This thesis has been submitted in fulfilment of the requirements for a postgraduate degree (e.g. PhD, MPhil, DClinPsychol) at the University of Edinburgh. Please note the following terms and conditions of use:

This work is protected by copyright and other intellectual property rights, which are retained by the thesis author, unless otherwise stated.
A copy can be downloaded for personal non-commercial research or study, without prior permission or charge.
This thesis cannot be reproduced or quoted extensively from without first obtaining permission in writing from the author.
The content must not be changed in any way or sold commercially in any format or medium without the formal permission of the author.
When referring to this work, full bibliographic details including the author, title, awarding institution and date of the thesis must be given.
The Measurement of Suggestibility in Adults with Intellectual Disabilities:
An Adaptation of the Gudjonsson Suggestibility Scales and a Systematic Review Exploring the Influence of Cognitive Variables

Hannah Lydia Shackleton

Doctorate in Clinical Psychology
May 2017
DClinPsychol Declaration of Own Work

Name: Hannah Lydia Shackleton

Title of Work: The measurement of suggestibility in adults with intellectual disabilities: An adaptation of the Gudjonsson Suggestibility Scales and a Systematic Review exploring the influence of cognitive variables

I confirm that this work is my own except where indicated, and that I have:

• Read and understood the Plagiarism Rules and Regulations
• Composed and undertaken the work myself
• Clearly referenced/listed all sources as appropriate
• Referenced and put in inverted commas any quoted text of more than three words (from books, web, etc.)
• Given the sources of all pictures, data etc. that are not my own
• Not made undue use of essay(s) of any other student(s), either past or present (or where used, this has been referenced appropriately)
• Not sought or used the help of any external professional agencies for the work (or where used, this has been referenced appropriately)
• Not submitted the work for any other degree or professional qualification except as specified
• Acknowledged in appropriate places any help that I have received from others (e.g. fellow students, technicians, statisticians, external sources)
• Complied with other plagiarism criteria specified in the Programme Handbook
• I understand that any false claim for this work will be penalised in accordance with the University regulations
• Received ethical approval from the School of Health in Social Science, University of Edinburgh
  OR
• Received ethical approval from an approved external body and registered this application and confirmation of approval with the School of Health in Social Science’s Ethical Committee

Signature ………………………………..

Date …1st May 2017…
Acknowledgements

I am very grateful to Dr Ken MacMahon for his hard work, efficiency and infinite patience as my academic supervisor. Your friendly wisdom and availability have helped make this process run as smoothly as possible. I would also like to acknowledge Dr Edith Matheson for her helpful contributions and support during the first 18 months of the research, and Dr Sharon Horne-Jenkins who latterly took over the baton as clinical supervisor with positivity and enthusiasm. I also want to recognise Ms Rowena Stewart for her indispensable library support.

I would like to thank the Speech and Language Therapists from NHS Forth Valley for their time and expertise, particularly Lindsey Jane Nicol for her consultation and willingness to help me develop materials. I am also grateful to Lois Cameron for her time and thought-provoking discussion.

Thank you to the rest of the DClinPsychol 2014 cohort, particularly Laurie, Emma, Leona, Nell and Emilly for their help in keeping the momentum going during the more challenging moments. I am also grateful to my family and friends, particularly Jane, Claire, Naomi and Lucy for their kindness and care packages, but mostly for keeping me sane. Special thanks goes to Will for his unconditional support and encouragement.

Last but definitely not least, I would like to extend a huge thank you to all of the participants and services that so enthusiastically involved themselves in this research. I have sincerely enjoyed meeting with you all.
Table of Contents

DClinPsychol Declaration of Own Work ................................................................. 2
Acknowledgements .............................................................................................. 3
Chapter 1: Thesis Portfolio Abstract .................................................................. 7
Chapter 2: Thesis Lay Summary .......................................................................... 8
Chapter 3: Systematic Review Journal Article .................................................... 10
  Introduction .......................................................................................................... 12
  Aim of the current review ................................................................................... 15
  Method .................................................................................................................. 15
  Search strategy .................................................................................................... 15
  Table 1. Eligibility criteria for study selection .................................................. 15
  Data extraction ..................................................................................................... 16
  Quality assessment ............................................................................................... 16
  Results ................................................................................................................... 17
  Figure 1. Flowchart of study identification ......................................................... 18
  Included studies ................................................................................................... 19
  Table 2. Study summaries .................................................................................... 19
  Synthesis of results from studies ....................................................................... 25
  Critical appraisal of the studies .......................................................................... 25
  Quality ratings ....................................................................................................... 25
  Sample characteristics ......................................................................................... 25
  Confirmation of intellectual disability ............................................................... 26
  Full Scale IQ (FSIQ) ........................................................................................... 27
  Memory .................................................................................................................. 28
  Verbal and Performance Intelligence Quotients .................................................. 29
  Language Ability ................................................................................................. 30
  Interrogative Suggestibility measure .................................................................. 30
  Discussion ............................................................................................................. 31
  Implications and future research ....................................................................... 32
  Strengths and limitations of this review ............................................................ 33
  Conflict of interest declaration ......................................................................... 34
  Systematic Review References ............................................................................ 35
Chapter 4: Empirical Study .................................................................................. 41
  Empirical Study Abstract .................................................................................... 42
  Introduction .......................................................................................................... 43
  The Gudjonsson Suggestibility Scales and Adults with Intellectual Disabilities .... 43
  Aims of Present Study .......................................................................................... 46
  Research Hypotheses ........................................................................................... 46
  Method .................................................................................................................... 47
Appendix E(iii) - Empirical Research: Confirmation of Local Approval Dundee and Angus College .................................................................................................................. 102
Appendix E(iv) - Empirical Research: Confirmation of Local Approval Fife Council 103
Appendix F(i) - Empirical Research: Participant information sheet ........................................ 104
Appendix F(ii) - Empirical Research: Participant consent form ............................................. 111
Appendix G - Empirical Research: Information sheet for services ....................................... 114
Appendix H - Empirical Research: Participants demographics form .................................... 118
Appendix I(i) - Empirical Research: Permissions for use of Boardmaker images .................. 119
Appendix I(ii) - Empirical Research: Adapted GSS scales and questions .............................. 121
Appendix J - Empirical Research: Debrief wording .............................................................. 129
Appendix K - Empirical Research: University Research Proposal ......................................... 130

Word counts (excluding tables, figures, references & appendices):
Systematic Review: 5005
Empirical Research: 5915
Total: 10920
Chapter 1: Thesis Portfolio Abstract

Background: The tendency for accepting and/or behaving under the influence of other’s suggestion in an interview context can be described as ‘interrogative suggestibility’ (IS). The Gudjonsson Suggestibility Scales (GSS) are used within many clinical and forensic settings as a tool to gauge the reliability of information obtained during interviews. Concerns exist regarding the suitability of these scales for use amongst the population of people with an intellectual disability (ID). Previous research concludes that the GSS may disadvantage people with an ID, indicating a greater degree of IS than is actually the case.

Method: The following systematic review of several electronic databases explores research to date (and what conclusions have been drawn) in relation to the degree to which cognitive variables relate to scores obtained on the GSS by people with an ID. The subsequent empirical study makes adaptations (e.g. supplementing verbal information with visuals) to the GSS in an attempt to improve its suitability for use with people with an ID. In addition, a number of cognitive variables are measured (e.g. verbal and visual memory) and their relationship with scores on the scales explored.

Results: The adaptations to the GSS did not result in a significant change to scores on the GSS. It was found that visual memory ability may contribute to whether visual information effects scores on the GSS following adaptations. Whilst tentative conclusions are drawn regarding the role of memory ability, the systematic review of research was limited in it’s clarification of the role of cognitive variables in IS. This is likely due to limited scope and quality of existing research.

Conclusion: Both the empirical study and the systematic review highlight the complexity of the field of interrogative suggestibility, particularly amongst people with an ID.
Chapter 2: Thesis Lay Summary

Background: Research has found that the way that questions are asked can affect the answers that a person gives. Some people may be particularly vulnerable to changing their answers or agreeing with questions, depending on how they are phrased (this is called ‘interrogative suggestibility’). Researchers have suggested that people with intellectual disabilities can be more susceptible to this than people who do not have an intellectual disability. A tool called the Gudjonsson Suggestibility Scales (involves a story being read to a person followed by some questions) is often used to measure the extent to which a person might be influenced in this way. However, there are concerns that the scale can over-estimate this tendency in people with intellectual disabilities.

Method: This portfolio involved reviewing several electronic databases and exploring research to date (and what conclusions have been drawn) in relation to the degree to which certain mental abilities (e.g. memory for visual information) influence how people with intellectual disabilities perform on the Gudjonsson Suggestibility Scales. The other part of this research portfolio sought to find out whether making certain adaptations to the Gudjonsson Suggestibility Scales (e.g. including pictures to the story to see if it would help people remember it better). In addition, a number of mental abilities were measured (e.g. how well people can remember verbal and visual information) and their relationship with performance on the scales explored.

Results: The adaptations to the Gudjonsson Suggestibility Scales did not result in a significant change to scores. It was found that visual memory ability might contribute to whether visual information improves people with an intellectual disability’s performance on the Gudjonsson Suggestibility Scales following adaptations. Whilst tentative conclusions are drawn regarding the role of memory ability, the systematic review of research was limited in it’s clarification of the role of certain mental abilities in interrogative suggestibility. This is likely due to limited breadth and quality of existing research.
Conclusion: Both parts of this thesis portfolio highlight the complexity of the field of interrogative suggestibility, particularly amongst people with an intellectual disability. There is a need for further research to further clarify the roles certain mental abilities play in interrogative suggestibility.
Chapter 3: Systematic Review Journal Article

Association of cognitive variables and interrogative suggestibility within the population of those with intellectual disabilities: A systematic review

Written in accordance with author guidelines for: Journal of Applied Research in Intellectual Disability (JARID; see Appendix A).

Abbreviated title for running head:
Cognitive variables and suggestibility: a review

Keywords:
Suggestibility
Interrogation
Intellectual disability
Cognitive
Individual differences
Neuropsychology
Systematic Review Abstract

**Background:** The use of the Gudjonsson Suggestibility Scales (GSS) for assessment of interrogative suggestibility (IS) for people with an intellectual disability (ID) has been criticised. Several studies have suggested that the GSS does not have ecological validity, instead reflecting cognitive limitations for material presented verbally. This systematic review evaluates literature examining relationships between cognitive variables and the GSS in samples of people with an ID.

**Method:** A systematic literature search across several electronic databases from 1980 until January 2017 using pre-specified inclusion criteria and study quality evaluation criteria.

**Results:** Nine studies met inclusion criteria. Nine measured memory capacity, two measured language ability and one examined verbal and performance IQ. Findings allude to the role of memory, but theoretical inferences from all cognitive variables are limited due to the inadequate measures used.

**Conclusions:** Research examining the role of cognitive factors in the IS of people with an ID is limited in both scope and quality.
Introduction

Interrogative suggestibility (IS) can be described as the propensity to accept suggestive information in a closed social interaction. The acceptance of suggestive information includes, often unknowingly, responding to leading questions and/or allowing interviewer feedback to influence responses. Gudjonsson and Clark (1986) developed a trans-population theoretical model of IS which proposes that susceptibility to IS is mediated by an individual’s cognitive ability, mental state and personality characteristics. Gudjonsson and Clark (1986) claim that because individuals who have little, or temporarily impaired, information processing capacity have limited encoding and retrieval structures, the availability of frames of reference to use during interrogative questioning, about a previously witnessed event, is compromised.

The Gudjonsson Suggestibility Scales (GSS; Gudjonsson, 1984) are a widely studied and used means of assessing IS. The GSS consists of a short narrative that is read to individuals, followed by a request that they state everything they can recall about the story immediately afterwards and again approximately 50 minutes later. Individuals are then asked a number of questions, some of which are leading questions that suggest that certain information was presented in the story when it was not. The questions are asked twice, once before receiving negative feedback, and once after. The negative feedback implies that the individual could be more accurate and as such requires them to answer the questions again. Six scores are provided by the GSS: immediate recall score; delayed recall score; yield 1 score (number of leading questions a person yields to before negative feedback); shift score (number of times a person changes their original response as a result of negative feedback); yield 2 score (number of leading questions which the person yields to after the negative feedback); and finally, a total suggestibility score (the sum of yield 1 and shift scores). It is recognised that different psychological processes underpin each of the component scores on the GSS. For example, recall and yield scores are thought to relate more to cognitive processes (Milne, Clare & Bull, 2002) whereas shift scores are thought to be more influenced by social factors, an individual’s coping processes, personality characteristics such as social desirability and neuroticism (Gudjonsson, 1983; Bain & Baxter, 2000; Polczyk, 2005; Drake, 2010). Findings such as these are in line with Gudjonsson and Clark’s
(1986) model of IS, implying that cognitive abilities are more important for coping with suggestive questions than for dealing with negative feedback.

The GSS are used as a measure of IS for people with an ID in situations when the reliability of information individuals provide is deemed to be crucial, such as within the context of the criminal justice system (Willner, 2011; Howells & Ward, 1994). The appropriateness of these scales for people with an ID has received some criticism, particularly with regard to the scales’ reliance on verbal information without taking account for this in subsequent scoring procedures (Beail, 2002). Some researchers have explored the relationship between a single score measure of cognitive functioning (e.g. IQ) and IS (as measured by the GSS) instead, however this has returned inconsistent results, with some finding negative correlations between IQ and GSS scores (Gudjonsson, 1983; Sharrock & Gudjonsson, 1993), and some not finding any significant relationships at all (Sondenaa, Rasmussen, Palmstierna, & Nottestad, 2010). In their research with children, Henry & Gudjonsson (2007) did not find the predicted relationship between IS and IQ; however, when they divided IQ scores into verbal IQ and non-verbal IQ their findings alluded to the role of more specific cognitive variables. They found that verbal IQ was related to performance on misleading questioning whereas non-verbal IQ was related to free recall.

Reduced cognitive functioning can also occur in the context of sleep deprivation and mental illness. Interestingly, researchers have identified relationships between IS (as measured by the GSS) and anxiety, depressed mood, and sleep deprivation (Ridley & Gudjonsson, 2012; McGroarty & Thomson, 2012; Blagrove, 1996). Whilst the authors attributed these relationships to interviewees’ limited coping strategies when faced with interrogation and uncertainty, it might be argued that the role of reduced cognitive abilities (e.g. difficulties with concentration, critical analysis and decision making) associated with these circumstances are important in their influence of susceptibility to IS (as measured by the GSS).

Research exploring the variety of cognitive factors that influence IS amongst children and young people appears to be at a more advanced stage than that with people with
an ID. Given the quantity of existing studies within the general adults and child populations, a number of reviews have been published. A systematic review by Bruck and Melnyk (2004) reported mixed results, but concluded language and creativity to be fairly consistently related to IS. Hritz et al (2015) also reviewed literature with the purpose of highlighting aspects to consider when interviewing a child. Whilst this review was not conducted systematically, nor were individual study characteristics formally rated for quality before conclusions drawn, they also acknowledge the inconsistent findings that exist across published studies. Hritz et al (2015) reviewed research concerning the influence of memory, executive functioning, distractibility, attention and creativity on children’s IS with some studies revealing significant results, and others non-significant results or significant results in the non-predicted direction. However, the authors report that the majority of studies reviewed support an inverse relationship between a child’s language skills and their susceptibility to suggestion and as such conclude, in agreement with Bruck and Melnyk (2004), language ability to be a complex, multifaceted factor affecting IS. In fact, so convinced are these authors about findings relating to language ability, they propose that language ability should be considered by interviewers independently of IQ and other measures of cognitive functioning.

Although research alludes to the importance of certain cognitive abilities and IS, the research involving people with an ID is uncertain. For this reason, an exploration of existing findings from research conducted with people with an ID is indicated. Indeed, research carried out amongst people with an ID may prove useful in furthering the understanding of factors that contribute to IS and therefore supporting or extending Gudjonsson and Clark’s (1986) model of IS. Such clarifications also have the potential for exploring trans-population indicators for susceptibility to suggestion.

This review considers whether heterogeneity in results from research conducted amongst people with an ID may be better explained by individual differences in the various cognitive domains rather than the overall IQ score. For example, individuals could have the same IQ score, but vary in working memory ability. If indeed working memory moderates the relationship between IQ and IS, differences in IS (as measured
by the GSS) may be explained by examining working memory; however, the effect is masked if a unitary IQ score is used. In other words, the potential effects of single cognitive variables are hidden behind a cumulative score (IQ) therefore exploring the influence of specific cognitive variables on IS is indicated.

**Aim of the current review**

This systematic review evaluates literature examining the relationship between cognitive variables and the GSS in samples of people with an ID.

**Method**

**Search strategy**

Searches were completed on 22nd January 2017. Articles were identified using the following search terms: learning disabilit* or intellectual disabilit* or mental* retard* or mental* handicap* or developmental* disab* or cognitive disab* or intellectual* impair* AND gudjonsson suggestibility scale* or GSS*.

Databases searched were Pubmed/Medline, AMED, CAB abstracts, PsychArticles full text, EMBASE, EMBASE classic, Global Health, Epub ahead of print and other non-indexed citations, PsychArticles, Web of Science, Scopus, JSTOR, Westlaw, Lexis, and ProQuest. Additional articles were identified following examination of reference lists from primary search results to ensure that, where possible, all pertinent studies were included. Studies were screened based on the criteria presented in Table 1.

**Table 1. Eligibility criteria for study selection**

<table>
<thead>
<tr>
<th>Inclusion criteria</th>
<th>Exclusion criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Original empirical research</td>
<td>• Adapted versions of the GSS</td>
</tr>
<tr>
<td>• Full text in English language</td>
<td>• Single case studies</td>
</tr>
<tr>
<td>• Published from 1980 onwards</td>
<td>• Letters, editorials, commentaries,</td>
</tr>
<tr>
<td>• IQ scores of participants ≤80</td>
<td>reviews,</td>
</tr>
</tbody>
</table>

15
Data extraction

Where available, the following data were extracted from each included article: sample characteristics (sample size, age, gender, and recruitment source), IQ scores (range, mean, standard deviation), IQ measure, cognitive variables e.g. memory (and measures for these), and findings relating to cognitive variable/s. Authors for seven of the nine studies included were contacted to request further data regarding cognitive variables from their studies. Only one author responded, confirming that the data in their study had been disposed of.

Quality assessment

As most published quality criteria checklists relate to randomised controlled trials and intervention studies, which this systematic review does not contain, new quality criteria were developed in consultation with several sources. These included quality criteria from existing systematic reviews relating to suggestibility (Hooper, Chou & Browne, 2016; Taylor, 2011), as well as published checklists including COSMIN checklist (Terwee et al., 2012), CONSORT checklist (Schulz et al 2010), SIGN methodology checklists (SIGN, 2012) and CASP critical appraisal checklists (Critical Appraisal Skills Programme, 2017). Fourteen quality criteria were developed (see Appendix B) and ratings were assigned depending on whether a study did not meet (0 points), partially met (1 point) or fully met (2 points) the specified quality criteria. Studies that had total scores above 20 were deemed to be high quality, with scores 10-19 indicating acceptable quality, and those with scores 0-9 deemed to be low quality. Quality assessment was carried out on all the included studies independently by the researcher. A random sample of articles were independently rated by another reviewer (a second year trainee clinical psychologist from a university different to the primary researcher). This was done to increase the validity of the quality ratings. Agreement was measured using Cohen’s kappa coefficient (McHugh, 2012).
Results

This section of the review will present a summary of the final studies and their findings. Due to variation in methods and measures it was not possible to combine study outcomes directly in the form of a meta-analysis. Hence, critical appraisal of the identified studies will be narrative in format, and will be structured around the cognitive variables each of the included studies investigated, and the pre-determined quality criteria.

