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Eyewitness Skills and Juror Perceptions of Adults with Intellectual Disabilities

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This thesis has been completed as a requirement for a Doctor of Philosophy of the University of Winchester

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ABSTRACT

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Individuals with intellectual disabilities (ID) are at an increased risk of abuse and are thus more likely to come into contact with the criminal justice system (CJS). Research examining this group's eyewitness skills is limited, particularly in relation to *adults* with ID, but it does suggest that they *can* be reliable and accurate witnesses. However, there remain significant gaps in the existing literature. The current research focused on three key areas of eyewitness testimony: investigative interviewing, line-up identification and juror perceptions. In the first study, adults with ID and mental age (MA) matched typically developing (TD) children, were shown two *separate* but *similar* eyewitness films. Recall occurred at three points: following a delay of around 45 minutes, a delay of one week and, for half of the participants, a further delay of one week. Participants were also asked to identify the two perpetrators (from the eyewitness films) from sequentially presented identification line-ups. Overall, the adults with ID recalled just as much information as the TD children, whilst producing few source monitoring errors, confabulations and contradictions. However, the adults with ID found the identification line-ups particularly challenging, evidenced by low identification accuracy rates, problems in recalling the non-biased line-up instructions and understanding the line-up's purpose. In an investigation of the usefulness of cognitive measures (e.g., memory and language) in predicting eyewitness performance, facial and verbal memory were discovered to be significant predictors of amount of correct information recalled for both groups, but facial memory was not predictive of line-up identification accuracy. The second study examined how level of recall and provision of witness information affected mock jurors' perceived credibility of evidence from witnesses with ID. This group were perceived to be honest and believable, but their evidence was not perceived to be very complete. Provision of witness information did not have a detrimental impact on perceived credibility. In summary, adults with ID can be reliable witnesses however, their ability to accurately identify a perpetrator from an identification line-up is impoverished. These results have important practical implications, not only with specific reference to the police investigation process, but also in relation to several aspects of the criminal justice system.

Keywords: Intellectual disabilities, eyewitness skills, investigative interviews, identification line-ups, individual differences, mock juror perceptions

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Chapter 1

Literature Review

1.1 Introduction and Overview

Eyewitnesses play a vital role in the Criminal Justice System (CJS), being relied upon heavily to provide both detailed information about a witnessed event, as well as identification of a perpetrator. Given the importance of this 'eyewitness testimony' and the fact that it is often the main form of evidence in an investigation (Kebbell & Davies, 2006), gaining a thorough understanding of the accuracy and reliability of eyewitness testimony, together with the factors that might affect it, is of the utmost importance.

For decades researchers have concerned themselves with studies of eyewitness testimony in the general population as a whole, whilst vulnerable groups, such as those with intellectual disabilities (ID), have been overlooked. Yet there is a greater likelihood of individuals with ID coming into contact with the CJS because they are at an increased risk of either witnessing abuse or being victims of abuse than individuals without ID (Reiter, Bryen & Shachar, 2007; Sullivan & Knutson, 2000). Moreover, the abuse suffered is likely to be repeated and sustained (McDonnell, Breen, Deveau, Goulding & Smyth, 2014) often spanning a number of years (McCormack, Kavanagh, Caffrey & Power, 2005) and involving more than one perpetrator (Cambridge, Beadle-Brown, Milne, Mansell & Whelton, 2006). Yet this group's access to justice appears thwarted by both police officers' and jurors' commonly held beliefs regarding their credibility and reliability as witnesses (Brennan & Brennan, 1994; Stobbs & Kebbell, 2003).

In view of the above, it is evident just how crucial it is that we gain a thorough understanding of this group's eyewitness skills and yet, as will become evident during the course of this literature review, research in this area is limited. This chapter seeks to provide an overview of two key areas of eyewitness testimony, i.e., verbal recall of a witnessed event and visual identification of a perpetrator, together with an examination of the factors that can affect it. It also includes a discussion of ID, including its diagnosis, associated cognitive deficits and incidence of abuse against individuals in this group, as well as an examination of the importance of perceived accuracy and reliability of eyewitness evidence in the courtroom. The chapter finishes with a brief exploration of the potential usefulness of individual differences on cognitive measures as predictors of eyewitness performance.

1.2 Eyewitness Testimony

Eyewitness testimony incorporates both the verbal recall of a witnessed event (i.e., a crime) as well as the visual identification of a perpetrator from an identification line-up. The provision of an accurate and reliable account, from either a witness or victim of crime, affords the investigating police officer the information necessary to ascertain what (if anything) has occurred and who committed the crime (Milne & Bull, 2006). Eyewitness testimony often provides the main source of leads in police investigations (Kebbell & Milne, 1998) and it is just as important in the courtroom, where it can have a very powerful effect on the jury decision making process (Cutler, Penrod & Dexter, 1990; Cutler, Penrod & Stuve, 1988). Indeed, as Wells, Memon and Penrod (2006) rightly point out, testimony from an eyewitness who has no reason whatsoever to be untruthful can be an extremely convincing form of evidence for a jury.