The process of identifying studies for inclusion is presented in Figure 1. Electronic database searches yielded 682 results, with 564 remaining following the exclusion of duplicates. The first screening, via titles only, resulted in the exclusion of a further 476 references, with the second screening, involving review of abstracts, excluding a further 81 references (see Appendix C). It was at this point that reference lists of remaining articles were hand searched, leading to the identification of a further two articles for inclusion. A final total of nine studies were identified.
Figure 1. Flowchart of study identification

<table>
<thead>
<tr>
<th>Databases searched</th>
<th>Pubmed/ Medline (n=0)</th>
<th>AMED (n=0)</th>
<th>CAB abstracts (n=2)</th>
<th>PsychArticle (n=19)</th>
<th>EMBASE (n=28)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web of Science (n=17)</td>
<td>Scopus (n=49)</td>
<td>Global Health (n=0)</td>
<td>ProQuest (n=531)</td>
<td>JSTOR (n=8)</td>
<td></td>
</tr>
<tr>
<td>Epub (n=3)</td>
<td>Westlaw (n=14)</td>
<td>Lexis (n=11)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Records identified through database searching (n = 682)

Records after duplicates removed (n = 564)

Records screened (n = 88)

Records excluded by title (n = 476)

Full-text articles assessed for eligibility (n = 7)

Suitable articles identified through hand searching reference lists (n=2)

Studies included in final quantitative synthesis (n = 9)

- Ppts <16yrs (n=11)
- Ppts <16yrs + non-ID (n=3)
- Ppts <16yrs + non-suggestibility (n=3)
- Ppts <16yrs + non-empirical (n=2)
- Ppts <16yrs + non-suggestibility + non-ID (n=2)
- Non-empirical + non-ID (n=1)
- Non-empirical (n=19)
- Non-suggestibility (n=15)
- Non-suggestibility + non-ID (n=5)
- Non-ID (n=17)
- Adapted GSS only (n= 3)
<table>
<thead>
<tr>
<th>Study</th>
<th>Relevant sample</th>
<th>IQ measure</th>
<th>Cognitive variables (+ measures)</th>
<th>Findings re cognitive variables</th>
<th>Overall quality rating</th>
<th>Year of study</th>
<th>Authors and sample description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N=60 (32 male, 28 female) adults from a 'special day centre'. Age range 24-56 (mean= 36.8; SD= 9.11)</td>
<td>WAIS-R 53-74 (mean= 59.93; SD= 5.94)</td>
<td>Relationship between recall performance and rest of the original GSS not reported (lead author contacted and confirmed data had been destroyed)</td>
<td>Immediate recall and delayed recall recalled from 8 subtests (as measured by GSS)</td>
<td>Acceptable</td>
<td>(1996)</td>
<td>Cardone &amp; Dent (1996)</td>
</tr>
<tr>
<td>2</td>
<td>Group 1 (with an ID), N= 20 (15 men, 5 women) Recruited from special day centres and supported residential placements. Group 2 (without ID), N=20 (11 male, 9 female). Recruited staff members from a special day centre.</td>
<td>WAIS-R 57-75 (mean= 65; SD= 5.3)</td>
<td>Immediate recall and delayed recall (as measured by GSS)</td>
<td>Immediate recall and delayed recall were significantly lower in those with an ID, than those without.</td>
<td>Acceptable</td>
<td>(1993)</td>
<td>Clare &amp; Gudjonsson (1993)</td>
</tr>
</tbody>
</table>

Table 2. Study summaries
<table>
<thead>
<tr>
<th>Authors and year of study</th>
<th>Relevant sample</th>
<th>IQ measure</th>
<th>FSIQ scores</th>
<th>Cognitive variables (+ measures)</th>
<th>Findings re cognitive variable</th>
<th>Overall quality rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gudjonsson, Murphy, &amp; Clare (2000)</td>
<td>N=49 (31 men, 18 women)</td>
<td>WAIS-R 44-82 (mean= 47.2)</td>
<td>Mild ID group: mean= 67.4; SD= 7.4</td>
<td>Immediate recall, delayed recall (as measured by GSS)</td>
<td>Total suggestibility scores (GSS recall) verbal memory, verbal fluency, II</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Gudjonsson &amp; Henry (2003)</td>
<td>N=221 (178 males, 43 females)</td>
<td>WAIS-R 70-117 (mean= 94.5; SD= 11.5)</td>
<td>Mild ID group: mean= 67.4; SD= 5.7</td>
<td>Immediate recall, delayed recall (as measured by GSS)</td>
<td>Total suggestibility scores (GSS recall) verbal memory, verbal fluency, II</td>
<td>Acceptable</td>
</tr>
<tr>
<td>McVilly (2002)</td>
<td>N=49 (31 men, 18 women)</td>
<td>WAIS-R 44-82 (mean= 47.2)</td>
<td>All scores except that for other group</td>
<td>No ages reported</td>
<td>No health issues, normal IQ scores</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Authors and year of study</td>
<td>Relevant sample</td>
<td>IQ measure</td>
<td>Cognitive variables (+ measures)</td>
<td>Findings re cognitive variables</td>
<td>Overall quality rating</td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------</td>
<td>------------</td>
<td>----------------------------------</td>
<td>--------------------------------</td>
<td>------------------------</td>
<td></td>
</tr>
</tbody>
</table>
| O'Connell, Garmoe & Goldstein (2005) | N=60 (40 men, 20 women) across all groups | ID diagnoses confirmed by reviewing participant’s record from referring agency | Group 1 (the only group that used the original form of GSS) N=19, recruited from agencies supporting those with ‘developmental disabilities’ | IQ negatively correlated with yield (as measured by GSS) and delayed recall, SD=5.6, mean=60.5; Immediate recall | 5 (O’Connell) | 21 | 0.45

<table>
<thead>
<tr>
<th>Authors and year of study</th>
<th>Relevant sample</th>
<th>IQ measure</th>
<th>Cognitive variables (+ measures)</th>
<th>Findings re cognitive variable</th>
<th>Overall quality rating</th>
<th>Relevant sample size</th>
<th>Year of study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sharrock &amp; Gudjonsson (1993)</td>
<td>N= 108 (with + without ID)</td>
<td>WAIS-R</td>
<td>Memory as measured by GSS explored across all participants.</td>
<td>14 out of 26 participants do not score significantly higher on shift test compared to those with IQ&gt;70. No other results reported specific to IQ&lt;70.</td>
<td>Acceptable</td>
<td>N= 26 (IQ&gt;70) + 82 (IQ&lt;70)</td>
<td>1993</td>
</tr>
<tr>
<td>Authors and year of study</td>
<td>Relevant sample</td>
<td>IQ measure</td>
<td>Cognitive variable (+ measures)</td>
<td>Findings re cognitive variable</td>
<td>Overall quality rating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------</td>
<td>------------</td>
<td>----------------------------------</td>
<td>-------------------------------</td>
<td>------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sondenaa, Rasmussen, Palmsitierna, &amp; Nottestad (2010)</td>
<td>N= 133 (total subjects with + without ID)</td>
<td>WASI</td>
<td>Memory (as measured by GSS) and delayed recall, immediate recall</td>
<td>VIQ, PIQ and FSIQ negatively correlated with GSS subtests, with stronger correlations reported for VIQ (authors do not report whether statistically significantly stronger than other scores). None of these results were reported for those with an ID.</td>
<td>Acceptable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White, &amp; Willner (2005)</td>
<td>N=40 (20 male, 20 female)</td>
<td>WASI</td>
<td>Immediate recall 'delayed recall' (as measured by GSS)</td>
<td>No results pertaining to BPVS reported. Relationship between recall performance and VIQ reported.</td>
<td>Acceptable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authors and year of study</td>
<td>Relevant sample</td>
<td>IQ measure</td>
<td>Cognitive variables (+ measures)</td>
<td>Findings re cognitive variable</td>
<td>Overall quality rating</td>
<td>FSId scores</td>
<td>Measure</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------------</td>
<td>-----------</td>
<td>----------------------------------</td>
<td>-------------------------------</td>
<td>-------------------------</td>
<td>-------------</td>
<td>---------</td>
</tr>
<tr>
<td>90.0; SD = 1.6</td>
<td>1.1; 1.4; 56.4</td>
<td>10.0; 9.5; 8.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>63.9; SD = 3.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1; V IQ: 57.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.0; 8.0; SD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Author did not respond to request for access to data)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=24 recruited from day centres for those with an ID</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>British Picture Vocabulary Scale (BPVS) 'Immediate recall' (as measured by the GSS)</td>
<td>No results pertaining</td>
<td></td>
<td>Relationship between recall performance and rest of the original GSS not reported.</td>
<td>(Author did not respond to request for access to data)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Synthesis of results from studies

The exploration of cognitive variables with GSS scores was not the primary focus for any of the included articles. Instead, these data were reported as a supplementary analysis in each study. The variety of cognitive variables reported within the included studies was limited to three distinguishable domains (memory, verbal and non-verbal [performance] intelligence, and language), which will be summarised below.

Critical appraisal of the studies

Quality ratings

Four studies were randomly selected to be reviewed by the independent reviewer. Together with the primary researcher’s quality ratings, the ratings were subjected to a Cohen’s κ to determine if there was agreement between reviewers (Laerd Statistics, 2015). According to agreement criteria by Altman (1999) there was ‘very good’ agreement between the reviewers, κ = .836, 95% CI [.713, .959], p < .001. Any differences in ratings were discussed between reviewers until a single rating was agreed upon.

The overall quality scores assigned to each paper can be seen in Table 2. One study achieved a ‘low quality’ rating (O’Connell, Garmoe & Goldstein, 2005), whilst the rest achieved ‘acceptable quality’ ratings. No studies achieved ‘high quality’ ratings which further highlights the difficulty in drawing conclusions from existing research. Full quality ratings per quality criteria for each study can be seen in Appendix D. The following section will more broadly discuss some of the main methodological issues identified when appraising each article.

Sample characteristics
Both inclusion and exclusion criteria are stated in only one out of the nine studies (O’Connell, Garmoe & Goldstein, 2005), with Sondenaa, Rasmussen, Palmstierna and Nottestad, (2010) only partially reporting exclusion criteria.

Sharrock and Gudjonsson (1993) and Sondenaa, Rasmussen, Palmstierna and Nottestad (2010) did not report age or gender composition of their sample. Whilst research appears to be inconsistent in determining whether gender differences exist in adults in relation to IS (Abbasi & Hong, 2012), there is more certainty regarding the influence of age in adults (Gudjonsson, 1984), even after memory has been controlled for in the elderly (Dukala and Polczyk, 2014). There was some variability in terms of gender balance and age ranges, particularly for Clare and Gudjonsson (1993) and Gudjonsson and Henry (2003) but it is unclear what effect this may have on their findings.

Participants were recruited from a range of sources. Five studies recruited from special community/day centres, two from forensic establishments (e.g. prison), one from residential agencies and one from the study author’s private forensic cases (defendant, victim or alleged witness). A bias towards forensic populations is noted, but the degree of influence this has on reported findings is uncertain. One of the studies in this review explores the link between previous convictions and IS and claim that previous interrogative experience may reduce suggestibility. If this is the case, caution should be exercised when generalising results from forensic ID populations to the wider ID population.

None of the studies included in this review report attrition or rates at which eligible individuals declined to participate, therefore it is unclear whether this is due to a lack of reporting, or difficulties in this area.

**Confirmation of intellectual disability**

For a diagnosis of an ID to be made, the British Psychological Society (BPS) state that individuals must demonstrate significant impairment of intellectual functioning,
significant impairment of adaptive behaviour, and onset of impairment before adulthood. No studies included in this review independently measured both intellectual and adaptive functioning, nor commented on confirmation of impairment onset prior to age 18 (BPS, 2015).

Also in their guidance document for the assessment of ID, the BPS state that the optimal measure of intellectual functioning is provided by the most current version of the Wechsler Adult Intelligence Scale (WAIS; BPS, 2015). Crawford, Allan, and Jack, (1992) report that whilst the use of all 11 subtests of the Wechsler Adult Intelligence Scale-Revised (WAIS-R, Wechsler, 1986) is optimal for diagnostic purposes, versions containing 7 subtests or more do not compromise the reliability or validity of IQ scores enough to render them unsuitable for research or screening purposes. It was therefore not too concerning that Cardone and Dent (1996) and Clare and Gudjonsson (1993) used only 8 out of the optimal 11 subtests of the WAIS-R. It was noted that Gudjonsson, Murphy and Clare (2000) and Gudjonsson and Henry (2003) also used the WAIS-R for measurement of their participants’ IQ despite this measure not being the most current Wechsler Adult Intelligence Test at the time of publication of each of their respective studies, although it is acknowledged that, at that time of data collection, this may not have been available.

O’Connell, Garmoe and Goldstein (2005) did not conduct formal assessments of IQ, as part of their study protocol, instead confirming participant’s ID status by reviewing case files from referring agencies. Finally, three studies (Willner & White, 2003; Willner, 2008; Sondenaa, Rasmussen, Palmstierna & Nottestad, 2010) utilised the Wechsler Abbreviated Scale of Intelligence (WASI; Wechsler, 1999) to ascertain participants level of intellectual functioning. Whilst the ‘gold standard’ is the administration of all subtests of the most current WAIS, in certain circumstances administration of the most current version of the WASI is acceptable but not to be relied on for diagnostic purposes (BPS, 2015).

**Full Scale IQ (FSIQ)**
The FSIQ is a single score quantification of global cognitive capacity (Wechsler, 1999). A FSIQ score is typically derived from an individual’s performance on standardised measures of verbal comprehension, perceptual reasoning, processing speed and working memory. Three out of the nine studies in the present review report on relationships between FSIQ and GSS scores for participants with an ID. Sondenaa, Rasmussen, Palmstierna and Nottestad (2010) found that FSIQ scores negatively correlated with all scores of the GSS, meaning that as FSIQ scores increased in their sample, individuals tended to yield less to leading questions, and shift their answers less. Gudjonsson, Murphy and Clare (2000) found this also to be the case, but only for immediate and delayed recall scores and ‘yield 2’ scores on the GSS. The only correlation (negative) that O’Connell, Garmoe and Goldstein (2005) found between FSIQ and GSS scores were for ‘yield 1’ scores. It is therefore difficult to make reliable conclusions regarding the relationship between FSIQ and GSS scores. It is unfortunate that the other six studies do not report these analyses, as this data may have provided support or refutation of claims made by previous researchers that IQ negatively correlates with all scores on the GSS.

Memory

The term ‘memory’ captures a diverse set of cognitive capacities by which individuals retain information and reconstruct past experiences, usually for present purposes. None of the studies in the present review acknowledge (or differentiate) types of memory other than verbal, nor do they use a standardised, reliable and valid measure of memory ability. Instead all included studies reported measurement of memory in the form of recall ability (delayed and immediate) as measured by the GSS. In his creation of the GSS, Gudjonsson (1984) described how the recall aspect of the scales could be scored in a manner similar to the Wechsler Memory Scales (WMS; Wechsler, 1945); however, Gudjonsson (1984) did not report how closely the two correlate with one another. Therefore, it is not known how representative of general memory abilities the GSS immediate and delayed recall scores are, despite most studies in this review appearing to draw conclusions based on the assumption that the GSS recall scores are indeed representative of memory abilities.
Two studies report significant relationships between recall ability (as measured by the GSS) and other GSS scores. Gudjonsson, Murphy and Clare (2000) found that it was only yield 2 score that significantly negatively correlated with both immediate and delayed recall scores on the GSS, both with coefficients indicating weak and moderate correlations respectively (Field, 2013). O’Connell, Garmoe and Goldstein (2005) found that immediate and delayed recall ability were not significantly associated with yield 1 scores on the GSS which is contrary to what other studies have hypothesised about yield 1 being more related to cognitive processes than yield 2 or shift scores. The latter authors do not report any other associations, significant or otherwise.

One study (Cardone & Dent, 1996) created a composite score for immediate and delayed recall ability and termed this ‘free recall’ ability. However, they did not report relationships between recall performance and GSS scores. Two other studies (Sharrock & Gudjonsson, 1993; Sondenaa, Rasmussen, Palmstierna & Nottestad, 2010) explored the association between memory (as measured by the GSS) and other scores on the GSS; however, this was done across all participants (those with and without an ID) so no inferences can be made for people with an ID specifically. Four studies (Cardone & Dent, 1996; Clare & Gudjonsson, 1993; Willner & White, 2003; Willner, 2008) did not report relationships between recall ability and performance on any of the GSS.

Three articles (Gudjonsson, Murphy & Clare, 2000; Gudjonsson & Henry, 2003; O’Connell, Garmoe & Goldstein, 2005) acknowledged floor effects for participants’ recall abilities on the GSS. O’Connell, Garmoe and Goldstein (2005) and Gudjonsson, Murphy and Clare (2000) provided calculations regarding this, with the former authors reporting performances at or below the 9th percentile, and the latter authors reporting that 28% of participants were unable to recall any detail at immediate recall, reducing to 48% at delayed recall.

Verbal and Performance Intelligence Quotients
Whilst most studies explored the association between IQ and GSS scores, one study (Sondenaa, Rasmussen, Palmstierna, & Nottestad, 2010) reported separate scores for verbal (VIQ) and performance (PIQ) abilities extracted from the Weschler Abbreviated Scale of Intelligence (WASI; Weschler, 1999). In their study, they found that both VIQ and PIQ negatively correlated with the GSS, but VIQ slightly more so, alluding to the possibility that verbal ability (e.g. language based problem solving) plays a differential role to performance IQ in relation to IS.

**Language Ability**

Two studies (White & Willner, 2003; Willner, 2008) used the British Picture Vocabulary Scale (BPVS; Dunn & Dunn, 1982), which is a measure of receptive language assessment for vocabulary ability for children ages 3-16 years. Unfortunately scores on the BPVS were not reported in relation to the GSS so no inferences regarding receptive language ability/vocabulary can be made. It was also noted that for one study (Sondenaa, Rasmussen, Palmstierna, & Nottestad, 2010), participants completed the Hayes Ability Screening Index (HASI; Hayes, 2000), which is a tool that screens for ID and some speech, language and communication needs. However, the authors did not report data from this measure in their study, stating that they were reported elsewhere. The author of the present review was not successful in identifying where the data for the HASI was published.

**Interrogative Suggestibility measure**

Administration of the GSS appears to have been carried out largely consistently within each study. Seven out of the nine studies in this review utilised the GSS2, whilst the other two studies used the GSS1. Whilst no significant differences have been found between measures (Gudjonsson, 1987), it was claimed in the study by Clare and Gudjonsson (1993) that a study was in preparation (Gudjonsson, 1993) that found the GSS2 to be better suited for use amongst people with an ID due to the questions being less complex to understand. However, the ‘in preparation’ article could not be found by the author of this review.
Discussion

Perhaps because the relationship between cognitive abilities and performance on the GSS was not the primary focus of all articles, it was not always the case that all relationships were reported. In those that did report such relationships, there are some findings that suggest memory (as measured by the GSS) relates to scores on the GSS. However, because no standardised measure of memory is used in any of the studies included, inferences based on these findings are limited. Furthermore, how representative immediate and delayed recall ability (as measured by the GSS) is to the breadth and complexity of memory functioning is unclear.

Data from the BPVS is not reported therefore conclusions regarding the influence of language ability on IS for people with an ID cannot be made. Furthermore, due to the lack of availability of norms for those over the age of 16 with an ID, any inferences would have to be tentative.

Given the findings from previous reviews that explore the cognitive variables implicated in IS amongst the child and adolescent population, it seems that people with an ID have been somewhat neglected from similar explorations. It may be that the lack of research in this area reflects the concerns of clinicians and researchers regarding the GSS’s suitability for use with the population of people with an ID. It is also possible that a lack of research in this area relates to a possible assumption by some that all individuals with an ID are highly suggestible. This may be a consequence of diagnostic overshadowing; the concept whereby any difficulties individuals with an ID present with are attributed to the fact they have a diagnosis of an ID rather than other individual differences (Emerson et al., 2012). It is not uncommon for people with an ID to be considered as a homogenous group (Kebbel & Hatton, 1999). As well as being incorrect, this is likely to hinder much needed theoretical advancement.

Each of these discussion points highlights the need for increased inclusion of people with an ID in research more generally, particularly as clinicians and researchers may have limited information regarding variability that may help contribute to the
theoretical understanding of IS (and individual differences). If indeed is established that certain cognitive abilities increase susceptibility to IS, there may be trans-population implications, for example to those with other forms of cognitive impairment for example dementia, and acquired brain injury.

*Implications and future research*

Findings from other populations may highlight the usefulness of further exploring this topic with the exploration of cognitive variables being the primary objective. Ongoing suggestibility research should include valid and reliable measures of specific cognitive variables, instead of a general measure of cognitive ability such as FSIQ. Pooling results from all populations to explore the relationship between certain variables, therefore striving to identify trans-population indicators for susceptibility to suggestion.

Given the apparent complexity of the IS construct, a systematic exploration of not only single cognitive variables, but combinations of variables that are likely linked IS is indicated. In addition, whether other internal variables (such as anxiety [Gudjonsson, 1988]) mediate the relationship between cognitive abilities and IS would be important, particularly for applied considerations.

Whilst most limitations to adaptive functioning are due to reduced intellectual functioning, it cannot be assumed that everyone with IQ <70 will have similar levels of global impairment. In fact, IQ and adaptive functioning are not found to be highly correlated (Sparrow, Chichetti & Balla, 2005). It would be interesting to explore how adaptive functioning ability related to IS, particularly as none of the studies included within this review assess adaptive functioning nor explore this in relation to GSS performance. One might hypothesise that better adaptive functioning is associated with increased resistance to IS, but further research is required.

It was also noted within the studies included in this review that many people with an ID perform very poorly on the recall aspect of the GSS, highlighting a potential floor
effect for this measure. Even if it is confirmed that recall ability (immediate and delayed) on the GSS is representative of memory ability, a measure that provides a wider range of scores would be preferable to use for future comparisons.

If indeed it is identified from further quality research that an individual’s susceptibility to IS can be predicted by their performance on certain cognitive measures, the quandary of whether it is practical to routinely assess every individual is raised. It may only be in situations when suspicions arise that a comprehensive assessment of IS is indicated. Alternatively, the development of a screening assessment would be beneficial to help establish whether a more comprehensive assessment is indicated or not.

Whilst this review focused on IS as measured by the GSS, there is the potential for widening the search to include other measures of suggestibility; however, this is likely to involve deviating from theoretical territory outlined by Gudjonsson and Clark’s model of IS (1986). There is also the potential for expanding the inclusion criteria to capture modified versions of the GSS. It may be that modifications of the GSS lead to a score that is more representative of the ‘true’ concept of IS, however there is also the risk that the opposite effect is achieved. It is for the latter reason that this review chose to focus on a purist form of the measure.

**Strengths and limitations of this review**

A relative strength of this review are the broad search terms that were used. Instead of including the term ‘cognitive’ or a variant of this, the search was kept wide in that it looked for any studies that used the GSS with people with an ID therefore including studies where exploration of cognitive variables was supplementary to the primary research question.

There are a number of limitations to this review. As with any systematic review that yields limited number of studies in a particular area, there is a chance that this instead reflects a flaw in the search process. For example, it may be that other grey literature
exists, but as only one grey literature database was included some existing research may not have been identified. The lack of research may also represent a publication bias, in that studies may exist that have failed to find significant relationships with any cognitive variables, however these are not included in this review as they were not published (Dwan, Gamble, Williamson, & Kirkham (2013).

Clinical Implications

It is concluded that despite some claims made regarding the role of certain cognitive variables (e.g. memory) in IS in other populations, there is a scarcity of appropriate research in this area to substantiate these claims within the population of people with an ID. Based on findings of this review, it is suggested that clinicians remain cautious about assuming a link between cognitive variables and IS amongst the population of people with an ID. At present, there is a lack of reliable data on which to base substantive recommendations for clinical practice at this time. Hence, further research in this field is imperative.

Conflict of interest declaration

This research was conducted and funded as part of the author’s Doctoral Degree of Clinical Psychology at The University of Edinburgh, the fees of which are paid for by NHS Education for Scotland (NES).
Systematic Review References


Dwan, K., Gamble, C., Williamson, P. R., & Kirkham, J. J. (2013). Systematic review of the empirical evidence of study publication bias and outcome reporting bias—an updated review. *PloS one, 8*(7), 66-84


Chapter 4: Empirical Study

The measurement of suggestibility in adults with intellectual disabilities: Adaptation of the Gudjonsson Suggestibility Scales and an exploration of the influence of cognitive variables.

Written in accordance with author guidelines for: Journal of Applied Research in Intellectual Disability (JARID; see Appendix A).

Abbreviated title for running head: Adaptation of the GSS

**Keywords:**

Suggestibility

GSS

Intellectual disability

Cognitive

Individual differences

Neuropsychology
Empirical Study Abstract

Background: The use of the Gudjonsson Suggestibility Scales (GSS) for assessment of interrogative suggestibility (IS) for people with an intellectual disability (ID) has been criticised for relying on verbal working memory ability which may be problematic for those with an ID. Existing research has made various adaptations to improve the utility of the GSS with people with an ID. This study aims to combine past adaptations to explore the effect on GSS performance.

Method: 40 adults with an ID completed an adapted version of the GSS along with measures of IQ, verbal working memory, visual memory and situational anxiety.

Results: The addition of visual information to a shortened adapted version of the GSS failed to significantly improve the performance of people with an ID on the GSS. A multiple regression analysis identified a potential association between visual memory and outcomes on the adapted GSS, but clear theoretical conclusions were difficult to draw.

Conclusions: The addition of visuals to an adapted GSS failed to improve IS scores.
Introduction

Suggestibility has been defined in many ways; however most authors allude to it being a tendency to accept and/or alter behaviour under the influence of another’s suggestion (Ridley, 2012). Whilst very early literature regarding the concept of suggestibility was closely intertwined with that of hypnosis (Morgan, 1924; Orne, 1977; Ridley, 2013), later research related to event recollection. Cattell, in the late 19th century, carried out some of the earliest experimental work in this area, highlighting the effects of suggestion upon testimony (as cited in Sporer, 1982), and later Loftus and Palmer (1974) examined specifically the impact that wording has on the distortion of memory. It was not long after this that Gudjonsson (1984) acknowledged a certain type of suggestibility that arises in the context of an interrogation. As part of his model of interrogative suggestibility (IS), Gudjonsson (1984) identified two main ways that an individual’s responses can be influenced during questioning: with the use of leading questions and through criticism or negative feedback. Based on this model, Gudjonsson developed the Gudjonsson Suggestibility Scales as a measure to index the degree to which an individual is susceptible to IS (GSS; Gudjonsson, 1984, 1987). In this assessment, a brief story is read aloud and the listener is asked how much they can recall of it straight afterwards. After a delay of 50 minutes, the listener is then asked what they can recall about the story before being asked a series of questions about it, some of which are leading. The listener is then told that they have made a number of errors, and the original questions are then asked again. The scales give a measure of the degree to which a person ‘yields’ to leading questions, and the extent to which a person will ‘shift’ their answers in response to the inter-personal pressure of being told that their performance is not optimal. A number of psychosocial and cognitive factors have been found to influence an individual’s suggestibility on the GSS, these include; anxiety, self-esteem, adverse life events, and memory ability (Ridley & Gudjonsson, 2012).

The Gudjonsson Suggestibility Scales and Adults with Intellectual Disabilities

The GSS are used frequently as an index of suggestibility for people with an intellectual disability (ID) who come into contact with the criminal justice system,
either as alleged perpetrators or victims (Howells & Ward, 1994; Clare & Gudjonsson, 1993). As people with an ID tend to score more highly on the GSS than those without IDs, they are deemed, on this assessment, to be more suggestible than those without an ID (Everington & Fulero, 1999; Clare & Gudjonsson, 1993). However, the GSS have been criticised for their reliance on purely verbal information, particularly when most human testimony and lived experiences involve encoding of many sources of information beyond this (Beail, 2002; White & Willner, 2005).

Beail (2002) argued that the GSS are designed in such a way as to rely on semantic memory rather than autobiographical memory, therefore potentially reducing the ecological validity of the GSS. It would be expected that information pertaining to an event witnessed in person be encoded into autobiographical memory rather than semantic memory, as would be the case with the story read out as part of the GSS (Kebbell & Hatton 1999; Baddeley, Eysenck, & Anderson, 2009). Beail (2002) also noted that the questions within the GSS are more likely to elicit acquiescent responses (responding in the affirmative, regardless of question) from individuals who are firmly encouraged to answer questions on information they often have difficulty recalling in the first place (e.g. fictional events). If people with an ID are more at risk of acquiescence or guessing, particularly in the face of uncertainty (Heal & Sigelman, 1995), this would result in individuals scoring for suggestibility (as indexed by the GSS) therefore inflating their score based on uncertainty rather than true suggestibility.

Based on Beail’s (2002) conclusion that it is the GSS’s reliance on semantic memory rather than autobiographical memory that contributes to lower recall scores (and therefore higher suggestibility scores), White and Willner (2005) designed a study to explore this further. They compared performance on a suggestibility scale (similar to the GSS) for “real life” events that had been experienced by the individual, versus impersonal events depicted as part of a fictional story (as in the GSS). They found that IS, as measured by the scale, was higher for the impersonal content depicted as part of the fictional story, compared to actual events witnessed in person. Hence, individuals were determined to be more suggestible as a result of limitations to verbal working
memory capacity rather than as an indication that they are inherently more suggestible, by dint of their ID.

Gudjonsson and Clare (1995), and Milne, Clare and Bull (2002) found recall ability to be inversely related to suggestibility scores, implying that those with better recall ability may less susceptible to interrogative pressure. Cardone and Dent (1996) added pictorial stimuli to some items of the GSS in order to improve memory encoding. It was hypothesised that this would reduce subsequent suggestibility scores for a group of people with an ID. They found that the addition of pictorial stimuli significantly increased immediate and delayed recall, and reduced the extent to which participants ‘yielded’ to leading questions; no change in the degree of ‘shift’ was seen, however.

An unpublished study by Bowden (1998) used video stimuli to accompany the verbal information with the objective of better replicating ‘real life’ visual information. However, the addition of video stimuli to story narrative did not lead to a significant improvement in story recall ability or a reduction in suggestibility scores. It was postulated that the visual information (video) may not have been present for long enough to be encoded, as such it would be reasonable to think that having a visual adaptation may only be useful if there is sufficient quantity of it, and if it is present for long enough to be encoded by the participant (as occurred for Cardone and Dent, 1996, when they used pictures).

Willner (2008) investigated whether reducing verbal memory load (by asking for recall half way through the GSS story instead of at the end) reduced suggestibility scores. Whilst he found that recall improved somewhat, there was no significant change to suggestibility scores. This could indicate that memory ability is unrelated to suggestibility as measured by the GSS, or it may be that this adaptation was not sufficient, and an impact on suggestibility scores may have been observed if he had supplemented the verbal information with visuals as per Cardone and Dent (1996).

Although it appears that the majority of research that has looked specifically at language ability has been conducted within the child population, some researchers
have reported inverse relationships between suggestibility and certain aspects of language, e.g. narrative ability, comprehension ability (Hritz et al, 2015; Bruck & Malnyk, 2004). For this reason, a reliance on verbal information may be problematic for individuals with compromised cognitive functioning. Thus, some authors have strongly argued that the GSS should not be used with individuals with impaired cognitive function, such as those with an intellectual disability (Willner, 2011). Yet, at present, there is no alternative assessment and the GSS remains as a measure that can be criticised as relying too heavily upon cognitive abilities that are specific to its format.

**Aims of Present Study**

In order to establish whether the GSS paradigm may have some utility with individuals with an ID, this study focuses on the addition of visual material to a reduced scale which has been adapted to improve comprehensibility, thereby combining previous amendments (Cardone & Dent, 1996; Willner, 2008). In addition, measures of certain cognitive domains will be taken: general intellectual ability and visual memory and verbal working memory. The relationship between short term memory and working memory is frequently debated, with the conclusion taken for the purposes of this research that at the very least working memory is not distinct from short term memory and therefore has a significant impact upon memory capability (Cowan, 2008). Using measures of visual memory and verbal working memory will provide information regarding the cognitive capabilities that are supported by the adaptations. Therefore, this present study sets out to examine whether the addition of visual materials to an adapted Gudjonsson Suggestibility Scale will reduce suggestibility levels on the GSS for a population of people with an ID. Furthermore, this study will also explore the relationship between suggestibility scores and the psychological and cognitive variables of anxiety, IQ, visual memory and verbal working memory.

**Research Hypotheses**
Hypothesis One: the addition of visual materials to an adapted Gudjonsson Suggestibility Scale will improve recall and other suggestibility scores.

Hypothesis Two: the degree to which suggestibility is impacted by the addition of visual supports will be dependent upon cognitive variables of IQ and visual and auditory memory.

**Method**

**Design**

A within-subjects counterbalanced design was employed for this study. Responses on the adapted GSS were dependent variables, and IQ, verbal and visual memory, and state anxiety were the independent variables.

**Ethics**

Ethical approval for the study was granted by the University of Edinburgh School of Health in Social Science Research Ethics Committee (Reference no. CLIN270). Approvals from relevant local ethics committees, such as local councils, were also obtained (see Appendices E[i]-E[iv]). An ID specialist Speech and Language Therapist was consulted on all participant materials (e.g. study information sheets and consent forms) to ensure they were accessible for use with people with an ID (see Appendices F[i]-F[iii]).

**Participants**

The precedent effect size from Cardone and Dent’s (1996) study was used to inform a power calculation for hypothesis one for the present study. They found an effect size of 0.7 on ‘yield’ when visual stimuli were added to the GSS. Based on this effect size, an ‘a priori’ sample size calculator (G*Power; Faul, 2007) was used to determine the
minimum number of participants required to detect a medium effect size using a two-tailed paired sample t-test. A significance level of .05, at a power of .80 and with an effect size of .70 would require a minimum of 19 participants. For the second hypothesis relating to how much subsequent change scores on the GSS depends on three independent variables (for example) a sample size was also calculated using an ‘a priori’ sample size calculator (G*Power; Faul, 2007). Whilst relationships between the independent variables in the present study and GSS are previously established in research, an effect size in relation to change score as a multiple regression outcome variable is uncertain. However, it was expected that these variables will be substantial contributors to the degree to which scores on the GSS vary. As a result, sample size was calculated for a medium-to-large effect size (.25). The use of three predictors, at significance level of .05, at a power of .80 would require a minimum of 48 participants. A ‘rule of thumb’ outlined by Field (2013) suggests a minimum of 10 cases per predictor for a regression analysis, so based on both recommendations the target sample size for this analysis was set at a minimum of 48.

**Inclusion criteria**

- Mild intellectual disability (Full-Scale IQ range 55 - 70 [95% confidence interval range includes scores between 45 – 75; APA, 2013; WHO, 1992]).

**Exclusion criteria**

- Major mental illness, e.g. diagnosis of schizophrenia, current severe depression (as defined by APA, 2013)
- Diagnosis or current query of dementia
- Current substance misuse
- Current involvement with forensic services
- Previous engagement with the primary researcher in a therapeutic setting

In total, 50 individuals participated in the study, but ten sets of collected data were excluded prior to analysis as these individuals’ Full Scale IQ scores were above 74.
Recruitment

Managers from colleges and day centres across three regions of Scotland were approached by the primary researcher and information about the study provided (see Appendix G). Thirteen out of the 16 services approached confirmed that their service users might meet criteria. Once members of support staff identified a group of potential participants, they gained consent for them to meet with the primary researcher (PR) to receive further information regarding the study. This was done as a 1:1 meeting with the PR, or in the format of a presentation by the PR to a group. Individuals were given a minimum of 24 hours to consider the information before being asked by members of support staff if they wanted to take part. For those that expressed a further interest in taking part, 1:1 appointments between PR and participant were arranged.

Table 3. Distribution of recruitment sources and final recruitment numbers

<table>
<thead>
<tr>
<th>Services (n=16) by type</th>
<th>Number of potential participants given information about the study</th>
<th>Number consented</th>
<th>Number non-completed (and reason)</th>
<th>Number completed (unusable)</th>
<th>Included data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colleges (n=5)</td>
<td>65</td>
<td>21</td>
<td>2 (not considered to have capacity to consent: 1, voluntarily withdrew: 1)</td>
<td>19 (6)</td>
<td>13</td>
</tr>
<tr>
<td>Day centres (n=5)</td>
<td>74</td>
<td>25</td>
<td>2 (not considered to have capacity to consent: 2)</td>
<td>23 (4)</td>
<td>19</td>
</tr>
<tr>
<td>Social clubs (n=5)</td>
<td>32</td>
<td>7</td>
<td>0</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Advocacy group (n=1)</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Totals</td>
<td>175</td>
<td>54</td>
<td>4</td>
<td>50 (10*)</td>
<td>40</td>
</tr>
</tbody>
</table>

*FSIQ scores (< 45 = 1, and > 75 = 9) were excluded based on the requirement of the confidence interval range of scores to encompass 55-70 FSIQ scores, as per inclusion criteria.
Materials

Demographic information

Information regarding participants’ age, gender, marital status, accommodation type, support provision and occupation was collected to describe the sample and guide generalisability of the results (see Appendix H).

Gudjonsson Suggestibility Scales (GSS)

Both parallel versions of the GSS scales were used as part of this study (Gudjonsson, 1997). The story in version one of the GSS relates to a woman that has her handbag stolen whilst on holiday in Spain. The story in version two of the GSS relates to a couple that see a boy that has lost control of his bicycle coming down a hill. Both original versions of the stories are comprised of 40 story concepts each. In the original format, one of the stories is read to the subject before they are asked to recall as much of it as they can, achieving a point for every correctly recalled concept with a maximum score of 40 points (immediate recall score). Following a 50-minute delay, individuals are asked once more how much they can recall about the story, once again achieving a point for every recalled story concept (delayed recall score). Subjects are then asked 20 questions; five questions relating to previously heard story content (e.g. ‘Was the woman on holiday in Spain?’), and the rest leading questions (e.g. ‘Did the woman’s glasses break in the struggle?’ when there was no mention of her glasses in the story). The ‘yield 1’ score represents the number of times a subject yields to a leading question. Once the subject has answered the 20 questions, the administrator provides the following negative feedback regardless of their yield 1 score “You have made a number of errors. It is therefore necessary to go through the questions once more, and this time try to be more accurate.” The 20 questions are then repeated and a ‘yield 2’ and ‘shift’ score is provided. The ‘shift’ score represents the number of answers the subject has changed from before the feedback to after the feedback. A total suggestibility score is calculated by adding ‘yield 1’ and ‘shift’ scores together. For
the purposes of this study, the original format of the GSS was adapted in a number of ways:

*No 50-minute time interval:* Participants were questioned about the story immediately following story presentation, instead of after a fifty-minute delay. This was to maximise the recall of information (Willner, 2008)

*Reduced components:* The number of components of scales that were presented to participants at any one time were halved. For example, the adapted GSS 1 was split into two scales (GSS1a and GSS1b), and each of these were considered a separate story for the participant. Using a reduced component version of the GSS 1 and 2 may support recall thereby reducing the risk of obtaining a floor effect for free recall of information (Willner, 2008).

*Inclusion of visual information:* The scales were adapted to include visual as well as verbal information (see Cardone & Dent, 1996). Visual information was in the form of pictures depicting 50% of the verbal components. For example, the verbal component ‘they lived in a small bungalow’ was accompanied by a picture of a small bungalow. Pictures were based on Boardmaker™ visual supports (Mayer-Johnson Co., 2002; Appendix I[i] and I[ii]). Along with their corresponding verbal concept, pictures were reviewed and rated by five ID specialist Speech and Language Therapists to ensure they matched each concept.

A Mann-Whitney U test was selected to establish whether there were differences in picture/concept likeness ratings between each of the stories. Distributions of the ratings for each story were similar, as assessed by visual inspection. Ratings for adapted GSS1 (mean rank = 13.50) and GSS2 (mean rank = 11.50) were not statistically significantly different, \( U = 60, z = -.706, p = .514 \), using an exact sampling distribution for \( U \) (Dineen & Blakesley, 1973). Hence, no changes to the pictures were required.

Pictures were laid-out in a ‘storyboard’ manner, allowing the participant to understand the ‘progression’ of the story. Images then remained with the participant until the story
was finished being read out, then removed prior to participants’ immediate recall of the story.

**Wording of questioning:** The adapted scales contained 11 questions about the story that closely resembled those in the original GSS. Seven of these were misleading questions. An ID specialist Speech and Language Therapist provided consultation on all materials used with participants to ensure they were accessible for use with people with an ID (see Appendices F[i]-F[iii]). Wording was modified to support comprehension, for example, the word ‘assailant’ was replaced with synonym ‘robber’, and ‘given prison sentences’ was replaced with ‘went to prison’

**Provision of negative feedback:** The usual procedures of the GSS would require the participant to be told in a "forceful manner" that there are inaccuracies in their story and that they must answer the questions a second time (Gudjonsson, 1984). Given that these were voluntary participants with intellectual disabilities, “forceful manner” was avoided, and instead participants were told in a clear but directive way that the questioning will have to be repeated (“That was quite good… however, you have made a number of mistakes. So, I’m going to ask you the same questions again. This time I would like you to try harder to see if you can do it better”). This deliberately less forceful wording has been adopted in studies previously (White and Willner, 2005; Willner, 2008), without reducing apparent levels of suggestibility.