Yet, eyewitness testimony is not infallible. Eyewitnesses can and often do get things wrong, resulting in catastrophic outcomes for those on the receiving end of their inaccurate eyewitness evidence. Many of those wrongfully convicted can lose several years of their lives, sometimes decades, being incarcerated for crimes they did not commit, or worse still, as is the case in some states in the United States, find themselves on death row (Innocence Project, 2017). In fact, according to the Innocence Project in the United States, inaccurate eyewitness testimony has played a role in over 70% of convictions which have subsequently been overturned through DNA testing. Here in the UK it was the publication of the Devlin Report in 1976 (Her Majesty's Stationery Office (HMSO), 1976) that finally drew attention to the fact that eyewitness testimony, specifically identification evidence, was not always reliable. This report came about in response to the individual cases of Laszlo Virag and Luke Dougherty. Both men, although subsequently exonerated, were convicted for crimes they had not committed, based on mistaken identification. In concluding his investigation into the law and procedures for identification at that time, Lord Devlin recommended that prosecution cases should not be brought about on eyewitness evidence alone. However, this recommendation was never made law and eyewitness testimony continues to be relied upon heavily in order to bring about a successful prosecution.

1.2.1 Factors Affecting Eyewitness Testimony

Contrary to popular belief, memory is not like a video recorder, it doesn't record every minute detail of an experience or witnessed event ready to be played back whenever requested. Memory is fragile, it is a process of reconstruction open to distortion and failure at encoding, storage and retrieval (Brainerd, Reyna, Howe & Kingma, 1990). There are several factors that

can affect every day memory as a whole and eyewitness testimony specifically and these are discussed in greater detail in the sections that follow.

1.2.2 Delay

In a ground-breaking experiment, Ebbinghaus (1885) demonstrated, through his own learning of nonsense syllables, how forgetting increases over time. He discovered that, without rehearsal, forgetting was greatest very soon after learning, with around 50% of information being forgotten within an hour. After a delay period of one week forgetting begins to level off. There is currently very little research that has explored the actual period of delay at various stages in real life investigation cases. However, research examining the length of time between first reporting and trial suggest delays ranging from a few months to a number of years (e.g. Plotnikoff & Woolfson, 2009).

Delayed recall of information regarding a witnessed event can be extremely problematic for eyewitnesses. The longer the interval between an experienced or witnessed event and any subsequent questioning can result in a decrease in both the amount and accuracy of information recalled (Ebbesen & Rienick, 1998; Odinot & Walters, 2006). This effect is not just specific to verbal recall of a witnessed event. A meta-analysis of 53 identification studies carried out by Deffenbacher, Bornstein, McGorty and Penrod (2008) revealed that the accuracy of face recognition also decreases as the length of the retention interval increases.

1.2.3 System and Estimator Variables

Several variables both within and outside of the control of CJS can have an impact on eyewitness testimony. The former are referred to as 'system' variables and include factors such as line-up construction, mode of presentation and line-up instructions, whereas the latter are referred to as 'estimator' variables (as their effect can only be 'estimated'), and include factors such as witness characteristics (Wells, 1978). These estimator variables can be further split into 3 categories: situational variables (e.g., seriousness of crime, stress and weapon focus effect), perpetrator factors (e.g., facial distinctiveness or attractiveness) and witness factors (e.g., age and intelligence/cognitive abilities) (Narby, Cutler & Penrod, 1996).

Of particular importance to the research presented in this thesis are witness factors, for example age and cognitive abilities. Both the eyewitness accounts and person descriptions of young children are often much less complete than older children and adults (Goodman & Reed, 1986; Goodman, Rudy, Bottoms, & Aman, 1990) and in addition, children's identification accuracy on line-ups (both perpetrator present and absent) is much lower (Fitzgerald & Price,

2015), although this does appear to improve with age (Brigham, Van Verst, & Bothwell, 1986; Karageorge & Zajac, 2011). Similar findings have been reported at the other end of the age scale with older witnesses providing less accurate recall of an event (Coxon & Valentine, 1997) and also being less accurate on identification line-ups (Memon, Bartlett, Rose & Gray, 2003; Wilcock, Bull & Vrij, 2007).

Studies examining the relationship between intelligence (another witness factor) and eyewitness testimony, in the general population at least, are scarce and overall provide very little evidence of any association (e.g., Brown, Deffenbacher & Sturgill, 1977). With regards to verbal ability, Shapiro and Penrod (1986) in their meta-analysis of 128 facial identification studies found that high verbal ability was related to increased line-up identification accuracy. Whether or not intelligence and cognitive abilities in adults with ID are related to particular aspects of eyewitness testimony, such as amount and accuracy of information recalled and performance on the identification line-ups, will be explored in the relevant sections of this thesis.

1.3 Intellectual Disability

1.3.1 Cognitive Profile and Prevalence

ID can vary in severity, from mild (IQ of approximately 55 to 70) through to profound (IQ of less than 20) and the level of ID has traditionally been defined by cognitive ability, i.e., IQ tests. In recent years however, there has been a shift away from diagnoses solely reliant on IQ towards a more person-centred approach to diagnosis, underpinned by assessments of an individual's adaptive functioning (skills required to carry out everyday tasks) as well as cognitive abilities. According to the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5, 2013) the criteria for a formal diagnosis of ID are: (1) commencement of symptoms during childhood, (2) an IQ of approximately 70 or below i.e. around two standard deviations or more below the general population, and (3) deficits in adaptive functioning (across the conceptual, social and practical domains).

There are a number of known causes of ID which can occur either before birth, for example due to chromosomal abnormalities such as Down syndrome and foetal alcohol syndrome, or during / after birth, such as trauma (during birth), prematurity and infections. However, for many of those diagnosed with ID, the exact cause is unclear (British Institute of Learning Disabilities (BILD), 2011). Whilst it is extremely difficult to provide definitive figures regarding

prevalence rates, it is estimated that around 2% of the general population in the UK has ID (Emerson & Hatton, 2008). It is further estimated that approximately 80% of those diagnosed as having ID fall within the mild range (Henry, Bettenay & Carney, 2011).

Individuals with ID can exhibit cognitive and adaptive deficiencies in areas such as attention, memory, face recognition, language and communication (Henry et. al., 2011). Attention plays a crucial role in many aspects of everyday life (Eysenck & Keane, 2010), and is especially important for eyewitness memory where it influences an individual's ability to attend to, commit to memory (encode) and later recall details about a witnessed event. With regards to the attentional abilities of adults with ID, Sterr (2004), in a test of everyday attention, found that the performance of this group was deficient compared to that of their non-ID peers. Individuals with ID have also been found to demonstrate memorial deficits in certain areas such as working memory (a component of memory responsible for the temporary storage of information) (Swanson & Siegel, 2001) and long-term memory (Nolan, Cottle & Walker, 1985) which in turn could have a negative effect on the encoding, retention and subsequent retrieval of information. In relation to face recognition skills in adults with ID, these have been found to be deficient compared with non-ID peers (Gawrylowicz, Gabbert, Carson, Lindsay & Hancock, 2013). Whilst individuals with ID commonly exhibit deficits in general communication skills (Belva, Matson, Sipes & Bamburg, 2011), they can experience specific problems in providing detailed narrative accounts (Murfett, Powell & Snow, 2008) and demonstrate difficulties in the use of pragmatic language (using language appropriately in social interactions) (Abbeduto & Hesketh, 1997; Hatton, 1998). Taken as a collective, these impairments could have a detrimental impact on several facets of eyewitness skills, such as provision of accurate and intelligible evidence and the correct identification of a perpetrator, which in turn, may contribute to witnesses with ID being perceived as less credible and more suggestible.

1.3.2 Cognitive Development in Individuals with Intellectual Disabilities

Two of the main models of cognitive development in children with ID are the 'developmental' and 'difference' approaches. Advocates of the developmental approach maintain that individuals with ID proceed through exactly the same stages of cognitive development, in the same sequence, as those without ID. The pace of progression is however, slower for those with ID and the final level of development is lower than those without ID (Weisz, 1990). As a result, individuals with ID will exhibit similar levels of development as those at a comparative level of cognitive functioning, i.e., those of a similar mental age (MA). Conversely, those who support the difference approach assert that the cognitive development of children with ID is

not the same as those without ID, it is qualitatively different (Mundy & Kasari, 1990). In this respect the cognitive development of children with ID lags behind MA.

Unlike the supporters of the developmental approach who favour the use of a control group matched for MA, those who advocate a difference approach have traditionally employed control groups matched for chronological age (CA). The argument here is that if the performance of CA matched groups (i.e., those with and without ID), is comparative, this helps to identify cognitive abilities that have been unaffected by ID. However, this argument has been criticised by supporters of the developmental approach who contend that being unable to find any differences between groups does not provide evidence to support the assertion that group performance is comparative. Instead it is more probable that such a result is due to methodological issues rather than a definitive attribute of the group under review (Burack, Russo, Flores, Iarocci & Zigler, 2012).

1.3.3 Prevalence of Abuse Amongst those with Intellectual Disabilities

Individuals with ID are at an increased risk of either witnessing abuse or being victims of abuse compared to individuals without ID (Reiter et al., 2007; Sullivan & Knutson, 2000; Westcott & Jones, 1999). According to an investigation carried out in 2015 by the British Broadcasting Corporation (BBC), across 106 councils in England there were 4,748 reports of sexual abuse against adults with disabilities during the period 2013 – 2015. Of these cases, 63% were against people with intellectual disabilities (Learning Disability Today, 2015). Of course, these cases merely relate to those reported, thus the prevalence of abuse against individuals with ID is in many respects an unquantifiable entity (Brown, Stein & Turk, 1995). The immeasurable nature of abuse is likely exacerbated by the fact that many crimes go unreported (McCarthy & Johnson, 1997) and the reasons for this appear multi-faceted. Limited life experiences, lack of knowledge and understanding of the laws governing sex, not realising an offence has been committed (O'Callaghan & Murphy, 2007), fear of retribution or loss of care (Mansell, Sobsey & Calder, 1992; McCormack et al., 2005) can all be contributory factors in non-reporting. Moreover, conviction rates in cases involving abuse against individuals with ID are often very low. For example, in cases of sexual abuse of adults with ID, it is estimated that out of approximately 1,400 cases reported each year only 1% results in a successful conviction (Mencap, 2001).