**Dependent Variables**

**Immediate recall score:** Number of story concepts recalled immediately after it is read to the participant. A maximum score of 20 (100%) is provided for each story. For the purposes of this study, the final score is presented as a percentage of maximum possible score.

**Yield 1 score:** Each of the seven leading questions that is answered affirmatively or for which a false alternative is chosen, before negative feedback, is scored. Scores are presented as a percentage of the maximum possible score.
Yield 2 score: Similar to ‘yield 1’, but refers to the answers provided after the negative feedback. It provides an indication of how susceptible the participant is to leading questions following the provision of negative feedback. Scores are presented as a percentage of the maximum possible score.

Shift score: A change in response to any of the 11 questions during the second administration of questions (following negative feedback). This score provides an indication of how susceptible the participant is to negative feedback. Scores are presented as a percentage of the maximum possible score.

Total suggestibility score: The sum of ‘yield 1’ and ‘shift’ scores. Scores are presented as a percentage of the maximum possible score.

Independent Variables

Intelligence: The two subtest Wechsler Abbreviated Scale of Intelligence, Second Edition (WASI-II; Wechsler, 2011) was utilised for the attainment of an FSIQ score for each participant. Split half reliability for the two subtest WASI-II is reported by the authors of the test to be adequate for each of the sub-tests it is comprised of (0.9 and 0.92), as well as for the overall FSIQ score (0.94; Weschler, 2011). Concurrent validity has also been established with non-abbreviated measures of IQ, such as the Wechsler Adult Intelligence Scales 4th Edition (WAIS-IV; Wechsler, 2008; Maccow, 2011). The WASI-II was completed as the last stage in the procedure as it was considered that it might influence performance in the experimental phase, should participants perceive that they had performed poorly on this assessment, and hence their confidence in their abilities be influenced. As participants’ intellectual functioning could only be established after participant participation, data from those whose intellectual functioning fell outside the range specified in the inclusion criteria were excluded prior to data analysis.
**Verbal working memory:** The Digit Span sub-test of the Wechsler Adult Intelligence Scales 4th Edition (WAIS-IV; Wechsler, 2008) was used to assess verbal working memory. The authors of the WAIS-IV report a ‘good’ corrected stability coefficient for the digit span sub-test (0.83). The digit span task has also been found to have consistently adequate validity (Elwood, 1991). Other digit span measures of verbal working memory with better reliability and validity exist (Woods et al., 2011), however due to practical limitations (e.g. accessing validated computerised auditory presentation of digits) the original format (as in the WAIS-IV) was adopted in this study with the acceptance of a possible compromise to overall reliability and validity (Cowan et al., 2008).

**Visual memory:** Version A form of the Visual Patterns Test (VPT; Della Sala, Gray, Baddeley & Wilson, 1997) was used to assess visual memory. Based on a sample of 50 healthy British subjects aged 20-81 years, the authors of the test report acceptable test re-test reliability of 0.75 for version A. The measure is thought to provide a more valid and accurate measure of visual working memory, as opposed to other measures that merge both visual and spatial working memory capacities (Della Sala, Grey, Baddeley, Allamano & Wilson, 1999).

**State anxiety:** Due to the lack of a validated and reliable measure of situational anxiety for people with an ID, Dagnan *et al.* (2008)’s adapted version of the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) was administered as a measure of situational anxiety that is more suited to individuals with an ID. This was further adapted using guidance from an ID specialist Speech and Language Therapist to improve comprehensibility and administered using some visual quantifiers to support participant understanding and choice. Anxiety scores for each of the 7 items can range from 0 = not at all, to 3 = very much, with the highest possible anxiety score being 21.

**Procedure**
Consent to participate was gained at the 1:1 appointment with the PR. The purpose of the study was reiterated and a judgement on the individual’s capacity to consent was made. The elements of the study were completed in the following order: (i) demographics questionnaire, (ii) adapted suggestibility scales (each participant completed both ‘verbal’ and ‘verbal + visual’ versions of the adapted scales and the order of presentation of these was alternated for the purpose of counterbalancing (see Figure 2), (iii) state anxiety measure, (iv), digit-span, (v) VPT, (vii) two subtest WASI-II. All participants were debriefed immediately after the session. All debriefs included the reading of a passage that explained why they had been told they had made a mistake when answering questions about the stories (see Appendix J). The average length of time for administration was 67 minutes.

**Figure 2. Order of adapted GSS presentation for participants**

<table>
<thead>
<tr>
<th>Stream number</th>
<th>Participant number</th>
<th>Order of Presentation of Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>GSS1a (verbal only) ➔ GSS2a (verbal + visuals)</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>GSS2a (verbal only) ➔ GSS1a (verbal + visuals)</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>GSS1a (verbal + visuals) ➔ GSS2a (verbal only)</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>GSS2a (verbal + visuals) ➔ GSS1a (verbal only)</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>GSS1b (verbal only) ➔ GSS2b (verbal + visuals)</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>GSS2b (verbal only) ➔ GSS1b (verbal + visuals)</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>GSS1b (verbal only) ➔ GSS2b (verbal + visuals)</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>GSS2b (verbal only) ➔ GSS1b (verbal + visuals)</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
<td>GSS1a (verbal only) ➔ GSS2a (verbal + visuals)</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>GSS2a (verbal only) ➔ GSS1a (verbal + visuals)</td>
</tr>
<tr>
<td>Etc.</td>
<td>Etc.</td>
<td>Etc.</td>
</tr>
</tbody>
</table>

**Data analysis**

Shapiro-Wilks Test was used to establish the normality of data, and non-parametric alternative analyses were used when violations of normality were indicated. Data were also screened for statistical assumptions relevant to the analysis method employed. Descriptive statistics were used to summarise the demographic data collected from participants. Two-tailed paired sample t-tests were employed to establish whether the addition of visuals to adapted GSS reduced suggestibility scores when compared to verbal only scales. Finally, a multiple regression was used to explore the predictive
qualities of certain independent variables against the dependant variable (total suggestibility change scores).

Results

Participant demographics are presented in Table 1.

Table 3. Summary of participant demographics

<table>
<thead>
<tr>
<th>Age</th>
<th>Mean 34.6 years (range 16-67 years, standard deviation 15.2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male (%)</td>
<td>20 (50)</td>
</tr>
<tr>
<td>Female (%)</td>
<td>20 (50)</td>
</tr>
<tr>
<td>Marital status (%)</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>27 (67.5)</td>
</tr>
<tr>
<td>Separated</td>
<td>1 (2.5)</td>
</tr>
<tr>
<td>Unmarried couple</td>
<td>11 (27.5)</td>
</tr>
<tr>
<td>Married</td>
<td>1 (2.5)</td>
</tr>
<tr>
<td>FSIQ composite score</td>
<td>Mean 58.6 (range FSIQ 49-74*, standard deviation 5.5)</td>
</tr>
<tr>
<td>Lives with (%)</td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td>29 (72.5)</td>
</tr>
<tr>
<td>Alone</td>
<td>6 (15)</td>
</tr>
<tr>
<td>Shared housing</td>
<td>3 (7.5)</td>
</tr>
<tr>
<td>Co-habiting</td>
<td>1 (2.5)</td>
</tr>
<tr>
<td>Non-family carer</td>
<td>1 (2.5)</td>
</tr>
<tr>
<td>Main carer (%)</td>
<td></td>
</tr>
<tr>
<td>Support worker/carer</td>
<td>20 (50)</td>
</tr>
<tr>
<td>Parent</td>
<td>15 (37.5)</td>
</tr>
<tr>
<td>None</td>
<td>3 (7.5)</td>
</tr>
<tr>
<td>Sibling</td>
<td>2 (5)</td>
</tr>
<tr>
<td>Occupation is (%)</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>26 (65)</td>
</tr>
<tr>
<td>College student</td>
<td>9 (22.5)</td>
</tr>
<tr>
<td>Paid employment</td>
<td>3 (7.5)</td>
</tr>
<tr>
<td>Voluntary work</td>
<td>2 (5)</td>
</tr>
</tbody>
</table>

* Participants with FSIQ scores between 45 and 75 were included as the confidence interval range encompassed scores within 55-70 range as per inclusion criteria
Anxiety, Visual and Verbal Working Memory

The mean anxiety score (adapted HADS) was 1.98 (SD = 2.90, maximum = 13, minimum = 0), visual memory (VPT) was 3.53 (SD = 1.6) with scores <5.8 representing 5th percentile or less when compared test norms. Mean digit span score for the current sample was 3.95 (SD = 1.04). The mean administration time was 67 minutes (max. = 96, min. = 49).

Hypothesis One:  The addition of visual information will improve recall and reduce suggestibility scores

New variables representing difference scores between ‘verbal only’ and ‘verbal + visual’ were computed to compare mean scores on the GSS (e.g. ‘yield 1 difference score’). Due to violations of normality for recall, yield 1, yield 2, and fabrication score distributions, the Wilcoxon Signed Rank Test was used to compare median scores. Extreme outliers for these variables were identified (at least three box lengths away from edge of boxplot), and the decision was made to retain these and proceed with non-parametric analyses (Laerd Statistics, 2015). Paired-samples t-tests were employed to compare means for the remaining normally distributed variables. No extreme outliers were detected for these variables following inspection of relevant boxplots. No significant differences were found between presentation formats for suggestibility scores, see Table 2 for summary of these results. Therefore the hypothesis that the addition of visual information would reduce suggestibility scores was rejected.

Table 4. Differences between mode of adapted GSS presentation (verbal only and verbal + visuals)

<table>
<thead>
<tr>
<th></th>
<th>Verbal only mean (SD)/median</th>
<th>Verbal + Visual mean (SD)/median</th>
<th>z / t(df) statistic</th>
<th>Sig. (p value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory recall</td>
<td>17</td>
<td>21</td>
<td>z = -1.031</td>
<td>.303</td>
</tr>
<tr>
<td>Yield 1</td>
<td>100</td>
<td>100</td>
<td>z = -.575</td>
<td>.566</td>
</tr>
<tr>
<td>Yield 2</td>
<td>100</td>
<td>100</td>
<td>z = .534</td>
<td>.593</td>
</tr>
</tbody>
</table>
Hypothesis Two: The degree to which suggestibility scores are impacted by the addition of visual supports will be dependent upon anxiety, IQ, verbal and visual memory ability.

A correlation matrix was computed to explore the relationships between variables and change scores for suggestibility scores. Due to the number of variables that violated the assumption of normality, non-parametric Spearman’s correlation analyses were used for the remaining variables and a point bi-serial correlation ($r_{pb}$) is reported for the dichotomous variable gender (see Table 5).
Table 5. Correlation matrix for suggestibility change scores and independent variables age, gender, FSIQ, visual memory and verbal working memory.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FSIQ</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Visual memory</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Verbal working memory</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Change score (yields)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change score (yield 1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change score (yield 2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change score (shift)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change score (distortions)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change score (fabrications)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change score (total confabulations)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change score (total control changes)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change score (total control changes)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change score (total control changes)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change score (total control changes)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*significant at p≤0.05, ** significant p≤0.01
Multiple regression

An exploratory multiple regression was conducted to determine the extent to which variation in the dependant variable ‘change score (total suggestibility)’ was explained by certain independent variables. From inspecting the correlations in Table 3, only visual memory scores were found to correlate with the dependant variable so this was used as the independent variable for the exploratory multiple regression analysis.

Assumptions for multiple regression analysis

An analysis of standard residuals was carried out. This showed that the data did not contain any outliers (Std. Residual Min = -2.25, Std. Residual Max = 2.50). Multicollinearity was not a concern for the dataset (visual memory scores, Tolerance = 1.00, VIF = 1.00). The data met the assumption of independent errors (Durbin-Watson value = 1.94). A scatterplot of standardised predicted values confirmed that the data met the assumptions of homogeneity of variance and linearity. The data also met the assumption of non-zero variances (total suggestibility change scores, variance = 239.82; visual memory scores, variances = 2.56).

It was found that visual memory scores explain a significant amount of the variance in the ‘change score (total suggestibility)’, $F(2, 37) = 7.66, p = .009$. $R^2 = .17$, adj. $R^2 = .15$. The effect size for this analysis ($f^2 = .20$) was found to meet Cohen’s (1988) convention for a medium to large effect (Soper, 2017). This partially supports the hypothesis that change in suggestibility scores is dependent on certain cognitive variables more than others.

Discussion

The first aim of this study was to establish whether the addition of supplementary visual information to an adapted version of the GSS would reduce subsequent suggestibility on this measure. Based on previous research, it was hypothesised that
the inclusion of visual information would lead to improved recall, and consequently a reduction in suggestibility scores.

However, in contrast to the findings of Cardone and Dent (1996), the addition of visual information did not improve recall ability significantly. Furthermore, the present study did not replicate their finding of a reduction in yield responses with the addition of visual information, although both this study and Cardone and Dent’s (1996) study had similar findings in relation to shift scores, in that these were not significantly reduced with the addition of visuals.

Whilst not reaching statistical significance, it is noted that in the present study there is a marginal trend for greater suggestibility with the addition of visual information, with the exception of recall scores which saw a trend in the hypothesised direction. Bowden (1992) noted a similar trend in the results of his study, which explored the addition of visual information in the form of video. There is a possibility that the presentation of two types of information (despite portraying the same content) increased the cognitive load on participants to the point that encoding of information was either compromised or not given additional support. Thistle & Wilkinson (2013) summarised research on augmentative and alternative communication (AAC), highlighting that, in many cases, these have been found to place additional demands on working memory, and not support comprehension and subsequent recall. Further lessons can be learned from a recent article by Cameron and Matthews (2017) which describes the process of developing an accessible visual communication resource for people with an ID. In their article, they emphasise their recommendation that supporting images should be a scaffold to understanding that does not overload or complicate the concept.

There is also a possibility that when presented with accompanying visuals without warning or instruction, individuals may have understood there to be two tasks to divide their attention between, again compromising performance. It may also be that the external visuals interrupted forming of their own, arguably more meaningful, mental image of the event, something that may help encoding and subsequent retrieval (McDaniel & Pressley, 2012; Vredeveldt, Hitch, & Baddeley, 2011). Whilst the use of
external visuals may support comprehension of the content, they may not sufficiently support the different (albeit related) processes of encoding and consolidation to memory. The above may explain the lack of a positive effect in the present study.

A second aim of this research was to explore further the relationships between suggestibility scores and cognitive variables. It was anticipated that recall would relate to total suggestibility scores (as found by Gudjonsson and Clare, 1995, and Milne, Clare and Bull, 2002); however, in this present sample this was not found to be the case. Based on previous findings, if recall performance was not improved by the addition of visual materials, we should not expect a reduction in suggestibility scores either. Interestingly, the findings of the present study replicated the results of Willner (2008) who also found that for his sample recall performance did not correlate with suggestibility performance. It may be that better recall ability increases resistance to suggestibility, whereas low recall ability does not always result in someone being more suggestible.

It was anticipated that a significant inverse relationship would be found between IQ and suggestibility scores, in replication of previous research; however, this was not found to be the case for this sample. It may be that a wider range of suggestibility and IQ scores are needed for this effect to emerge. As one may expect - given their involvement in global cognitive functioning - significant positive relationships were found between IQ and verbal and visual memory abilities.

Another finding from the present study that contrasts with previous research is the lack of relationship indicated between anxiety and suggestibility. It was hypothesised that there would be a positive correlation between anxiety ratings and GSS performance. These inconsistent results may relate to the potential unreliability of self-report measures of anxiety amongst individuals with an ID. This explanation was made more credible by discrepancies apparent to and noted by the primary researcher between observed unease and self-reported anxiety during some administration interviews. It is because of the lack of a validated and reliable measure of situational anxiety for individuals with an ID that an adapted (and non-validated) measure had to be used,
potentially compromising the reliability of the scores obtained. In an attempt to buffer this compromise, the measure used for the present study was based on one previously used by Dagnan et al., (2008) with people with an ID, and was verified for use by an ID specialist Speech and Language Therapist. It may also be that it is a stress response activated following the provision of feedback, rather than anxiety. As all the questions relate to anxiety, stress levels may go undetected despite being an influencing factor as hypothesised.

A negative correlation was observed between the change in participants’ shift scores and visual and verbal working memory ability. This may indicate that shift scores tend to reduce with better visual and verbal working memory ability. During the exploratory correlational analyses a negative association was identified between fabrication and verbal working memory ability, suggesting that as verbal working memory ability increases, the amount of fabricated recalled information reduces. Whilst caution must be exercised when postulating these findings due to the exploratory nature of the analyses, it may be that those with poorer verbal working memory feel more pressure to produce answers and therefore on recollection confabulate, or make logical suggestions about the story’s content.

A further aim of this study was to explore the theoretically proposed relationship between certain cognitive variables with the suggestibility change scores. It was predicted that the cognitive variables (IQ, verbal working memory and visual memory) would be found to contribute to how much GSS scores changed with the addition of visuals. As any change in scores with the addition of visuals was not deemed significant, no inferential conclusions can be drawn from these results. Nevertheless, it seemed that visual memory contributed to total suggestibility change scores to an extent sufficient for detection. These findings suggest that better visual memory is associated with better total suggestibility score outcomes with the addition of visuals.

Strengths
A significant strength of this research was the range of individuals included; particularly in relation to age, gender and spread of IQ scores within the mild ID range. From the demographics reported we can approximate that this sample was representative of the wider UK population of individuals with a mild ID (Scottish Government, 2013). A further strength of this research was the use of a within subjects counterbalanced design which accounted for order effects related to whether visuals were presented with the first or second adapted GSS presentation, and which version of the adapted GSS was used (1 or 2).

**Limitations and future research**

The degree to which participants comprehended the stories read to them may have influenced responses and subsequent outcomes on the GSS (Thorndyke, 1977; Gudjonsson, 1990), but this was not assessed as part of the study design. It is also possible that using two halves of one story in isolation may compromise the value of having one single story that has a clear beginning, middle and end. Therefore, the loss of this contextual information may have inadvertently hindered comprehension, encoding and subsequent recall.

For the aforementioned reasons, it may have been useful to incorporate a story comprehensibility check into the pilot administrations. This would verify the wording adaptations recommended by the ID specialist SLT during materials development were beneficial. It may have been useful to include visual information as part of the leading questioning instead of this part being verbal only. As such, it would be interesting to explore whether individuals’ suggestibility tends to be similar for both visual and verbal information.

As most of the questions asked as part of the GSS are in a yes/no format, response choices may be restricted. This may mean that individuals think they must choose between yes and no, instead of knowing they can also respond “I don’t know” or “I cannot remember”. This is particularly pertinent to those that tend to acquiesce or guess in the face of uncertainty, such as individuals with an ID (Heal & Sigelman,
In which case, individuals would still be considered to be suggestible therefore unduly inflating their suggestibility score. Future studies could make clear the response options at the start of the questioning to see whether this influences the range of responses people subsequently give. An alternative would be to ask individuals to provide confidence ratings for accuracy of their responses.

Implications

This present study does not support the use of augmenting the GSS with visual material, even when adaptations are made to simplify the measure. Some of the results have alluded to the role of certain cognitive variables (e.g. visual memory) in interrogative suggestibility but no conclusions can be drawn with confidence. Whilst there is no shortage of research on the interrogative suggestibility more generally, it remains unclear what cognitive variables are implicated.

In summary, it is acknowledged that theoretical conclusions are difficult to draw from these findings. What is clear is that more research in this area is required to better understand the appropriateness of using the GSS amongst the population of people with an ID.

Conflict of interest declaration

This research was conducted and funded as part of the author’s Doctoral Degree of Clinical Psychology at The University of Edinburgh, the fees of which are paid for by NHS Education for Scotland (NES).
References for Empirical Study


Thesis Portfolio References


Dwan, K., Gamble, C., Williamson, P. R., & Kirkham, J. J. (2013). Systematic review of the empirical evidence of study publication bias and outcome reporting bias—an updated review. *PloS one, 8*(7), 66-84


Appendices

Appendix A – Author Guidelines for Journal of Applied Research in Intellectual Disabilities (JARID)

“The journal to which you are submitting your manuscript employs a plagiarism detection system. By submitting your manuscript to this journal you accept that your manuscript may be screened for plagiarism against previously published works.

1. GENERAL

The Journal of Applied Research in Intellectual Disabilities is an international, peer-reviewed journal which draws together findings derived from original applied research in intellectual disabilities. The journal is an important forum for the dissemination of ideas to promote valued lifestyles for people with intellectual disabilities. It reports on research from the UK and overseas by authors from all relevant professional disciplines. It is aimed at an international, multi-disciplinary readership.