Because many crimes against individuals with ID are likely to go unreported there is little chance of perpetrators being caught and convicted. Consequently, individuals with ID may be seen as easy targets which leaves them open to sustained abuse. In an institutionalised setting,

where there is an imbalance of power between those with ID and their carers', individuals may experience multiple abuses by multiple perpetrators (Cambridge et al., 2006; McDonnell et al., 2014). Indeed, in a study of reported allegations of abuse in just two local authorities, Cambridge, Mansell, Beadle-Brown, Milne and Whelton (2011) found that 33% of the confirmed cases involved multiple abuses or multiple perpetrators. In such instances the ability of eyewitnesses to discriminate between numerous similar events committed by a number of different individuals is vital. However, it can be difficult to separate memory details when events are similar (Johnson, Hashtroudi, & Lindsay, 1993). As such, multiple instances of abuse may create source monitoring issues i.e., the inability to differentiate between the actual memory of the event (the experience) and other subsequent memory sources e.g., thoughts about the event (Memon, 1998), as well as problems with source misattribution, i.e., confusing the actual memory origin. This is especially pertinent as research suggests that individuals with ID exhibit general deficits in source monitoring (Lorsbach & Ewing,1995). In this thesis, memory for two separate but similar events will thus be examined.

1.3.4 Criminal Justice Professionals' Perceptions of Individuals with Intellectual Disabilities

Even when crimes are reported individuals with ID may be subject to 'secondary victimisation' by professionals within the Criminal Justice System (CJS). Research suggests that even when individuals with ID report an offence to police they are not taken seriously (Sharp, 2001) which is likely underpinned by a common perception amongst CJS professionals that individuals with ID make less reliable witnesses, provide less accurate eyewitness evidence and are highly susceptible to suggestibility (Brennan & Brennan, 1994). Nathanson and Platt (2005) asked 39 attorneys to complete a questionnaire regarding the perceived eyewitness skills of adults and children without ID, as well as children with ID. They found that the majority of attorneys not only considered the recall of children with ID to be less detailed and contain more inconsistencies than those without ID but perceived this group to be less likely to accurately identify a perpetrator from an identification line-up. Moreover, the children with ID were perceived to be much more suggestible than their typically developing (TD) peers.

Such perceptions also appear to be pervasive amongst jurors, who may perceive witnesses with ID to be authentic and truthful but still struggle to accept their evidence as credible (Stobbs & Kebbell, 2003). Jurors' perceptions of adults with ID are discussed further in section 1.7.

1.4 Interviewing Witnesses

The interviewing of witnesses is a key element of the investigation process (Vrij, Hope & Fisher, 2014) and the provision of an accurate and detailed account of a witnessed event is inextricably bound with the ability of the witness to successfully retrieve information about the event from memory, as well as the manner in which a police officer questions the witness (McLean, 1995).

With regards to the retrieval of information from memory, it has already been pointed out at the beginning of this chapter that memory is a reconstructive process which can be affected by a wide variety of factors, resulting in distortion and failure. We turn now to look at some of these factors and how they can affect recall of a witnessed event.

1.4.1 Factors Affecting Verbal Recall at Interview

Schemas refer to mental concepts that are underpinned by knowledge about the world (Grote-Garcia, 2011). These schemas consist of information relating to what we think should happen or indeed, expect to happen, in given situations for example, what to expect during a trip to the supermarket. Schemas can be extremely beneficial to memory, helping us to make sense of events and experiences by filling in any gaps in order to produce a reconstruction. However, they can also distort memory, as these gaps might be filled with information based on what we feel is *supposed* to happen in a given situation, rather than what actually happened (Eysenck & Keane, 2010). In a study that explored the impact of schemas on eyewitness memory for a bank robbery, Tuckey and Brewer (2003) discovered that where witnesses were exposed to ambiguous information, for example, a robber pointing to a bag *as if* there was a gun in it, participants used schema-consistent information (e.g., that bank robberies involve a gun) to make sense of the ambiguous elements of the crime.

Memories of an event can also be affected by interference, which can be either proactive, where old memories or experiences from a previous event disrupt the retention of new memories, or retroactive, where new memories or experiences disrupt the retention of old memories (Eysenck & Keane, 2010). The misinformation effect, where memory is distorted following exposure to new information, is a good example of retroactive interference and a considerable amount of pioneering research has been carried out in this area by Elizabeth Loftus. In one of Loftus' first experiments into the misinformation effect (Loftus & Palmer, 1974) she showed participants films depicting motor vehicle accidents and asked them to estimate the speed at which the vehicles had been travelling. The wording of the questions was manipulated so that the verbs inferred the speed of the vehicles. Loftus and Palmer found

that those participants who were asked "how fast were the cars going when they 'smashed' into each other?" provided higher estimates of speed than those who were asked the same question with the word 'smashed' replaced with 'hit'. Moreover, a week after viewing the films, in comparison to those in the 'hit' condition, participants in the 'smashed' condition were more likely to respond 'yes' when asked if they had seen broken glass, despite there being none in the film.

Another example of how exposure to subsequent misinformation can distort memory for an event is that of memory conformity, which occurs when memories for an event are influenced by information obtained from other people. This can be especially problematic where there are multiple witnesses, as research studies have demonstrated how easily information discussed between co-witnesses can be incorporated into another witness's account (e.g., Gabbert, Memon, Allan & Wright, 2004; Paterson & Kemp, 2006; Wright & Schwartz, 2010). Indeed, there are a number of real-life cases, such as the murder of Jill Dando in 1999 (Wright, Memon, Skagerberg & Gabbert, 2009) and the Oklahoma bombing in 1995, where memory conformity appears to have had an impact on eyewitness testimony (Gabbert, Memon & Allan, 2003; Memon & Wright, 1999).