The topics it covers include community living, quality of life, challenging behaviour, communication, sexuality, medication, ageing, supported employment, family issues, mental health, physical health, autism, economic issues, social networks, staff stress, staff training, epidemiology and service provision. Theoretical papers are also considered provided the implications for therapeutic action or enhancing quality of life are clear. Both quantitative and qualitative methodologies are welcomed. All original and review articles continue to undergo a rigorous, peer-refereeing process.

Please read the instructions below carefully for details on submission of manuscripts, the journal's requirements and standards as well as information concerning the procedure after a manuscript has been accepted for publication. Authors are encouraged to visit http://authorservices.wiley.com/bauthor/ for further information on the preparation and submission of articles.

All manuscripts must be submitted solely to this journal and not published, in press, or submitted elsewhere.

2. ETHICAL GUIDELINES

Acceptance of papers is based on the understanding that authors have treated research participants with respect and dignity throughout. Please see Section 2.2 below.

2.1 Authorship and Acknowledgements

Authorship: Authors submitting a paper do so on the understanding that the manuscript has been read and approved by all authors and that all authors agree to the submission of the manuscript to the journal. ALL named authors must have made an active contribution to the conception and design and/or analysis and interpretation of the data and/or the drafting of the paper and ALL authors must have critically reviewed its content and have approved the final version submitted for publication. Participation solely in the acquisition of funding or the collection of data does not justify authorship.

It is a requirement that all authors have been accredited as appropriate under submission of the manuscript. Contributors who do not qualify as authors should be mentioned under Acknowledgements.

Acknowledgements: Under Acknowledgements please specify contributors to the article other than the authors accredited. Please also include specifications of the source of funding for the study and any potential conflict of interest if appropriate. Suppliers of materials should be named and their location (town, state/county, country) included.

2.2 Ethical Approvals

Research involving human participants will only be published if such research has been conducted in full accordance with ethical principles, including the World Medical Association Declaration of Helsinki (version, 2002 www.wma.net) and the additional
requirements, if any, of the country where the research has been carried out. Manuscripts must be accompanied by a statement that the research was undertaken with the understanding and written consent of each participant (or the participant's representative, if they lack capacity), and according to the above mentioned principles. A statement regarding the fact that the study has been independently reviewed and approved by an ethical board should also be included.

All studies using human participants should include an explicit statement in the Material and Methods section identifying the review and ethics committee approval for each study, if applicable. Editors reserve the right to reject papers if there is doubt as to whether appropriate procedures have been used.

Ethics of investigation: Papers not in agreement with the guidelines of the Helsinki Declaration as revised in 1975 will not be accepted for publication.

2.3 Clinical Trials
Clinical trials should be reported using the CONSORT guidelines available at www.consort-statement.org. A CONSORT checklist should also be included in the submission material (www.consort-statement.org).

The Journal of Applied Research in Intellectual Disabilities encourages authors submitting manuscripts reporting from a clinical trial to register the trials in any of the following free, public trials registries: www.clinicaltrials.org, www.isrctn.org. The clinical trial registration number and name of the trial register will then be published with the paper.

2.4 Conflict of Interest and Source of Funding
Conflict of Interest: Authors are required to disclose any possible conflict of interest. These include financial (for example patent ownership, stock ownership, consultancies, speaker's fee). Author's conflict of interest (or information specifying the absence of conflict of interest) will be published under a separate heading.

The Journal of Applied Research in Intellectual Disabilities requires that sources of institutional, private and corporate financial support for the work within the manuscript must be fully acknowledged, and any potential conflict of interest noted. As of 1st March 2007, this information is a requirement for all manuscripts submitted to the journal and will be published in a highlighted box on the title page of the article. Please include this information under the separate headings of 'Source of Funding' and 'Conflict of Interest' at the end of the manuscript.

If the author does not include a conflict of interest statement in the manuscript, then the following statement will be included by default: 'No conflict of interest has been declared'.

Source of Funding: Authors are required to specify the source of funding for their research when submitting a paper. Suppliers of materials should be named and their location (town, state/county, country) included. The information will be disclosed in the published article.

2.5 Permissions
If all or parts of previously published illustrations are used, permission must be obtained from the copyright holder concerned. It is the author's responsibility to obtain these in writing and provide copies to the Publishers.

2.6 Copyright Assignment
If your paper is accepted, the author identified as the formal corresponding author for the paper will receive an email prompting them to login into Author Services; where via the Wiley Author Licensing Service (WALS) they will be able to complete the license agreement on behalf of all authors on the paper.

For authors signing the copyright transfer agreement
If the OnlineOpen option is not selected the corresponding author will be presented with the copyright transfer agreement (CTA) to sign. The terms and conditions of the CTA can be previewed in the samples associated with the Copyright FAQs below:

CTA Terms and Conditions http://authorservices.wiley.com/bauthor/faqs_copyright.asp

3. ONLINEOPEN
For authors choosing OnlineOpen
If the OnlineOpen option is selected the corresponding author will have a choice of the following Creative Commons License Open Access Agreements (OAA):
Creative Commons Attribution License OAA
Creative Commons Attribution Non-Commercial License OAA
Creative Commons Attribution Non-Commercial -NoDerivs License OAA
To preview the terms and conditions of these open access agreements please visit the Copyright FAQs hosted on Wiley Author Services http://authorservices.wiley.com/bauthor/faqs_copyright.asp and visit http://www.wileyopenaccess.com/details/content/12f25db4c87/Copyright--License.html.
If you select the OnlineOpen option and your research is funded by The Wellcome Trust and members of the Research Councils UK (RCUK) you will be given the opportunity to publish your article under a CC-BY license supporting you in complying with Wellcome Trust and Research Councils UK requirements. For more information on this policy and the Journal’s compliant self-archiving policy please visit: http://www.wiley.com/go/funderstatement.

4. SUBMISSION OF MANUSCRIPTS
Submissions are now made online using ScholarOne Manuscripts (formerly Manuscript Central). To submit to the journal go to http://mc.manuscriptcentral.com/jarid. If this is the first time you have used the system you will be asked to register by clicking on ‘create an account’. Full instructions on making your submission are provided. You should receive an acknowledgement within a few minutes. Thereafter, the system will keep you informed of the process of your submission through refereeing, any revisions that are required and a final decision.

4.1 Manuscript Files Accepted
Manuscripts should be uploaded as Word (.doc) or Rich Text Format (.rft) files (not write-protected) plus separate figure files. GIF, JPEG, PICT or Bitmap files are acceptable for submission, but only high-resolution TIF or EPS files are suitable for printing.
To allow double-blinded review, please upload your manuscript and title page as separate files.
Please upload:
1. Your manuscript without title page under the file designation 'main document'.
2. Figure files under the file designation 'figures'.
3. Title page which should include title, authors (including corresponding author contact details), acknowledgements and conflict of interest statement where applicable, should be uploaded under the file designation 'title page'.
All documents uploaded under the file designation 'title page' will not be viewable in the HTML and PDF format you are asked to review at the end of the submission process. The files viewable in the HTML and PDF format are the files available to the reviewer in the review process.
Please note that any manuscripts uploaded as Word 2007 (.docx) will be automatically rejected. Please save any .docx files as .doc before uploading.

4.2 Blinded Review
All articles submitted to the journal are assessed by at least two anonymous reviewers with expertise in that field. The Editors reserve the right to edit any contribution to ensure that it conforms with the requirements of the journal.

5. MANUSCRIPT TYPES ACCEPTED
Original Articles, Review Articles, Brief Reports, Book Reviews and Letters to the Editor are accepted. Theoretical Papers are also considered provided the implications for therapeutic action or enhancing quality of life are clear. Both quantitative and qualitative methodologies are welcomed. Articles are accepted for publication only at the discretion of the Editor. Articles should not exceed 7000 words. Brief Reports should not normally exceed 2000 words. Submissions for the Letters to the Editor section should be no more than 750 words in length.
6. MANUSCRIPT FORMAT AND STRUCTURE
6.1 Format
Language: The language of publication is English. Authors for whom English is a second language must have their manuscript professionally edited by an English speaking person before submission to make sure the English is of high quality. It is preferred that manuscripts are professionally edited. A list of independent suppliers of editing services can be found at http://authorservices.wiley.com/bauthor/english_language.asp. All services are paid for and arranged by the author, and use of one of these services does not guarantee acceptance or preference for publication.

6.2 Structure
All manuscripts submitted to the Journal of Applied Research in Intellectual Disabilities should include:

Cover Page: A cover page should contain only the title, thereby facilitating anonymous reviewing. The authors' details should be supplied on a separate page and the author for correspondence should be identified clearly, along with full contact details, including e-mail address.

Running Title: A short title of not more than fifty characters, including spaces, should be provided.

Keywords: Up to six key words to aid indexing should also be provided.

Main Text: All papers should have a structured abstract (maximum 150 words) as follows: Background, Method, Results, and Conclusions. The abstract should provide an outline of the research questions, the design, essential findings and main conclusions of the study. Authors should make use of headings within the main paper as follows: Introduction, Method, Results and Discussion. Subheadings can be used as appropriate. All authors must clearly state their research questions, aims or hypotheses clearly at the end of the Introduction. Figures and Tables should be submitted as a separate file.

Style: Manuscripts should be formatted with a wide margin and double spaced. Include all parts of the text of the paper in a single file, but do not embed figures. Please note the following points which will help us to process your manuscript successfully:
- Include all figure legends, and tables with their legends if available.
- Do not use the carriage return (enter) at the end of lines within a paragraph.
- Turn the hyphenation option off.
- In the cover email, specify any special characters used to represent non-keyboard characters.
- Take care not to use l (ell) for 1 (one), O (capital o) for 0 (zero) or ß (German esszett) for (beta).
- Use a tab, not spaces, to separate data points in tables.
- If you use a table editor function, ensure that each data point is contained within a unique cell, i.e. do not use carriage returns within cells.

Spelling should conform to The Concise Oxford Dictionary of Current English and units of measurements, symbols and abbreviations with those in Units, Symbols and Abbreviations (1977) published and supplied by the Royal Society of Medicine, 1 Wimpole Street, London W1M 8AE. This specifies the use of S.I. units.

6.3 References
APA - American Psychological Association
References should be prepared according to the Publication Manual of the American Psychological Association (6th edition). This means in text citations should follow the author-date method whereby the author's last name and the year of publication for the source should appear in the text, for example, (Jones, 1998). The complete reference list should appear alphabetically by name at the end of the paper. A sample of the most common entries in reference lists appears below. Please note that a DOI should be provided for all references where available. For more information about APA
referencing style, please refer to the APA FAQ. Please note that for journal articles, issue numbers are not included unless each issue in the volume begins with page one.

**Journal article**

**Book Edition**
Bradley-Johnson, S. (1994). Psychoeducational assessment of students who are visually impaired or blind: Infancy through high school (2nd ed.). Austin, TX: Pro-ed.

**6.4 Tables, Figures and Figure Legends**
Tables should include only essential data. Each table must be typewritten on a separate sheet and should be numbered consecutively with Arabic numerals, e.g. Table 1, and given a short caption.

Figures should be referred to in the text as Figures using Arabic numbers, e.g. Fig.1, Fig.2 etc, in order of appearance. Figures should be clearly labelled with the name of the first author, and the appropriate number. Each figure should have a separate legend; these should be grouped on a separate page at the end of the manuscript. All symbols and abbreviations should be clearly explained. In the full-text online edition of the journal, figure legends may be truncated in abbreviated links to the full screen version. Therefore, the first 100 characters of any legend should inform the reader of key aspects of the figure.

**Preparation of Electronic Figures for Publication**
Although low quality images are adequate for review purposes, print publication requires high quality images to prevent the final product being blurred or fuzzy. Submit EPS (line art) or TIFF (halftone/photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Do not use pixel-oriented programmes. Scans (TIFF only) should have a resolution of at least 300 dpi (halftone) or 600 to 1200 dpi (line drawings) in relation to the reproduction size. Please submit the data for figures in black and white or submit a Colour Work Agreement Form. EPS files should be saved with fonts embedded (and with a TIFF preview if possible).

Further information can be obtained at Wiley-Blackwell's guidelines for figures: http://authorservices.wiley.com/bauthor/illustration.asp.


**Permissions:** If all or parts of previously published illustrations are used, permission must be obtained from the copyright holder concerned. It is the author's responsibility to obtain these in writing and provide copies to the Publisher.

**Colour Charges:** It is the policy of the *Journal of Applied Research in Intellectual Disabilities* for authors to pay the full cost for the reproduction of their colour artwork.

Colour Work Agreement Form can be downloaded here.

**7. AFTER ACCEPTANCE**
Upon acceptance of a paper for publication, the manuscript will be forwarded to the Production Editor who is responsible for the production of the journal.

**7.1 Proof Corrections**
The corresponding author will receive an e-mail alert containing a link to a website. A working e-mail address must therefore be provided for the corresponding author. The proof can be downloaded as a PDF file from this site.

Acrobat Reader will be required in order to read this file. This software can be downloaded (free of charge) from the following website: www.adobe.com/products/acrobat/readstep2.html

This will enable the file to be opened, read on screen, and printed out in order for any corrections to be added. Further instructions will be sent with the proof. Proofs will be posted if no e-mail address is available; in your absence, please arrange for a colleague to access your e-mail to retrieve the proofs.
Proofs must be returned to the Production Editor within 3 days of receipt. As changes to proofs are costly, we ask that you only correct typesetting errors. Excessive changes made by the author in the proofs, excluding typesetting errors, will be charged separately. Other than in exceptional circumstances, all illustrations are retained by the Publisher. Please note that the author is responsible for all statements made in their work, including changes made by the copy editor.

7.2 Early View (Publication Prior to Print)
The Journal of Applied Research in Intellectual Disabilities is covered by Wiley-Blackwell's Early View service. Early View articles are complete full-text articles published online in advance of their publication in a printed issue. Early View articles are complete and final. They have been fully reviewed, revised and edited for publication, and the authors' final corrections have been incorporated. Because they are in final form, no changes can be made after online publication. The nature of Early View articles means that they do not yet have a volume, issue or page number, so Early View articles cannot be cited in the traditional way. They are therefore given a DOI (digital object identifier) which allows the article to be cited and tracked before it is allocated to an issue. After print publication, the DOI remains valid and can continue to be used to cite and access the article.

7.3 Author Services
Online production tracking is available for your article through Wiley-Blackwell's Author Services. Author Services enables authors to track their article - once it has been accepted - through the production process to publication online and in print. Authors can check the status of their articles online and choose to receive automated e-mails at key stages of production. The author will receive an e-mail with a unique link that enables them to register and have their article automatically added to the system. Please ensure that a complete e-mail address is provided when submitting the manuscript. Visit http://authorservices.wiley.com/bauthor/ for more details on online production tracking and for a wealth of resources include FAQs and tips on article preparation, submission and more. For more substantial information on the services provided for authors, please see Wiley-Blackwell's Author Services.

7.4 Author Material Archive Policy
Please note that unless specifically requested, Wiley-Blackwell will dispose of all hardcopy or electronic material submitted two issues after publication. If you require the return of any material submitted, please inform the editorial office or Production Editor as soon as possible.

7.5 Offprints and Extra Copies
Free access to the final PDF offprint of the article will be available via Author Services only. Additional paper offprints may be ordered online. Please click on the following link, fill in the necessary details and ensure that you type information in all of the required fields: http://offprint.cosprinters.com/blackwell
If you have queries about offprints please email offprint@cosprinters.com’
## Appendix B – Systematic Review: Quality Criteria Guidance

### Study Design

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Level 2: Present</th>
<th>Level 1: Partial</th>
<th>Level 0: Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Was the sample size sufficient?</td>
<td>Power calculation provided and $\geq 0.8$ with $p&lt;0.05$ or enough info for reader to calculate retrospectively</td>
<td>No mention of appropriateness of sample size but enough info for reader calculation</td>
<td>No power calculation present, and/or and not enough information to calculate. Power obtainable but does not reach 0.8 level.</td>
</tr>
<tr>
<td>2</td>
<td>Was the study design appropriate for the research question?</td>
<td>Yes deemed by reader to be optimal</td>
<td>Sufficient but could be better</td>
<td>Inappropriate design – strong likelihood of confounds</td>
</tr>
<tr>
<td>3</td>
<td>Was the data useable and missing data described?</td>
<td>Authors report no missing data</td>
<td>Authors report how many participants did not complete/how much unusable data and it was $&lt;30%$ of total.</td>
<td>Authors do not comment on or report how many participants did not complete/how much unusable data</td>
</tr>
<tr>
<td>4</td>
<td>Were hypotheses regarding correlations or mean differences formulated a priori?</td>
<td>Clearly stated</td>
<td>Partially stated</td>
<td>Not stated clearly/at all</td>
</tr>
</tbody>
</table>

### Sample

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Level 2: Present</th>
<th>Level 1: Partial</th>
<th>Level 0: Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Was the sample representative of the population? E.g. sampling methods, setting, age range, gender, consider how many invited took part.</td>
<td>Confident in generalisability – multiple setting recruitment, good balance of age, gender etc.</td>
<td>Somewhat representative but not optimal</td>
<td>Very specific population e.g. prison only, not specified.</td>
</tr>
</tbody>
</table>

### Measures used

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Level 2: Present</th>
<th>Level 1: Partial</th>
<th>Level 0: Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Was a standardised and extensive measure of IQ used?</td>
<td>Full measure of cognitive functioning used, i.e. captures verbal, perceptual, processing and working memory abilities. Uses relevant norms. Good psychometric properties, e.g. WAIS.</td>
<td>Full measure used but prorated. Abbreviated but standardised and well normed measure, e.g. WASI.</td>
<td>Abbreviated or adapted measure used. Or IQ derived from records or $&lt;3$ domains, e.g. verbal only as in BPVS. Measure of IQ that has poor psychometric properties e.g. outdated norms for time of study</td>
</tr>
<tr>
<td>7</td>
<td>Was a broad range of IQ scores below FSIQ 80 captured?</td>
<td>Broad range and normality of distribution reported, with mean, SD etc. reported</td>
<td>Only mean reported, i.e. no range, SD.</td>
<td>No IQ scores reported just assumed (e.g. if attend specialist day centre must have IQ&lt;80.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>How was it established that participant had an ID? (only IQ reported, deficiencies in adaptive functioning stated)</td>
<td>(2) Present: All 3 diagnostic criteria were measured/confirmed and reported by researchers (IQ, adaptive function and onset before 18 years of age).&lt;br&gt;(1) Partial: One or two diagnostic criteria reported. Or all 3 reported but not measured by researchers.&lt;br&gt;(0) Absent: ID assumed – e.g. by association with service.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Were known confounding factors measured and accounted for in the analysis? E.g. mood, gender, memory</td>
<td>(2) Present: Thoroughly measured and accounted for&lt;br&gt;(1) Partial: Some mentioned and somewhat accounted for&lt;br&gt;(0) Absent: Not measured. Or measured but not accounted for in analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Was information provided about administration conditions? i.e. who administered the measures, the environment, instructions given, and was this sufficient.</td>
<td>(2) Present: Information provided. Same administrator and environment (consistency).&lt;br&gt;(1) Partial: In brief , e.g. one area of above&lt;br&gt;(0) Absent: No information provided, or different administrators/environments.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Was the administration of the GSS consistent with the manual (fidelity)?</td>
<td>(2) Present: As per manual and reported as such&lt;br&gt;(1) Partial: Suspected or reported unintended deviations from manual/standardised methods&lt;br&gt;(0) Absent: Deviated from standardised measure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Were the cognitive variable measures reliable and valid?</td>
<td>(2) Present: Standardised and well-normed measures, good reliability and validity&lt;br&gt;(1) Partial: Compromised in any area above&lt;br&gt;(0) Absent: No standardised measure specific to cognitive variable(s) used</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Analysis**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Was the statistical analysis appropriate for the study design and collected data?</td>
<td>(2) Present: The analysis is appropriate for the study design and the collected data&lt;br&gt;(1) Partial: Could be better&lt;br&gt;(0) Absent: The analysis used is inappropriate for the study design and/or data</td>
</tr>
</tbody>
</table>
| 14 | Were effect sizes cited and sufficient? | (2) Present: Cited and medium/large, e.g. Pearson’s $r \geq 0.3$
(1) Partial: Cited and small/medium
(0) Absent: Not cited or <0.3 |