1.4.2 The Cognitive Interview

As already mentioned at the start of the chapter, eyewitness evidence plays a pivotal role in the investigation process and at the heart of obtaining an accurate and detailed account of a witnessed crime, is good investigative interviewing. But how can police officers ensure that they obtain a full and accurate account from witnesses? In the 1980s this question, along with an acceptance of the inefficacy of current police interviewing techniques, led researchers to investigate the most effective method of eliciting a detailed eyewitness account, without compromising accuracy. Utilising psychological knowledge about the process of remembering and retrieval, as well as theories of memory (e.g., the encoding specificity hypothesis (Tulving & Thomson, 1973) and multiple trace theory (Bower, 1967)), Geiselman et al. (1984) developed the Cognitive Interview (CI).

The CI sought to overcome many of the problems that were evident with police interviewing practice at that time, such as inappropriate question use, which resulted in a lack of detailed and accurate eyewitness evidence (Geiselman et al., 1984). The CI can be split into four distinct sections as follows: (1) Mental context re-instatement (MCR), (2) Report everything, (3) Reverse order and (4) Change perspective. The theoretical perspective underpinning these different sections or retrieval techniques is that of multiple trace theory (Bower, 1967). This

theory proposes that our memories do not exist as distinct, unrelated events, but instead our memories consist of a pathway of interconnected associations. As such there may be several ways that recall can be prompted. Thus, if one of the CI techniques fails to aid retrieval of a memory, another technique may prove more successful (Memon, 1998).

The MCR instruction encourages witnesses to take themselves back to the event by forming an image in their mind of the environment, to think about the sounds, smells etc., and how they were physically feeling at the time of the event. This technique is underpinned by the 'encoding specificity hypothesis' which asserts that reinstating the context in which information was originally encoded improves access to the stored information (Tulving & Thomson, 1973). In a particularly interesting study of context re-instatement in a naturalistic setting, Godden and Baddeley (1975) asked divers to learn a list of words either on dry land or underwater. They subsequently asked the divers to recall the list of words either in the same environment in which the words were learnt or a completely different one. They found that recall of the words was better when the learning and recall environments were the same. A beneficial effect of context re-instatement, both mental and physical, on recall has since been found in a number of research studies (e.g. Bramão, Karlsson & Johansson, 2017; Smith & Vela, 2001; Wong & Reed, 2011).

The 'report everything' instruction is aimed at encouraging witnesses to provide a free recall narrative of every detail remembered, even information that might not be considered relevant. This is a particularly useful prompt because witnesses may refrain from reporting certain information by mistakenly believing it has no investigative relevance (Geiselman, Fisher, MacKinnon & Holland, 1986) or thinking that the police may already have a lot of information about the witnessed event (Milne & Bull, 1999).

With the 'reverse order' technique witnesses are initially asked to recall the event in chronological order (from beginning to end) and then encouraged to recall the witnessed event in a number of different orders, e.g., working backwards from the end to the beginning (Wilcock, Bull & Milne, 2008). The idea behind this is that when recall occurs this usually happens in the order in which it occurred. However, one of the primary concerns here is that witnesses may use schemas or scripts about what they believe typically happens in a given situation which in turn may result in inaccuracies (the effect of schemas on memory have already been discussed in section 1.3.1 above). By asking a witness to recall the event in a different order the use of schemas or scripts is countered. Geiselman and Callot (1990) demonstrated the effectiveness of utilising such a strategy by asking witnesses to recall an

event in chronological order first and then in reverse order. They found that witnesses asked to recall in this order produced more correct information than witnesses who were asked to recall the event twice in chronological order. However, it is important to note here that other researchers have reported that changing the order of recall has resulted in a reduction in the amount of correct information recalled, together with an increase in confabulations (Dando, Ormerod, Wilcock, & Milne, 2011; Davis, McMahon & Greenwood, 2005).

In the case of the 'change perspective' technique witnesses are requested to recall the event from another person's perspective, i.e., to mentally put themselves' in another person's shoes, such as another witness or the victim. The objective with this, as with the 'reverse order' element of the CI, is to reduce the impact that existing schemas or scripts might have on recall. One of the main concerns with instructing witnesses to change perspective is that they might feel as if they have to 'make information up' perhaps because they find it difficult to put themselves in someone else's place.

Whilst overall, the CI was of huge benefit to the police and resulted in the elicitation of much more detailed witness accounts (Köhnken, Milne, Memon, & Bull, 1999) it became evident that further guidelines were required concerning the management of social and communicative aspects of a police interview. This resulted in a revision to the CI which became known as the Enhanced Cognitive Interview (ECI). The ECI is comprised of 7 distinct phases: (1) Establish rapport, (2) Explanation of interview aims, (3) Free recall, (4) Questioning, (5) Retrieval, (6) Summary and (7) Closure (Fisher & Geiselman, 1992).

The main aims of the rapport building phase are to open a dialogue with the witness, and to put them at ease, with the interviewer adopting an active listening role. In the second phase, which includes the 'report everything' instruction, it's important for the interviewer to let the witness know what exactly is expected of them and to let the witness feel as if they have control over the interview. The third phase involves the context reinstatement instruction and free report, with the fourth phase consisting of detailed questioning of the witness, using open and closed questions where suitable. In the fifth phase witnesses may be asked to change the order of recall as well as perspective. The sixth phase sees the interviewer summarising what the witness has recalled and allows the addition of newly recalled information if necessary, while the final phase brings the interview to a close, by thanking the witness and addressing any questions or queries they may have.