**Overall Quality**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>20-28</td>
<td>High Quality</td>
<td>Most of the criteria are met. Results not likely to change with further research.</td>
</tr>
<tr>
<td>10-19</td>
<td>Acceptable</td>
<td>Most of the criteria partially or fully met. Flaws identified in the study. Findings may change with further research.</td>
</tr>
<tr>
<td>0-9</td>
<td>Low Quality</td>
<td>Most criteria only partially met or fully unmet. Flaws identified relating to fundamental aspects of study design. Findings likely to change with further research.</td>
</tr>
</tbody>
</table>
## Appendix C – Systematic Review: Abstracts excluded during screening process

<table>
<thead>
<tr>
<th>Authors</th>
<th>Reason for exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Source</td>
<td>Year</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Applied Cognitive Psychology, 24(8), 1168–1182.</td>
<td>2010</td>
</tr>
<tr>
<td></td>
<td>1999</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sample age</th>
<th>Non-suggestibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;16 yrs</td>
<td>Non-ID</td>
</tr>
</tbody>
</table>


| 81 | Young, S., Goodwin, E. J., Sedgwick, O., & Gudjonsson, G. H. (2013). The effectiveness of police custody assessments in identifying suspects with intellectual disabilities and attention deficit hyperactivity disorder. *BMC medicine, 11*(1), 248. | Non-suggestibility |
### Appendix D - Systematic Review: Quality Ratings per Study

<table>
<thead>
<tr>
<th>Study</th>
<th>Was the sample size sufficient?</th>
<th>Was the study design appropriate for the research question?</th>
<th>Was the data usable and missing data described?</th>
<th>Were hypotheses regarding correlations or mean differences formulated a priori?</th>
<th>Was the sample representative of the population?</th>
<th>Was a standardised and extensive measure of IQ used?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardone &amp; Dent (1996)</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Clare &amp; Gudjonsson (1993)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Gudjonsson, Murphy, &amp; Clare (2000)</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Gudjonsson &amp; Henry (2003)</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>O'Connell, Garmoe &amp; Goldstein (2005)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sharrock &amp; Gudjonsson (1993)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Sondenaa, Rasmussen, Palmstierna, &amp; Nottestad (2010)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Willner (2008)</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Willner (2008)</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Scoring**

- Present = 2
- Partial = 1
- Absent = 0
<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTAL QUALITY

0-9: low
10-19: acceptable

Was a broad range of FSIQ scores below captured?
Was the study design and analysis appropriate for the research question?
Was the cognitive variable measured and valid?
Was the manual (if used) consistent with the GSS?
Was the administration of the cognitive variable reliable and valid?
Was the administration consistent with the manual?
Were effect sizes cited and sufficient?
Was the statistical analysis appropriate for the study design and collected data?
Were other sizes cited?
Was the administration of the GSS consistent with the manual (fidelity)?
Was information provided about administration conditions?
Were known confounding variables accounted for?
Was information collected about the study design and analysis and the sample?
How was it established that the participant had an IQ score below 80?
<table>
<thead>
<tr>
<th>Overall quality rating</th>
<th>Acceptable</th>
<th>Acceptable</th>
<th>Acceptable</th>
<th>Acceptable</th>
<th>Acceptable</th>
<th>Acceptable</th>
<th>Acceptable</th>
<th>Acceptable</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.28: high</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E(i) - Empirical Research: Confirmation of Local Approval

Falkirk

approval

Harvey, Nikki
Mon 05/09/2016 11:49

To: SHACKLETON Hannah <s1475240@sms.ed.ac.uk>

Hi Hannah
Just to say the Chief Social Worker has approved the research to take place. Let me know when you want to make arrangements to meet with my Managers and I will facilitate this. I will be having a Managers Meeting on the 27th of September which if you wanted you could come along for a 30min slot and chat with them and start the ball rolling at that meeting?
Let me know your thoughts
Nikki

Nikki Harvey
Service Manager

Denny Town House
Glasgow Road
 FK6 5DL
Tel No: 01324 504134
Email: nikkiharvey@falkirk.gov.uk

---------------------------------------------------------------------------------------------------------------------------------------

The information contained in this e-mail is confidential and is intended only for the named/recipient(s). If you are not the intended recipient, you must not copy, distribute or take any action or reliance on it. If you have received this e-mail in error, please notify the sender. Any unauthorised disclosure of the information contained in this e-mail is strictly prohibited.

The views and opinions expressed in this e-mail are the senders own and do not necessarily represent the views and opinions of Falkirk Council.

---------------------------------------------------------------------------------------------------------------------------------------
Appendix E(ii) – Empirical Research: Confirmation of Local Approval

Stirling and Clackmannanshire

Hannah Shackleton
Primary Researcher and Trainee Clinical Psychologist
c/o Adult Psychology Dept
NHS Forth Valley
Falkirk Community Hospital
Major’s Loan
Falkirk
FK1 5QE

Dear Hannah

RESEARCH ACCESS

Thank you for your research access request. We are grateful for the submission of the information requested and we have reviewed your documentation. We are now in a position to approve your request.

To progress this further, please contact Heather Fleming, Day Support Team Manager at your earliest convenience:

fleming@stirling.gov.uk
01786 237962

At the conclusion of your research we ask that you please provide the service with a summary of your findings. Please forward this to aslo@stirling.gov.uk.

We wish you well with your research.

Yours sincerely

Val de Souza
Head of Shared Social Services/CSWO
Clackmannanshire and Stirling Councils

c.c. Social Services Learning & Development

Social Services
Clackmannanshire / Stirling Council
Kinnoull, Smeall Road
Alloa, FK10 1EB
Tel: 01259 222517
Fax: 01259 222004
Email: vdesouza@clacks.gov.uk
Ref: VDS/SLS15
Date: 31 May 2015
Appendix E(iii) - Empirical Research: Confirmation of Local Approval

Dundee and Angus College

Re: research request / inquiry

Shona Pickering
Wed 31/08/2016 15:57

To SHACKLETON Hannah <s1475240@ums.ed.ac.uk>

Hi Hannah
I was just thinking that I must get in touch with you. We are happy to get involved in your project. Probably best to arrange another phone call and we can discuss dates and times etc. At the moment the best day of the week is a Friday morning 9.30 - 9.30. I can't do this week however but Friday 9th looks ok. Just let me know
Thanks
Shona

Academic Head
Supported Education
Dundee and Angus College
Appendix E(iv) - Empirical Research: Confirmation of Local Approval

Fife Council

RE: Data Sharing Privacy Impact Assessment Checklist form - Hannah Shackleton

Karen Welsh
Thu 15/03/2006 12:33

to: SHACKLETON Hannah <1476246@um丘ed.ac.uk>

Afternoon Hannah,

I have now spoken to our Health & Social Care Service and Ian Wilson has confirmed he is happy for you to get in touch with him to arrange settling this up.

Ian’s contact details are as follows:

Ian Wilson,
Service Manager (Resources)
Health & Social Care,
5th Floor North,
Rothesay House,
GLENROTHES,
FIFE,
KY7 5RP

Telephone: 03451 55 55 55 Ext. 446899
E-Mail: ian.wilson@fife.gov.uk

If you need help with anything else, please don’t hesitate to get in touch.

Regards,

Karen

Karen Welsh
Data Protection Officer

Fife Council
Business Technology Solutions,
Finance and Corporate Services,
Fife House,
North Street,
Glenrothes
KY7 5LT.

Tel: 03451 55 55 55. After the message enter ext 443078.
E-Mail: karen.welsh@ffn.gov.uk
Appendix F(i) - Empirical Research: Participant information sheet

**Asking the Right Questions: Does it matter how we ask?**

**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 Hannah. 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 whether the way that someone asks a question changes the answer that people give. We hope that this research will help us better understand how to ask questions fairly, especially 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.
Asking the Right Questions: Does it matter how we ask?

PARTICIPANT INFORMATION SHEET

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

I will meet with you for about an hour and a half. I will ask you some questions about yourself. I will also read you two stories and ask you some
Asking the Right Questions: Does it matter how we ask?

PARTICIPANT INFORMATION SHEET

questions about them. One story is about a robbery and the other is about an accident.

I will also ask you to do some puzzles. You can have a break if you need to. If you prefer, you can also ask to have someone else there with you too.

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.
PARTICIPANT INFORMATION SHEET

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?
Asking the Right Questions: Does it matter how we ask?

PARTICIPANT INFORMATION SHEET

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.
Asking the Right Questions: Does it matter how we ask?

PARTICIPANT INFORMATION SHEET

Miss Hannah Shackleton
Primary Researcher
and Trainee Clinical Psychologist

c/o Adult Psychology Dept
NHS Forth Valley
Falkirk Community Hospital
Major’s Loan, Falkirk. FK1 5QE

QuestionsAndAnswersResearch@gmail.com

Ph. 01324 614347

Or:

Ken MacMahon
Senior Lecturer and Clinical Psychologist
University of Edinburgh
Health in Social Science
Old Medical School
EH8 9AG
Ph. 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 and Clinical Psychologist
University of Edinburgh
Health in Social Science
Old Medical School
EH8 9AG
Ph. 0131 651 3960
Asking the Right Questions: Does it matter how we ask?

PARTICIPANT INFORMATION SHEET

I would like to find out more about this research.

My name is: .................................................................

The best way of getting in touch with me is:

Telephone number:

E-mail address:

or speaking to:

Please give this sheet to your key worker/care manager/lecturer.

This is so the researcher will know it's okay to contact you and will be in touch soon.
Appendix F(ii) - Empirical Research: Participant consent form

**Asking the Right Questions: Does it matter how we ask?**

**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:

<table>
<thead>
<tr>
<th>Statement</th>
<th>INITIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have been given information about this study</td>
<td></td>
</tr>
<tr>
<td>I understand what this study is about</td>
<td></td>
</tr>
<tr>
<td>All of my questions about the study have been answered</td>
<td></td>
</tr>
<tr>
<td>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</td>
<td></td>
</tr>
<tr>
<td>I understand that I can say ‘no’ to taking part at any time</td>
<td></td>
</tr>
<tr>
<td>I understand that I don’t have to say why I don’t want to take part</td>
<td></td>
</tr>
<tr>
<td>I know that nobody will know that the information I have given is from me</td>
<td></td>
</tr>
</tbody>
</table>
Asking the Right Questions: Does it matter how we ask?

PARTICIPANT CONSENT FORM

I agree to take part in this research study:

<table>
<thead>
<tr>
<th>Signature:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
</tr>
<tr>
<td>Today’s date:</td>
</tr>
<tr>
<td>Researcher’s signature:</td>
</tr>
</tbody>
</table>
**Appendix F(iii) - Empirical Research: Situational anxiety measure**

**Asking the Right Questions: Does it matter how we ask?**

**Situational anxiety measure**  
*(completed by researcher with participant)*

**Participant number:**

<table>
<thead>
<tr>
<th>Since we have met today...</th>
</tr>
</thead>
<tbody>
<tr>
<td>I felt tense</td>
</tr>
<tr>
<td>I felt frightened, as if something bad is about to happen</td>
</tr>
<tr>
<td>I felt worried</td>
</tr>
<tr>
<td>I felt relaxed</td>
</tr>
<tr>
<td>I had a funny feeling in my tummy, like butterflies</td>
</tr>
<tr>
<td>I felt fidgety</td>
</tr>
<tr>
<td>I felt panicky</td>
</tr>
</tbody>
</table>

**Visual representation of quantity to be displayed to participants:**

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

![Bar chart showing visual representation of anxiety levels](chart.png)
Appendix G - Empirical Research: Information sheet for services

Asking the Right Questions: Does it matter how we ask?

INFORMATION SHEET

Who is doing the research?
The research is being carried out by myself, Hannah Shackleton, 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 Dr Edith Matheson, Clinical Psychologist, will supervise the research.

Who are we recruiting?
We are looking to recruit individuals with:
- Mild learning disability (IQ 50 – 69)
- Aged 16 or over

With the exclusion of those who have:
- A major mental illness, e.g. diagnosis of schizophrenia, current severe depression
- Dementia, or current query of dementia
- Current substance misuse
- Current involvement with forensic services
- Previous engagement with primary researcher (Hannah Shackleton) in a therapeutic setting

What is the study about?
Research has found that the way that questions are asked can affect the answers that a person gives. Some people may be particularly vulnerable to changing their answers or agreeing with questions, depending on how they are phrased. Researchers have suggested that people with intellectual disabilities can be more susceptible to this than people who don’t have intellectual disabilities. A scale (which involves a story being read to a person) is often used to measure the extent to which a person might be influenced in this way. However, there are concerns that the scale can over-estimate this tendency in people with intellectual disabilities.

This study aims to adapt this scale, using pictures, to support people’s performance on the assessment, in order to find out whether it is possible to improve this measure. Assessments of people’s memory skills, general ability and how anxious they are will also be taken, to check whether these affect performance on the scale.

Why is this study important?
This study aims to find out whether an adapted version of the existing scale would be a useful way of measuring people’s tendencies to agree with others.
Asking the Right Questions: Does it matter how we ask?

INFORMATION SHEET

This research could also have implications for practice, since the current scale is often used with people with intellectual disability; yet there are on-going concerns about how useful it actually is in its present form.

This thesis is also being carried out as part of the Doctorate of Clinical Psychology and therefore has training and educational value.

What will happen in the study?
Participants will be recruited from learning disability services (non-NHS) across communities within Forth Valley. Recruitment may also take place in other areas, such as Glasgow and Edinburgh. If you give permission for the research to be carried out in your service / college [will be amended to suit each service], I would like to approach the keyworkers and / or care managers and ask them to identify groups of service users / students [will be amended to suit each service] who may meet inclusion criteria. A short presentation regarding the study would be given to groups of potential participants. Information packs would be left with the group, and they would 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. 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 make an appointment time to meet with them in order to explain the study and talk through the Participant Information Sheet. The Participant Information Sheet has been reviewed by a learning disability 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 and will be approached again after at least 24 hours to see if they are willing to participate.

If they are, a suitable time will be made to meet with participants again. The participant will again be told about the study, and their rights to choose to take part or not, as well as their rights to withdraw at any time. If they consent, I will then ask them to sign a consent form before starting the study with them.

Both the original and the adapted versions of the measure will be administered, along with 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.
Asking the Right Questions: Does it matter how we ask?

INFORMATION SHEET

The participants’ responses will be anonymous and the administration should last between 1-2 hours in total, depending on level of ability. 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?
Although there does not appear to have been any concerns raised in previous research using the scale with individuals with an intellectual disability, there is a small risk that distress may result from the events depicted (the stories describe a woman having her handbag stolen, and a child losing control when riding their bicycle). 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, it is possible for me to send you a written summary of the results following completion of the research. Please let me know if this is the case. 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
Asking the Right Questions: Does it matter how we ask?

INFORMATION SHEET

appropriate steps will be taken to safeguard individuals. It is the researcher's responsibility to manage disclosures appropriately, e.g. the welfare of the individual will be paramount, and appropriate authorities will be informed.

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.

Hannah Shackleton
Primary Researcher
and Trainee Clinical Psychologist

c/o Adult Psychology Dept
NHS Forth Valley
Falkirk Community Hospital
Major's Loan, Falkirk. FK1 5QE

QuestionsAndAnswersResearch@gmail.com
Ph. 01324 614347

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

Ken MacMahon
Senior Lecturer and Clinical Psychologist
University of Edinburgh
Health in Social Science
Old Medical School
EH8 9AG
Ph. 0131 651 3969

Angus Macbeth
Lecturer and Clinical Psychologist
University of Edinburgh
Health in Social Science
Old Medical School
EH8 9AG
Ph. 0131 651 3960
### Appendix H - Empirical Research: Participants demographics form

**Asking the Right Questions: Does it matter how we ask?**

**Demographic information**  
*(completed by researcher with participant)*

**Participant number:**

<table>
<thead>
<tr>
<th><strong>AGE:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>GENDER:</strong></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>MARITAL STATUS:</strong></th>
<th>Married</th>
<th>Divorced</th>
<th>Widowed</th>
<th>Separated</th>
<th>A member of an unmarred couple</th>
<th>Other ..........</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>ACCOMMODATION:</strong></th>
<th>Live alone</th>
<th>Live with family</th>
<th>Cohabiting</th>
<th>Shared house (with supported living)</th>
<th>Other ..........</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>MAIN CARER</strong></th>
<th>None</th>
<th>Parent</th>
<th>Support worker/carer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>EMPLOYMENT</strong></th>
<th>Paid employment</th>
<th>Voluntary employment</th>
<th>Unemployed</th>
<th>A student (Full time / part time)</th>
<th>Retired</th>
<th>Unable to work</th>
<th>Other ..........</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix I(i) - Empirical Research: Permissions for use of Boardmaker images

RE: None #333 [ ref: _00Dw0Csat._500w016Hvsw:ref ]
noreply@salesforce.com [noreply@salesforce.com] on behalf of mjq@tobiidynavox.com
[mjq@tobiidynavox.com]
Sent: 02 February 2016 19:53
To: Shackleton Hannah (NHS FORTH VALLEY)
Cc: PCSLicensing@tobiidynavox.com

Hello Hannah,
Please use up to 250 PCS with our permission. Please ensure that an updated copyright statement is included:
Thanks!

Customer Service/ Inside Sales Representative
Tobii Dynavox

2100 Wharton Street, 4th Floor
Pittsburgh, PA 15203
Phone: 1-800-588-4548 x2
Fax: 1-866-585-6260
Web: www.tobiidynavox.com

------------- Original Message -------------
From: Alicia Trax [alicia.trax@tobiidynavox.com]
Sent: 2/1/2016 2:43 PM
To: mjq@tobiidynavox.com
Subject: None #333

Contact Person * Hannah Shackleton
Company Name * NHS Forth Valley / University of Edinburgh
Address * Adult Clinical Psychology, Falkirk Community Hospital Major's Loan Falkirk FK15QE United Kingdom
Phone * 00447783406622
Email * hannah.shackleton@nhs.net
Description Trainee Clinical Psychologist conducting research in the Forth Valley region of the National Health Service of Scotland.
What is the purpose of the product? The purpose of the product is to facilitate the comprehensibility of materials involved in a research project that is recruiting individuals from the population of mild intellectual disability. The materials that will be
adapted for use with those with a mild intellectual disability will include the participation sheets, the consent form, and an experimental measure used within the study.