1.4.3 The (Enhanced) Cognitive Interview versus the Structured Interview

The efficacy of both the CI and ECI has since been explored in numerous studies, often in comparison to a structured or standard police interview. The structured interview (SI) is commonly based on best practice interviewing guidelines, such as Achieving Best Evidence in Criminal Proceedings: Guidance on interviewing victims and witnesses, and guidance on using special measures' (ABE; Ministry of Justice, 2011) and thus incorporates phases of rapport, free narrative, and questioning. However, unlike the CI or ECI, the structured interview does not include the cognitive components: MCR, reverse order or change perspective techniques.

The beneficial effect that the (E)CI has in increasing the amount of information recalled (in comparison to a SI) has been demonstrated in both laboratory studies (e.g., Geiselman et al., 1986) and in the field (e.g., Fisher, Geiselman & Amador, 1989). Moreover, Köhnken et al. (1999) in their meta-analysis of research in this area found that use of the CI resulted in the recall of significantly more correct information than a SI (or standard interview) in 51 out of the 55 studies reviewed. These findings were further corroborated by a subsequent meta-analysis carried out by Memon, Meissner and Fraser (2010), although these researchers additionally reported a small increase in incorrect information with the use of the CI.

1.4.4 Use of the Cognitive Interview in the UK

In 1992, following a review of current police interviewing practices, the PEACE model of investigative interviewing was introduced in England and Wales (PEACE stands *for planning* and *preparation*, *engage* and *explain*, *account clarification* and *challenge*, *closure* and *evaluation* – College of Policing, 2017). The CI, which was an essential component of the 'account' phase of PEACE, became part and parcel of the standard package of interview training for police officers (Howitt, 2009).

Following the CI's introduction as the interview of choice for investigative purposes, Kebbell, Milne and Wagstaff (1999) examined both police officer's perceptions of it, as well as how often it was used in the investigative process. Whilst police officers reported that overall, they found the CI useful, certain components of the CI were deemed to be more useful and more frequently used than others. For example, establishing rapport was found to be more useful and more frequently used than reverse order or change perspective. In addition, police officers expressed concern about using the CI because they perceived it to be time consuming. In a more recent study by Dando, Wilcock and Milne (2008) the researchers found that police officer's perceived usage and efficacy of certain elements of the CI were in line with those of Kebbell et al. (1999).

1.4.5 Use of the Cognitive Interview with Adults with Intellectual Disabilities

A substantial amount of research has been carried out on the effectiveness of the CI in improving recall however, almost all of this has focussed on the general population, with very little research investigating the impact of the CI on recall of adults with ID.

Research on *children* with *mild* to *moderate* ID has found that use of the CI as opposed to a SI results in an increase in the amount of information recalled, including background and contextual details, whilst also promoting the provision of a coherent narrative account (Gentle, Milne, Powell & Sharman, 2013). Milne, Sharman, Powell and Mead (2013) in their study of children with *severe* ID also found that the CI resulted in the recall of more correct information compared to the SI, with no increase in incorrect details or confabulations (i.e., recall of false information that did not occur). However, there was no difference between the CI and SI with regards to the children's susceptibility to misleading questions (although the researchers did point out that the levels of suggestibility overall were fairly low).

In the studies that have included *adults* with ID, results are broadly similar to those of children with ID, especially in relation to the amount of information recalled. Milne, Clare and Bull (1999) showed *adults* with *mild* ID a video of a road accident and interviewed them about it 24 hours later using either a SI or a CI. The results revealed that the participants interviewed using the CI recalled more correct details compared to the SI group, although the CI group produced more confabulations, especially in relation to person information. Unsurprisingly, the researchers noted that some of the adults with ID appeared to find the reverse order recall instruction difficult to understand.

The above findings regarding correct information were further replicated in a study by Clarke, Prescott and Milne (2013), again utilising a sample of adults with mild ID. Use of the CI, as opposed to the SI, resulted in almost a 40% increase in correctly recalled information for the adults with ID, without any detrimental impact on accuracy. Whilst use of the CI did not lead to an increase in incorrect information, there was no difference between the CI and SI conditions with regards to confabulations. These findings regarding confabulations are inconsistent with those of Milne et al.'s (1999) study, where an increase in confabulations with the CI was reported. Of note here though is that Milne et al. (1999) suggest that their findings regarding confabulations may have been due to one interviewer's use of inappropriate question types, e.g., misleading and forced-choice, an issue which is explored further in section 1.4.7 below.