<table>
<thead>
<tr>
<th>What is the intended audience/market?</th>
<th>Individuals with mild intellectual disability.</th>
</tr>
</thead>
<tbody>
<tr>
<td>How are symbols used in your product?</td>
<td>For adapting the participant information sheet and consent forms. Symbols will also be desirable for the adaptation of a measure used within the experimental session.</td>
</tr>
<tr>
<td>Is the product dependent on the use of symbols?</td>
<td>As the materials involved in this research are intended for use by those with a mild intellectual disability, the use of symbols is desirable.</td>
</tr>
<tr>
<td>What percentage of the product is made up of symbols?</td>
<td>Approximately 10 symbols each on the participant information sheet and consent form, and no more than 80 symbols on the adapted measure in total.</td>
</tr>
<tr>
<td>Do you intend to sell or give away your product?</td>
<td>No, for this current research there is no monetary value of the 'products', it is purely for research use only.</td>
</tr>
<tr>
<td>If you intend to sell, what is the anticipated retail price for your product?</td>
<td></td>
</tr>
<tr>
<td>How many copies of your product do you expect to produce annually?</td>
<td>The adapted materials are for a one-off project. It is estimated that only one copy of each set of materials will be required per person, totally approximately 90 sets.</td>
</tr>
</tbody>
</table>
**Appendix I(ii) - Empirical Research: Adapted GSS scales and questions**

<table>
<thead>
<tr>
<th>GSS 1 (part a)</th>
<th>Visual supplement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Story</strong></td>
<td></td>
</tr>
<tr>
<td>1. Anna Thompson</td>
<td><img src="image1" alt="Visual" /></td>
</tr>
<tr>
<td>2. of South Croydon</td>
<td><img src="image2" alt="Visual" /></td>
</tr>
<tr>
<td>3. Was on holiday in Spain</td>
<td><img src="image3" alt="Visual" /></td>
</tr>
<tr>
<td>4. With her husband</td>
<td><img src="image4" alt="Visual" /></td>
</tr>
<tr>
<td>5. When her bag was stolen</td>
<td><img src="image5" alt="Visual" /></td>
</tr>
<tr>
<td>6. Which had £50 worth of travellers cheques and her passport inside</td>
<td><img src="image6" alt="Visual" /></td>
</tr>
<tr>
<td>7. She screamed for help</td>
<td><img src="image7" alt="Visual" /></td>
</tr>
<tr>
<td>8. And tried to fight back</td>
<td></td>
</tr>
<tr>
<td>9. By kicking one of the robbers in the leg</td>
<td></td>
</tr>
</tbody>
</table>
1. Was the woman interviewed by a Detective Sergeant?
2. Was the woman on holiday with her husband?
3. **Did the woman’s glasses break in the struggle?** (L)
4. **Was the woman’s name Anna Wilkinson?** (L)
5. **Was the woman taken to the central police station?** (L)
6. **Did the woman’s handbag get damaged in the struggle?** (L)
7. Was the woman on holiday in Spain?
8. Was the woman from South Croydon?
9. **Did the woman’s clothes get torn in the struggle?** (L)
10. **Did the woman hit one of the robbers with her fist or handbag?** (L)
11. **Did one of the robbers shout at the woman?** (L)

---

**GSS 1 (part a) questions (leading questions are emboldened)**

1. Was the woman interviewed by a Detective Sergeant?
2. Was the woman on holiday with her husband?
3. **Did the woman’s glasses break in the struggle?** (L)
4. **Was the woman’s name Anna Wilkinson?** (L)
5. **Was the woman taken to the central police station?** (L)
6. **Did the woman’s handbag get damaged in the struggle?** (L)
7. Was the woman on holiday in Spain?
8. Was the woman from South Croydon?
9. **Did the woman’s clothes get torn in the struggle?** (L)
10. **Did the woman hit one of the robbers with her fist or handbag?** (L)
11. **Did one of the robbers shout at the woman?** (L)
### GSS 1 (part b)

<table>
<thead>
<tr>
<th>Story</th>
<th>Visual supplement</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. The woman reported that the 3 men had robbed her</td>
<td></td>
</tr>
<tr>
<td>14. The men were slim and in their early twenties</td>
<td></td>
</tr>
<tr>
<td>15. One of the men was bald</td>
<td></td>
</tr>
<tr>
<td>16. The police officer felt sorry for the woman and told her to contact the British embassy</td>
<td></td>
</tr>
<tr>
<td>17. Six days later</td>
<td></td>
</tr>
<tr>
<td>18. The police found the woman’s handbag</td>
<td></td>
</tr>
<tr>
<td>19. But there was no money or passport</td>
<td></td>
</tr>
<tr>
<td>20. Three men were then charged</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>21. two of the men were convicted and went to prison</td>
<td><img src="image1.png" alt="Image of three men in prison" /></td>
</tr>
<tr>
<td>22. one of them had stolen a bag before</td>
<td><img src="image2.png" alt="Image of a bag and airplane" /></td>
</tr>
<tr>
<td>23. the woman returned to Britain with her husband Simon and two friends</td>
<td><img src="image3.png" alt="Image of a woman and her family" /></td>
</tr>
<tr>
<td>24. but was still frightened of being on her own.</td>
<td></td>
</tr>
</tbody>
</table>

GSS 1 (part b) questions (leading questions are emboldened)

1. Did the woman have a husband called Simon?
2. Was one of the robbers bald?
3. Did the police give the woman a lift back to her hotel? (L)
4. Did the woman have one or two children? (L)
5. Were the robbers black or white? (L)
6. Were the robbers convicted six weeks after their arrest? (L)
7. Did two of the men go to prison?
8. Were the contents of the handbag ever found?
9. Did the woman's husband support her during the police interview? (L)
10. Were the robbers tall or short? (L)
11. Did the woman return to America after her holiday? (L)
GSS 2 (part a)

<table>
<thead>
<tr>
<th>Story</th>
<th>Visual supplement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Anna and John were a happily married couple in their thirties</td>
<td><img src="image1" alt="Heart" /></td>
</tr>
<tr>
<td>2. They had three children, two boys and a girl</td>
<td><img src="image2" alt="Family" /></td>
</tr>
<tr>
<td>3. The two boys were twins</td>
<td></td>
</tr>
<tr>
<td>4. They lived in a small bungalow</td>
<td><img src="image3" alt="House" /></td>
</tr>
<tr>
<td>5. Which had a swimming pool in the garden</td>
<td></td>
</tr>
<tr>
<td>6. John worked in a bank</td>
<td><img src="image4" alt="Bank" /></td>
</tr>
</tbody>
</table>


7. Anna worked in a bookshop with her sister Maria

8. One Tuesday morning in July
9. The couple were leaving their house to go to work
10. They saw a small boy
11. Going down a steep slope
12. On a bicycle

GSS 2 (part a) questions (leading questions are emboldened)

1. Were the couple called Anna and John?
2. Were their two boys twins?
3. Did the couple have a dog or a cat? (L)
4. Did the boy on the bicycle pass a stop sign or traffic lights? (L)
5. Did the boys bicycle get damaged when it fell on the ground? (L)
6. Was the husband a bank director? (L)
7. Did the couple live in a small bungalow?
8. Was the boy’s name William?
9. Was the boy frightened of a big van coming up the hill? (L)
10. Did the boy have some minor bruises as a result of the accident? (L)
11. Did the boy drop the books he was carrying whilst riding the bicycle? (L)
<table>
<thead>
<tr>
<th>Story</th>
<th>Visual supplement</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. The small boy on the bicycle was calling for help</td>
<td></td>
</tr>
<tr>
<td>14. He was ringing his bell</td>
<td></td>
</tr>
<tr>
<td>15. Anna and John ran after the boy</td>
<td></td>
</tr>
<tr>
<td>16. John caught hold of the bicycle and made it stop</td>
<td></td>
</tr>
<tr>
<td>17. The boy appeared very frightened but unhurt</td>
<td></td>
</tr>
<tr>
<td>18. And said that the brakes on his bicycle had broken</td>
<td></td>
</tr>
<tr>
<td>19. Anna and John recognised the boy</td>
<td></td>
</tr>
<tr>
<td>20. Whose name was William</td>
<td></td>
</tr>
<tr>
<td>21. He was the youngest son of their neighbours</td>
<td></td>
</tr>
<tr>
<td>22. Who worked for a well-known travel agency in a nearby town.</td>
<td></td>
</tr>
</tbody>
</table>
23. Sometimes in the winter months the two couples had gone skiing together.

24. But the children had preferred to stay with their grandparents who lived in the country.

GSS 2 (part b) questions (leading questions are emboldened)

1. Was the boy on the bicycle calling for help?
2. Was the boy on the bicycle ringing the bell?
3. **Anna worried that the boy might be injured? (L)**
4. Did John grab the boy's arm or shoulder? (L)
5. Did the boy commonly ride his bicycle to school? (L)
6. **Was the boy taken home by Anna or John? (L)**
7. Was the boy's name William?
8. Did their parents go skiing together sometimes?
9. **Was the boy frightened of riding his bicycle again? (L)**
10. Was the boy allowed to stay away from school after the accident? (L)
11. **Was the weather wet or dry when the accident happened? (L)**
Appendix J - Empirical Research: Debrief wording

“As we said at the beginning of this research, we are interested in whether the way that someone asks you a question changes the answer you give. That is why we asked you to answer the questions about the story a second time after telling you that you made some mistakes. We were interested in whether the answers you gave changed after we said this. You may or may not have made any mistakes when you were answering those questions.”
Doctorate in Clinical Psychology


Provisional Thesis Title: The measurement of suggestibility in adults with intellectual disabilities: Adaptation of the Gudjonsson Suggestibility Scales and an exploration of the influence of cognitive variables.

Exam number: B066836

Allocated Thesis Project Supervisors

- Clinical: Dr Edith Matheson
- Academic: Dr Ken MacMahon

Proposed setting(s): Non-NHS community services, e.g. day centres, social clubs and college courses for students with additional needs. It is proposed that recruitment will focus upon Forth Valley in the first instance, but will extend to other areas of Scotland if necessary.

Anticipated Month & Year of Submission of Thesis: 1st May 2017

Version (date): 11th July 2015

Total word count (exl. references): 5,996
Introduction
1) Please provide a brief critical review of relevant literature, which should clearly demonstrate the rationale and scientific justification for the research. (Relevant to IRAS A12)

Suggestibility

An individual may be described as ‘suggestible’ when found to be likely to accept and/or behave under the influence of others’ suggestion. The concept of suggestibility has been in circulation within the field of psychology for well over a century. Whilst very early literature often related to hypnosis (see Ridley, 2013, for a review), suggestibility was later explored in relation to event recollection. Cattell, in the late 19th century, carried out some of the earliest experimental research in this area, highlighting the effects of suggestion upon testimony (Sporer, 1982). This research was later extended by Loftus, who looked more specifically at the impact that wording has on the distortion of memory (Loftus & Palmer, 1974), contributing to the then developing theory of interrogative suggestibility – the degree to which a person is susceptible to suggestive questioning. Research from this era identified two main ways that suggestibility can be affected during questioning: by the use of suggestive or leading questions, and the influence of criticism or negative feedback (Gudjonsson, 1987).

Prompted by concern regarding the credibility of witness statements, and the fact that individuals may be influenced into making false statements, researchers began to focus on the measurement of suggestibility. Indeed, the relevance of suggestibility is not confined to forensic contexts. Any form of clinical interview where information is gathered, may be subject to the influence of leading questioning, and to the susceptibility of individuals to such questioning. In an attempt to quantify the degree to which an individual may be suggestible under interview, Gudjonsson (1984) developed a scale that was intended to measure this concept. The Gudjonsson Suggestibility Scale (GSS1) involves a recollection and interrogation of a fictional story that is read to an individual. Gudjonsson later developed a second version of this scale, the Gudjonsson Suggestibility Scale 2 (GSS2) that highly correlates with the GSS1 (Gudjonsson, 1987). Three scores are obtained from these scales; yield, shift and total suggestibility. ‘Yield’ refers to how much an individual can be influenced by leading questions, whilst ‘shift’ refers to the extent to which an individual sways or changes their answers when critical feedback regarding their initial response is given. An individual’s total suggestibility score is the sum of the individual's first yield score and shift score.

Numerous studies have found associations between Gudjonsson’s scales and specific psychological variables that would be expected to influence the degree to which a person might be suggestible in a given situation. These include anxiety levels of the participant (Wolfradt & Meyer, 1998), self-esteem (Drake et al., 2008; Gudjonsson & Lister, 1984) social desirability (Richardson & Kelly, 2004) experiences of life adversity (Drake & Bull, 2011). Given this, the scales
have become widely used tools for the assessment of suggestibility of witnesses, including both victims and alleged perpetrators.

*The Use of the Gudjonsson Suggestibility Scales with People with Intellectual Disabilities*

The GSS1 and GSS2 are used frequently as an index of suggestibility for individuals with intellectual impairment who come into contact with the criminal justice system, either as victims or alleged perpetrators (Howells & Ward, 1994; Bowden, 1998). Despite this, it has received a number of criticisms since its inception in the early 1980’s. Researchers have critiqued the scales for only using verbal information, particularly when most human testimony and lived experiences involve encoding of visually perceived information (Beail, 2002; White & Willner, 2005). Beail (2002) argued that the scales are more likely to elicit acquiescent responses from individuals who are firmly encouraged to answer questions on information they often have difficulty recalling in the first place (e.g. fictional events). Beail (2002) also cautions to the use of semantic memory as opposed to autobiographical memory, the latter of which would more likely be the memory used to store information about an event witnessed.

Such authors highlight that the scales (GSS1 and GSS2) appear to rely on verbal memory ability, instead of providing a true sense of how suggestible an individual is. Indeed, White and Willner (2005) found that the scales overestimated suggestibility in comparison to ‘real-life’ events, when a similar paradigm to the GSS was employed. Hence, those with verbal memory difficulties could seem highly suggestible as a result of their memory capabilities, rather than as an indication that they are inherently ‘suggestible’. In an attempt to explore whether this indeed was the case, Cardone & Dent (1996) added visual information in the form of pictures to the scales, and administered this to a group of individuals with intellectual disabilities. They found that, when compared to individuals only receiving verbal information, the degree to which a person ‘yielded’ to leading questions was reduced significantly. However, scores with this adaptation were still higher than scores found amongst people without such disabilities, and the extent of information recalled was still close to floor level. This suggests that cognitive ability was still playing a significant role, even with this adaptation. In addition, Cardone & Dent (1996) did not use visuals for every component of information presented (only 17 of a potential 40), which may only partially benefit the individual. Similarly, a study by Bowden (1998) adapted the scale to include a video along with the verbal information. Whilst there was no expected improvement in suggestibility scores, it must be considered whether the visual information needs to be present for a certain amount of time so as to be encoded sufficiently by the participant, and thus reduce the effects of reduced memory ability. As such, it would be reasonable to think that having a visual adaptation may only be useful if there is enough of it, and it is present for long enough to be encoded by the participant.
When Willner (2008) amended the administration of the scales to ask for recall of information halfway through the ‘story’, he found that whilst recall was improved, suggestibility did not decrease as would be expected. It is possible that this finding is the result of Willner (2008) not using visual aids to support recall. It is well recognised that the use of visual materials can support the understanding and decision-making of individuals with intellectual disabilities (Bailey, Willner & Dymond, 2011). Hence, this may explain why Willner (2008) did not find that reducing verbal memory load reduced suggestibility on this paradigm.

It has also been suggested that scores on the scales are likely to be influenced by the vocabulary level of the individual. For this reason a reliance on verbal information may be particularly problematic for individuals with impaired cognitive functioning, such as those with intellectual disabilities who are likely to have lower vocabulary ability (Bryant et al., 2003). Thus, some authors have argued, strongly, that the scales should not be used with individuals with impaired cognitive function, such as those with an intellectual disability (Willner, 2011). However, at present, there is not a similar assessment that could be used with people with intellectual disabilities, a group for whom the question of suggestibility is most likely to arise.

In conclusion

At present, there appears to be an impasse with regard to the use of the scales for people with intellectual disabilities, for whom the assessment of suggestibility is often a crucial issue within forensic settings. Within the wider population, where verbal memory ability is far less likely to be a factor, the scales appear to measure factors that would be considered psychological in nature (such as self-esteem; Drake et al., 2008). However, within an intellectual disability context, cognitive factors, particularly verbal memory, appear to be the overwhelming contributor to suggestibility when using this measure.

Nonetheless, the availability of a measure of suggestibility for use with people with intellectual disabilities, across both forensic and clinical settings, continues to be of value. Yet, the scale in its present form appears to rely too heavily on cognitive abilities. Until it is possible to reduce the loading on these abilities, and demonstrate that suggestibility on this paradigm is not merely an artefact of memory ability in a given situation, the scales will continue to be vulnerable to considerable criticism. Given this, it appears necessary to consider whether it is possible to modify the scales further and demonstrate that it is not entirely reliant on cognitive abilities in a given situation. If this is possible, then further exploration with the GSS paradigm would be of value.

In order to establish whether the GSS paradigm could be taken forward, this study proposes to focus on the addition of visual materials to a reduced scale. Indications from a previous study (Cardone & Dent, 1996) suggest that reducing memory load may reduce suggestibility (as indexed by the scales).
Nonetheless, recall of information remained low and hence subject to floor effects, possibly due to visual stimuli not being used for each item of information. Furthermore, reducing the number of items on the scale (without visual aids) did not alter the suggestibility score, a somewhat surprising finding (Willner, 2008).

Thus far, the reduction of verbal load in addition to augmentation with verbal stimuli has not been examined. By making these adaptations to the existing scale, it is anticipated that the risk of floor effects will be reduced. Within the proposed study, measures of general intellectual ability and verbal and visual memory will be taken. This will provide information regarding what cognitive capabilities are supported by the addition of visual materials. A measure of situational anxiety will also be taken as it has been shown that suggestibility in a given situation can be mediated by anxiety (Hansdottir et al., 1990). This will give the opportunity to determine whether it is possible to utilise an augmented format of the scale for future work on suggestibility, and potentially a measure specific to people with intellectual disabilities, and to what degree individual differences on this assessment remain as artefacts of cognitive processing abilities.

Research Questions / Objectives:

2) What is the principal research question / objective? (IRAS A10)

i) Will the addition of visual materials to adapted Gudjonsson Suggestibility Scales reduce suggestibility?

3) What are the secondary research questions? (IRAS A11)

ii) Will the degree to which suggestibility is reduced be dependent upon the cognitive variables of IQ and visual and auditory memory?

Methodology

4) Please give a full summary of your design and methodology. (Relevant to IRAS A13)

Ethics opinion

An application for ethical approval will be made through the University of Edinburgh School of Health in Social Science Research Ethics Committee. It is not envisaged that an application will have to be made through the NHS Research Ethics process, as participants will not be NHS patients nor recruited through NHS services. Approval
Design

The research questions will be addressed using quantitative methods, using a within-subjects counterbalanced experimental design.

Each participant will complete both ‘verbal’ and ‘verbal + visual’ versions of the suggestibility scales, but counterbalancing will be used to account for order effects. Both parallel versions of the scales (the GSS1 and GSS2) will be used for re-administration purposes, and visual materials will be developed for each. This results in four different streams of presentation order, which are as follows:

Order 1:  GSS1 (first half) - verbal only / GSS2 (first half) - verbal & pictures
Order 2:  GSS2 (first half) - verbal only / GSS1 (first half) - verbal & pictures
Order 3:  GSS1 (first half) - verbal & pictures / GSS2 (first half) - verbal only
Order 4:  GSS2 (first half) - verbal & pictures / GSS1 (first half) - verbal only

Participants will be sequentially allocated to one of these conditions and complete the measures in the above order. At data analysis stage, comparisons between recall and suggestibility scores will be made for the GSS1 and GSS2 (both adapted).

Stage 1: Materials Development

Following the adaptation of the GSS1 and GSS2 (halved in length and visual stimuli [pictures] developed, [see Section 6]), the scale will be reviewed by a group of five individuals working within intellectual disability services. This will serve as a check that the pictures match the verbal content of the scale (as per Cardone & Dent, 1996).

A Speech and Language Therapist working in the area of intellectual disabilities will also review all materials such as Information Sheets and Consent Forms to ensure they are accessible for those with a mild intellectual disability.

Stage 2: Recruitment

The initial wave of recruitment will be throughout NHS Forth Valley region, before expanding to wider regions depending on need. Managers from non-NHS services, such as care providers, colleges, day centres, housing providers and advocacy...
groups will be approached, and permission requested to provide details of the study to potential participants.

Once permission has been granted, the researcher will make a brief presentation about the study to groups regarding the research. Packs containing an information sheet and reply slip will also be given out. Those interested in participating in the study will be asked to return the reply slip to a designated member of staff. The researcher will also be available to answer any queries from potential participants directly. The details of individuals who wished to take part, or wanted further information about the study, will be passed on to the researcher by staff member(s). An arrangement for the assessment session will then be made with the participant.

Stage 3: Administration procedure

The session will be conducted at a location that is suitable for the participant, e.g. in a room at their day centre, college etc. Only the researcher and participant will be present for the session, though should the individual wish for a member of staff to be present this will be agreed. It is estimated that the full session will last approximately 1 hour 20 minutes, depending on ability of each participant.

Initially, there will be a review of the Information Sheet and discussion of the study to ensure that the participant comprehends the requirement of the study and that they can withdraw at any time. The process of the session will be as follows:

1. Consent gained and demographics questionnaire completed (10 minutes)
2. Order 1, 2, 3, or 4 of GSS presentation administered (with state anxiety measure administered following presentation of stimuli and prior to recall and questioning) (35 minutes)
3. Verbal (WAIS-IV Digit Span) and visual memory (Visual Patterns Task) assessments (15 minutes)
4. Two sub-test WASI-II (10 minutes)
5. Debrief (10 minutes)

This order has been chosen deliberately to ensure that perceived success, or otherwise, on the measures of cognitive ability do not influence performance on the adapted GSS.

5) Please list the principal inclusion and exclusion criteria (IRAS A17-1 and A17-2)

Inclusion:
• Aged 16 or over

Exclusion:

• Major mental illness, e.g. diagnosis of schizophrenia, current severe depression
• Dementia, or current query of dementia
• Current substance misuse
• Current involvement with forensic services
• Previous engagement with primary researcher in a therapeutic setting

6) How will data be collected?

All data will be collected by the primary researcher.

Demographic information

Information such as age, accommodation type, and employment status will be collected as part of an initial set of questions to be administered on the day of testing. These will be used to describe the sample as a guide to the generalizability of findings.