1.4.6 Achieving Best Evidence (ABE) in Criminal Proceedings

In the UK, the main document providing guidance for interviewing vulnerable witnesses is the ABE (2011). The ABE provides guidelines, underpinned by best practice, in relation to preparing, planning and conducting witness interviews, as well as preparing witnesses for court and the actual court appearance itself. It also sets out the procedures and processes that can be put in place to support vulnerable individuals in their role as witnesses. The ABE guidelines relate to the interviewing of vulnerable witnesses (including witnesses under 18 years of age and witnesses with a mental disorder, learning disability or physical disability), as well as intimidated and significant (i.e., key) witnesses, but for the purposes of this thesis the focus will primarily be on the guidelines specified for witnesses with learning disabilities. With regards to the format of the interview that the ABE proposes should be used with vulnerable witnesses, this constitutes what is referred to as a 'phased approach' and consists of four main phases: establishing rapport, initiating and supporting a free narrative account, questioning and closure. The ABE guidelines stress the importance of establishing good rapport and where necessary, ensuring that the witness understands the difference between a truth and a lie. An uninterrupted free narrative account should be initiated by means of an open-ended prompt, with the interviewer adopting an active listening and non-authoritative role. It is also suggested that the interviewer bears in mind the susceptibility of individuals with ID to acquiesce. 'Appropriate' questions, encompassing open-ended and specific-closed should then be asked to explore the witness's account further and whilst the ABE does not caution *against* the use of forced-choice and leading questions, it merely states that these should only be used as a 'last resort'. Once questioning is complete the interview should be summarised and the witness invited to add new information if anything comes to mind and the interview closed by thanking the witness and providing contact details in case any other information is recalled.

The interview used in this thesis is a detailed witness interview protocol based on current police best practice. It is consistent with the phased approach advised in the ABE guidelines.

1.4.7 Use of Different Question Types

Research carried out with individuals with ID has found that the amount and accuracy of information produced during an interview very much depends on the type of questions used. Studies that have examined the impact of different question types on the amount and accuracy of information recalled has, for the most part, focussed on children, with only a handful exploring this issue in adults with ID.

The key findings regarding children and young people with ID are that free and open-ended questions are most effective in eliciting accurate information (Collins & Henry, 2016; Gordon, Jens, Hollings & Watson, 1994; Henry & Gudjonsson, 1999; 2003) whereas specific questions can result in lower accuracy rates (Agnew & Powell, 2004). With regards to misleading questions, these can increase levels of suggestibility (Agnew & Powell, 2004; Henry & Gudjonsson, 2007) whilst leading closed questions may result in children agreeing with what the interviewer says (Gordon et al., 1994; Henry & Gudjonsson, 2007).

With regards to adults with ID, researchers have reported results broadly in line with those of children with ID. For example, Perlman, Ericson, Esses and Isaacs (1994) found that general questions (e.g., tell me some more about the man on the bike) and free recall questions were the most effective question types for eliciting accurate and reliable information. In addition, Clare and Gudjonsson (1993) in their investigation of interrogative suggestibility reported increased levels of suggestibility in response to leading questions, whilst Heal and Sigelman (1995) noted that the inclusion of closed questions (yes/no) in interviews with adults with ID can result in higher rates of acquiescence (i.e., answering 'yes').

Studies have also demonstrated that the accounts of both adults (Ternes & Yuille, 2008) and children (Agnew & Powell, 2004) with ID are often much less complete (i.e., contain fewer details) than their non-ID peers. This finding could be problematic in an investigative interview as a lack of detail may encourage interviewers to resort to using more prompts and inappropriate questions, for example, closed, in order to glean further information from witnesses with ID (Milne et al., 2013).

In spite of research demonstrating the negative effect that certain questions types such as leading and closed questions can have on recall, studies of what actually happens in the field have shown that these types of questions are still used by police officers during interviews. Both Cederborg and Lamb (2008) and Cederborg, La Rooy and Lamb (2008) in their examination of transcripts from forensic interviews of children and young adults with ID, reported that police officers rarely used free-recall questions and that the interviews mainly consisted of yes/no and option-posing questions, which, they noted, resulted in the children and young adults providing unreliable and contradictory information.

1.4.8 Use of Repeat Interviews

The issue of repeat interviews has attracted a considerable amount of interest from researchers because of the debate around whether or not they have a beneficial or

detrimental impact on eyewitness evidence. Indeed, the ABE guidelines (2011) recommend the use of a single interview where at all possible, and only advise the use of a subsequent interview in a given number of circumstances (e.g., in the case of new lines of enquiry or where new evidence is provided from other witnesses). However, the use of repeat interviews is an important issue in the current instance, as the abuse of adults with ID can often involve multiple perpetrators (Cambridge et al., 2011) and as such individuals with ID may be required to undergo further interviews.

Evidence exists to suggest that repeat interviews may facilitate reminiscence, i.e., recall of additional information not previously divulged, or hypermnesia, an increase in the total amount of information recalled in both children (La Rooy, Pipe & Murray, 2005) and adults without ID (Dunning & Stern, 1992). However, there is concern that repeat interviews may lead to the strengthening of memory for any inaccuracies reported in the earlier interview, whilst also leaving individuals open to the potential of both misinformation and source monitoring errors in the period in-between interviews (Brown, Lewis & Lamb, 2015).

Findings from research that has examined the impact of repeat interviews on the eyewitness accounts of children with ID appear to be mixed. Brown et al. (2015) investigated the effect of repeat interviews on recall of an experienced event in children with ID. Half of their sample were interviewed twice, after a one-week delay and again following a delay of six months, and the other half merely interviewed once after six months. Children interviewed twice recalled more information with higher accuracy rates than those children interviewed only once. In addition, the repeat interview resulted in recall of new information not previously disclosed in the first interview.

In another study involving children with ID, Henry and Gudjonsson (2003) also reported an increase in information with a second interview. However, when compared to the first interview, the repeat interview actually led to an increase in both suggestibility (to open-ended misleading questions, such as 'what colour was the lady's coat?') and changed responses, as well as more errors during free-recall. Furthermore, some researchers have reported that the use of repeat interviews results in a decrease in the amount and accuracy of information recalled (Gordon et al., 1994; Michel, Gordon, Ornstein & Simpson, 2000).