Dependent variable data

Suggestibility

The format for the Gudjonsson Suggestibility Scales involves the reading of a fictional story comprised of 40 verbal components with participants instructed to listen carefully. After a 50-minute delay, participants are then asked to recall as much about the story as they can. They are then asked 20 questions about the story, 15 of which are loaded with suggestion. The responses to these questions comprise the ‘yield score’. After the first set of questions, participants are ‘firmly’ told “you have made a number of errors. It is therefore necessary to go through the questions once more, and this time try to be more accurate”. The 20 questions are then repeated and any change in responses are noted (‘shift score’). ‘Yield’ and ‘shift’ scores are obtained from the completed scale, as well as a ‘total suggestibility’ score.
In terms of reliability of items comprising the GSS, Gudjonsson (1984) reports alpha coefficients for yield and shift items of 0.88 and 0.82 respectively. A parallel version of the GSS 1 was later developed, the Gudjonsson Suggestibility Scale 2 (Gudjonsson, 1987). Interscorer reliability for the suggestibility scales ranges from .949 to .992 for the GSS 1, and .989 to .996 for the GSS 2 (Richardson & Smith, 1993).

For the purposed of this study, adapted versions of both the GSS 1 and GSS 2 will be used. The adaptations are detailed below:

*No 50-minute time interval:* Within the GSS, an existing suggested adaptation for individuals with intellectual disabilities is the removal of this delay. In order to maximize the recall of information, a fifty-minute delay will not be incorporated into the session and participants will be questioned about the story immediately following presentation.

*Inclusion of visual information:* In order to support performance on the task, the scale will be adapted to include visual as well as verbal information (as per Cardone & Dent, 1996). The visual information will be in the form of pictures depicting all 20 corresponding verbal components, e.g. if the verbal component is: ‘they lived in a small bungalow’, it will be accompanied by a picture of a small bungalow. Images will be laid-out in a ‘storyboard’ manner to allow the participant to understand the ‘progress’ of the story. Images in story order will therefore remain with the participant until the verbal passage has been finished being read out.

*Reduced components:* In this study, the number of components comprising the GSS 1 and GSS 2 will be halved, i.e. only the first half of the components will be used. As with the removal of the 50 minute interval, it is thought that using a reduced component version of the GSS 1 and 2 will support recall. A study by Willner (2008) found that this reduction of components can improve recall ability, therefore reducing the risk of obtaining a floor effect for free recall of information.

*Wording of questioning:* The usual procedures of the GSS would require the participant to be told in a “forceful manner” that there are inaccuracies in their story and that they must answer the questions a second time (Gudjonsson, 1984). In consideration of the individuals involved in this research project, “forceful manner” will be avoided, and instead participant’s will be told in a clear but directive way that the questioning will have to be repeated (e.g. “Unfortunately you got some of those answers wrong, so we will have to go through them again. I want you to try as hard as you can.”). Deliberately less forceful wording has been adopted in studies previously, such as White and Willner (2005), and Willner (2008), without reducing the apparent levels of suggestibility.

*Independent variable data:*
Intelligence

The Wechsler Abbreviated Scale of Intelligence, Second Edition (WASI-II; Wechsler, 2011) is a brief intelligence test designed for individuals aged between 6 and 90 years. The two-subtest WASI-II, comprising ‘vocabulary’ and ‘matrix reasoning’ will be administered to all participants in order to obtain an estimate of their general cognitive ability (Full scale IQ). Administration time is estimated to be 10-15 minutes.

Verbal and visual memory

Verbal working memory will be assessed using the Digit Span sub-test of the Wechsler Adult Intelligence Scales 4th Edition (WAIS-IV; Wechsler, 2008). Administration time is estimated to be 5 minutes. Visual memory will be assessed using The Visual Patterns Test (VPT; Della Sala et al., 1997). Authors estimate that the VPT has an administration time of 10 minutes. The VPT has good reliability and validity and is a more accurate measure of visual working memory, as opposed to other measures that merge both visual and spatial working memory capacities (Della Sala et al., 1999). For the purposes of this study, a composite score for verbal and visual memory will be calculated.

State anxiety

A review by Hermans et al. (2011) highlighted the limited availability of assessment tools for measuring the anxiety of individuals with intellectual disabilities. In particular, there is an absence of a validated measure of state anxiety. Given this, relevant items from the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983), as adapted by Dagnan et al. (2008) for use with individuals with intellectual disability will be selected and administered in a form that addressed current feelings of anxiety.

Sample Size

7) What sample size is needed for the research and how did you determine this? (IRAS A59 and A60)

In order to estimate the required sample size for each of the research questions, two separate analyses were conducted

Research question i) Will the addition of visual materials to adapted Gudjonsson Suggestibility Scales reduce suggestibility?
Cardone & Dent (1996) found an effect size of 0.7 on ‘yield’ when visual stimuli were added to the GSS. Based on this effect size, a power calculation was conducted using an ‘a priori’ sample size calculator (G*Power; Faul, 2007). Estimations using this method are as follows:

<table>
<thead>
<tr>
<th>Method of analysis</th>
<th>Two-tailed paired sample t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desired statistical power</td>
<td>0.8</td>
</tr>
<tr>
<td>Anticipated effect size (based on previous research)</td>
<td>0.7</td>
</tr>
<tr>
<td>Probability level</td>
<td>0.05</td>
</tr>
<tr>
<td>Required sample size</td>
<td>19</td>
</tr>
</tbody>
</table>

Research question ii) Will the degree to which suggestibility is reduced be dependent upon the cognitive variables of IQ and visual and auditory memory?

A multiple regression will be used to explore the predictive qualities of the independent variables (IQ, memory, anxiety) against the dependent variable (change scores). A ‘rule of thumb’ outlined by Field (2009) recommends a minimum of 10 cases per predictor for a regression analysis. However, a more substantive assessment of required sample size was conducted. Significant relationships between the independent variables in this study and suggestibility scores have already been established from previous research (see Introduction). However, an effect size in relation to change score as an outcome variable is uncertain, although it is expected that these variables will be substantial contributors to the degree to which scores on the GSS alter. As a result, sample size was calculated for a medium-to-large effect size (see below). Once again, the power analysis was conducted using an ‘a priori’ sample size calculator (G*Power; Faul, 2007).

<table>
<thead>
<tr>
<th>Method of analysis</th>
<th>Multiple regression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticipated effect size</td>
<td>0.25 (medium-to-large)</td>
</tr>
<tr>
<td>Desired statistical power</td>
<td>0.8</td>
</tr>
<tr>
<td>Number of predictors</td>
<td>3</td>
</tr>
<tr>
<td>Probability level</td>
<td>0.05</td>
</tr>
<tr>
<td>Required sample size</td>
<td>48</td>
</tr>
</tbody>
</table>

8) Outline reasons for your confidence in being able to achieve a sample of at least this size.
The recruitment stage of this study is planned to run from January until October 2016. It is hoped that the length of this stage will maximise recruitment and also allow time for approaching wider services, and problem solving should any unforeseen difficulties arise. In her study that also recruited participants with an intellectual disability, Paterson (2007) achieved an encouraging response rate of 74% of those individuals able to consent. As such, the sample size appears achievable given the similarities in the methods of recruitment with this present study. The clinical supervisor of this project has extensive experience of ID services throughout Forth Valley. The academic supervisor of this project has experience working within Ayrshire & Arran, Greater Glasgow & Clyde and Lanarkshire, and a number of contacts working in intellectual disability services in Lothian.

Analysis

9) Please describe the methods of analysis (statistical or other appropriate methods (IRAS A62)

All descriptive and inferential statistical analyses will be conducted using SPSS. Assumptions relating to the collected data will be examined, e.g. normality distribution.

Research question i) Will the addition of visual materials to adapted Gudjonsson Suggestibility Scales reduce suggestibility?

A two-tailed paired sample t-test will be used to explore the differences between mean suggestibility score without and with visual stimuli. Primary analysis will look specifically at total suggestibility scores, and secondary analyses will explore Yield and Shift scores. Appropriate measures (e.g., Holm-Bonferroni corrections) will be taken to account for any familywise error rates that may result from multiple comparisons (Pallant, 2005).

Research question ii) Will the degree to which suggestibility is reduced be dependent upon the cognitive variables of IQ and visual and auditory memory?

A multiple regression will be used to explore the predictive qualities of the independent variables (IQ, memory, anxiety) against the dependent variable (change in yield scores).

Project Management: Timetable

10) Outline a timetable for completion of key stages of the project.

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Stage</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>July 2015</td>
<td>Submission of research proposal</td>
<td>- Wait for response/suggestions</td>
</tr>
<tr>
<td>Date</td>
<td>Event Description</td>
<td>Milestones</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>1st Aug – Oct 2015</td>
<td>Finalise research plan&lt;br&gt;Prep. relevant ethics applications</td>
<td>- Develop participant information forms, including seeking feedback re readability&lt;br&gt;- Assemble resources needed, e.g. photos for GSS 1 &amp; 2&lt;br&gt;- Seek and incorporate feedback from supervisors for ethics application&lt;br&gt;- Finalise recruitment sources, discuss with Clinical supervisor and other members of clinical team within local learning disability department.&lt;br&gt;- Determine final list of what participant access permissions will need to be obtained, e.g. local Council, colleges.</td>
<td></td>
</tr>
<tr>
<td>2nd End of Oct 2015</td>
<td>Submit ethics&lt;br&gt;Data prep work</td>
<td>- Wait for response&lt;br&gt;- Plan structure of thesis&lt;br&gt;- Create secure database&lt;br&gt;- Establish secure location for physical data storage&lt;br&gt;- Independent verification of GSS 1 &amp; 2 pictures and content similarity</td>
<td></td>
</tr>
<tr>
<td>2nd Jan - March 2016</td>
<td>Start recruitment in local area (pending favorable ethical decision)</td>
<td>- Begin recruitment in Forth Valley before widening to other areas.</td>
<td></td>
</tr>
<tr>
<td>2nd March – Oct 2016</td>
<td>Continue recruitment and data collection&lt;br&gt;Write up&lt;br&gt;- Methodology&lt;br&gt;- Introduction</td>
<td>- Input data into database&lt;br&gt;- Start first half of introduction&lt;br&gt;- Supervisor feedback re methodology</td>
<td></td>
</tr>
<tr>
<td>2nd July - Aug 2016</td>
<td>Data analysis</td>
<td>- Conduct analyses&lt;br&gt;- Interpret analyses&lt;br&gt;- Supervisor feedback re analyses</td>
<td></td>
</tr>
<tr>
<td>2nd Sept 2016</td>
<td>Write up&lt;br&gt;- Results&lt;br&gt;- Re-draft introduction</td>
<td>- Supervisor feedback re results</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Activity</td>
<td>Notes</td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------</td>
<td>--------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>3rd Oct 2016</td>
<td>Systematic review</td>
<td>- Refine question</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Plan</td>
<td></td>
</tr>
<tr>
<td>3rd Nov 2016 – Jan 2017</td>
<td>Systematic write up</td>
<td>- Supervisor feedback re introduction and analyses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Introduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Analyses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd Feb 2017</td>
<td>Finish systematic review</td>
<td>- Discussion</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Supervisor feedback</td>
<td></td>
</tr>
<tr>
<td>3rd March 2017</td>
<td>Final thesis write up</td>
<td>- Finish outstanding sections</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Finalise referencing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Formatting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Binding</td>
<td></td>
</tr>
<tr>
<td>3rd April 2017</td>
<td>Final thesis draft to supervisors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd May 2017</td>
<td>Final submission of thesis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd June - July 2017</td>
<td>Prepare for viva</td>
<td>- mock vivas with supervisors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Plan disseminations</td>
<td>- commence application for relevant publications</td>
<td></td>
</tr>
<tr>
<td>3rd Aug 2017</td>
<td>Submit for publications</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Management of Risks to Project

11) Please summarise the main potential risks to your study, the perceived likelihood of occurrence of these risks and any steps you will or have taken to reduce these risks. Outline how you will respond to identified risks if they should occur.

**Recruitment:** There is dependency on service managers’ agreement to allowing the researcher access to speak to clients within their services. They will also be required to support recruitment by providing information on individuals who may be interested to the researcher. It is the researcher’s responsibility to develop positive relationships with all involved, so as to facilitate the progression of the study. In her study, Paterson (2007) acknowledged a generally willingness and enthusiasm of service managers and other staff to facilitate her research and permit access clients within their services. All efforts will be made to foster positive relationships with service managers both through the researcher and her supervisors.

**Researcher Illness:** All stakeholders (e.g. the University, academic and clinical supervisors, NHS Forth Valley) will be informed should the researcher require significant leave for any unforeseen reason. Contingency plans will be discussed amongst the stakeholders, e.g. extending the recruitment period.

**Supervisor absence:** Should the clinical supervisor be unable to fulfil their duties (as agreed in the supervision contract), an alternative local clinical practitioner will be approached with the support of the researchers clinical line manager. Similarly,
should the academic supervisor become unable to fulfil their role (as also agreed in the supervision contract) for any reason, the University will be contacted and a replacement supervisor will be designated.

**Potential distress to participants:** The measures in this study have been widely used in other research, and wording has been adapted where possible to improve suitability for participants with intellectual disabilities. Although there does not appear to have been any concerns raised in previous research, there is a small risk that distress may result from the events depicted in the GSS 1 and/or 2 scales (i.e. a description of a woman having her handbag stolen, and a boy losing control when cycling his bicycle). It will be the researcher’s responsibility to identify if the participant becomes distressed or upset during the session and take necessary action in a sensitive manner. The Information Sheet given to the participant at the start of the study will state clearly that should the content of the study trigger any distress or confusion, they are advised to contact the primary researcher, a member of their staff, or their GP for support. This will be emphasised verbally when the researcher gathers consent and at the debrief following testing. Contact details for the primary researcher will be detailed on both the study information and debrief documents. Similar recommendations will be made on the information sheet provided for carers/parents should they have any concerns.

**Identification of risk:** Should any risk or concerns be identified regarding the care provision for individuals that the researcher comes in contact with, the researcher has a professional responsibility to report to the appropriate authorities e.g. to the Care Inspectorate, relevant Adult Support and Protection bodies. Should information be disclosed regarding any risk of harm to the participant or risk of harm to others, this shall be managed with clinical judgement and with sensitivity. The duty to disclose such information will be made clear within the study Information Sheet and related verbally when consent is taken. Any issues in relation to this will be discussed with supervisors and appropriate steps taken to safeguard individuals. It is the researcher’s responsibility to manage this disclosure appropriately, e.g. the welfare of the individual will be paramount, and appropriate authorities will be informed.

**Capacity:** As the population under study are individuals with a significant impairment of intellectual functioning, it is the responsibility of the researcher to be mindful of individuals’ capacity to consent to participation. This will be informally assessed during the sharing of information about the study, and during the consent process. The individual will be deemed to have the capacity to consent to taking part in the study should they:

- Understand the nature of what is involved in the study
- Be able to retain the information provided
- Understand and weigh up the implications of taking part in the study

Equally, should the researcher have doubts at any stage during the study (after participant has consented) that the individual may not meet the criteria above to consent to taking part in the research, the ending of the session will be managed carefully and the individual will be debriefed sensitively. Should this occur, the individual’s data would be destroyed securely, and not included within the rest of the study data.

**Consent, confidentiality and data protection:** It will be made clear to individuals that their participation is voluntary and they can withdraw their consent to take part in the
study at any time. Confidentiality during participation in the study will be explained, as well as the limits to confidentiality, e.g. should risk to self/others be disclosed.

Following data collection, all identifiable information will be anonymised and coded for the researcher’s purposes only. All data will be held securely (i.e. in a locked case if in transit) and will be stored securely within an NHS Forth Valley Psychology department. Data will be anonymised in advance of it being inputted into a computerised database which will be password protected.

Missing data: There is only a very small risk of missing data, as the researcher will collect the majority of the data during a single session with the individual.

Knowledge Exchange

12) How do you intend to report and disseminate the results of the study? (IRAS A51)

During the study debrief, participants will be asked if they wish to receive an accessible written summary of the results. Results will also be disseminated to the relevant services involved using whatever method may be desired, e.g. a summary report, presentation. The results of the study will also be disseminated via research papers at relevant national and international conferences. Where appropriate, results will also be disseminated to relevant Special Interest Groups (SIGs). Relevant journals will also be identified and journal articles will be submitted (e.g. Journal of Personality and Individual Differences, Journal of Intellectual Disability Research).

13) What are the anticipated benefits or implications for services of the project?

It is possible that this study will lead to the further development of a tool that can reliably measure interrogative suggestibility for people with intellectual disabilities. More generally, this research aims to contribute to the theoretical development of the concept of suggestibility, whilst increasing the understanding and awareness of the factors that should be taken into consideration when assessing an individual’s suggestibility.

14) Are there any potential costs to this project?

University costs

Measures: As the GSS 1 and 2 will be adapted, there are no additional costs for accessing more than one GSS 1 and 2 score sheet (which the researcher already has access to). The GSS manual can be obtained from the University via academic supervisor. The VPT materials are free to use and can be obtained from the academic supervisor. A measure of digit span will be extracted from the WAIS-IV and will therefore not require purchase of a score sheet.
Permission has been granted by Forth Valley’s Head of Primary Care Psychology to access the WASI-II from the department. 50 score sheets for the WASI-II will be required, at a cost of £159.60 (incl. VAT) + £4.50 delivery. An application will be submitted to the University requesting funding for these costs.

**NHS Health Board costs**

Provisional approval has been obtained from the researcher’s NHS line manager (Dr Sally Rankine) and Head of Forth Valley’s Psychology Services (Dr Jennifer Borthwick) for the below costs to be paid for by NHS Forth Valley:

Paperwork: printing of Information Sheets etc., and photocopying of paperwork (estimated to be 500 black and white, 200 colour). Preparation of visually adapted GSS 1 and 2 (20 colour pictures on laminated sheets for each).

Postage costs: for posting study information packs to relevant parties (i.e. service managers). It is estimated that up to 40 services will be contacted and given information packs regarding the study. It is not anticipated that all will request posted information so this is likely to be an overestimate of postage costs.

Travel costs: For researcher travel to and from participants from base (Falkirk Community Hospital) to locations throughout Forth Valley, and possibly other regions.

15) Any other relevant information.

The researcher has 24 months of previous experience working as a Support Worker within a private intellectual disabilities support service, as well as having completed the six-month intellectual disability clinical practice placement as part of the Doctorate of Clinical Psychology training.

16) Key References


17) Confirmation of Supervisors’ Approval

I confirm that both my academic and clinical supervisors have seen and approved this research proposal and have both completed the supervisors’ appraisal forms below.

Yes .Proposal

Appendix 1:

Methodological Review

Main Academic Thesis Supervisor’s Appraisal of Project Risk

Supervisor’s Name: Dr Ken MacMahon

Do you consider that the project should proceed in broadly its current form?

(Delete as appropriate)

Yes, subject to considerations outlined below

Please outline the reasons for your response. In particular, highlight any areas of risk to the completion of the project that have not been fully addressed within the proposal and any steps that could be taken to reduce risks:

I believe that this project examines an area that is of theoretical interest, as well as of significant importance in clinical practice. The issue of suggestibility is most likely to arise with people with intellectual disabilities (both for victims and alleged perpetrators). Hence, this study would be a valuable addition to the literature.

As noted in the proposal, the most significant risk is in relation to the recruitment of participants. However, the proposed study does not seek to recruit patients from the NHS which reduces recruitment difficulties substantially. Nonetheless, it is expected that the researcher will be required to make links with organisations, such as care providers and colleges. It will be necessary to concentrate efforts on this at an early stage, to ensure sufficient potential participants.

Planning the process of approaching specific organisations, in a systematic fashion, rather than an initial approach to a very wide group of service providers, will be necessary to minimise the time spent visiting numerous services. Attempting to recruit several individuals from each organisation should also reduce the time commitment required. Recognising when it may be necessary to move outwith Forth Valley (to facilitate recruitment) will be necessary at an early stage. If this is needed, then approaching services with whom the project supervisors have an existing relationship with would be likely to facilitate more rapid recruitment.

With regard to other risks, such as distress to participants and capacity issues, I believe that these have been addressed within the proposal.

Date: 11th July 2015
Appendix 2:
Methodological Review

Clinical Thesis Supervisor's Appraisal of Project Risk

Supervisor's Name: Dr Edith Matheson

Position: Chartered Clinical Psychologist

Do you consider that the project should proceed in broadly its current form?
(Delete as appropriate)

Yes ☑ Yes, subject to revisions outlined below No

Please outline the reasons for your response. In particular, highlight any areas of risk to the completion of the project that have not been fully addressed within the proposal and any steps that could be taken to reduce risks:

This project appears to have been well researched by Hannah and is of clinical value.

I have no particular concerns re risk.

Matheson

Date: 23/07/15