It is, however, important to draw attention here to the fact the length of delay utilised between the repeat interviews in each of the studies described above was inconsistent and varied widely which could make direct comparison of the results problematic. Brown et. al.,

(2015) used delay periods of one week and six months, Henry and Gudjonsson's (2003) were one day and two weeks whilst Gordon et al. (1994) and Michel et al. (2000) both used delay periods of six weeks (following immediate recall).

It is also important to clarify the difference between repeat interviews that are carried out in a forensic setting and those conducted in a research environment. In a forensic setting repeat interviews may be carried out on the same topic (e.g., to confirm the reliability of information already provided in light of new evidence) or on different topics (e.g., where multiple perpetrators and multiple instances of abuse are involved). Whereas in a research setting repeat interviews often involve repeated questioning about the same topics. This is an important distinction to make since these different types of repeat interviews may have a different impact on eyewitness evidence (e.g., unlike repeat interviews on different topics, those conducted for the same topic may result in contradictory information).

To date, there has been no research that has explored the effect of repeat interviews on the accuracy and reliability of the eyewitness accounts of *adults* with ID, thus this will be one of the main aims of the study described in chapter 3.

1.5 Identification Line-ups

Eyewitness identification evidence is deemed to be one of the most persuasive forms of evidence available to jurors (Cutler et. al. 1988). There is an oft quoted adage that there is nothing more credible than a witness standing up in front of a jury and proclaiming that the person in the dock was the one that committed the purported crime. This provides the jury with concrete proof of a relationship between the defendant and the crime, thereby signalling that the defendant is guilty (Wells et al., 1998).

However, as already pointed out at the very beginning of this chapter, eyewitness identification is not always as accurate as it is believed to be, prompting a considerable amount of research in this area. As concern has focused on mistaken identifications, researchers have sought to investigate this issue by using both perpetrator present (where the police suspect is in the line-up) and perpetrator absent (where the perpetrator is not in the line-up, i.e., simulating the situation where the police suspect is innocent) identification line-ups.

1.5.1 Identification Line-up Accuracy in Children

With regards to individuals from the general population, Pozzulo and Lindsay (1998) conducted a meta-analysis of identification studies involving children *and* adults. They found that, on perpetrator present line-ups, very young children, i.e., under five years, were less likely to make a correct identification compared to adults. However, children over five years demonstrated identification accuracy rates that were comparable to the adult group. Conversely, on perpetrator absent line-ups the level of correct rejections (i.e., where the participant states that they do not recognise or see the perpetrator in the line-up) for both younger and older children was considerably lower than that of the adults. Findings such as this appear to suggest that witness factors, such as age and cognitive ability, may play a role in identification accuracy.

1.5.2 Identification Line-up Accuracy in Adults with Intellectual Disabilities

If cognitive ability does indeed have an impact on identification accuracy, it follows that those individuals who experience cognitive deficits, such as adults with ID, are likely to experience problems in accurately identifying a perpetrator from a line-up. Unfortunately, studies that have examined this issue are limited in number and moreover, their findings have been inconsistent, thus making it hard to draw any definitive conclusion.

In the first study to be conducted in this area, Ericson and Isaacs (2003) found that adults with ID were as accurate as adults without ID in correctly identifying a perpetrator from a perpetrator present line-up, yet false identification rates for a line-up containing an innocent suspect (a perpetrator absent line-up) were higher for the ID group. In contrast, Ternes and Yuille (2008) reported that adults without ID were more accurate than adults with ID in identifying a perpetrator from a perpetrator present line-up but performance of the groups on the perpetrator absent line-up was comparable. In a more recent study by Wilcock and Henry (2013) the performance of adults with ID was deficient compared to adults without ID on *both* the perpetrator-present and perpetrator-absent line-ups.

Due to the relative lack of research on identification accuracy in adults with ID, one of the key aims of this thesis is to examine the ability of this group to accurately identify two perpetrators from perpetrator present and perpetrator absent line-ups.

1.5.3 Factors Affecting Identification Evidence

As with eyewitness evidence, there are a number of variables that can influence the accuracy of eyewitness identification evidence, known as 'system' and 'estimator' variables, and a

distinction between the two has already been provided at the beginning of this chapter. With regards to the research presented in this thesis, two variables are of particular interest: facial recognition ability (an estimator variable) and line-up instructions (a system variable).

1.5.3.1 Facial Recognition Ability

In many respects it seems a rather common-sense assumption that someone who may have good facial recognition skills would be accurate in identifying a perpetrator from a line-up. But does the research bear testament to this assumption? Morgan et al. (2007) conducted research to explore the relationship between eyewitness identification accuracy and facial recognition abilities of soldiers undergoing survival training. As part of the training programme the soldiers were placed in a mock prisoner of war camp and subsequently interrogated. Two days later, the soldiers' facial recognition abilities were tested and they were subsequently asked to identify their interrogator from a photographic line-up. Findings revealed that there was a significant positive association between performance on the facial recognition test and identification accuracy. Andersen, Carlson, Carlson and Gronlund (2014) in their study of eyewitness identification and individual differences, which used both sequential (images presented one at a time) and simultaneous (images presented altogether) line-ups, also found that those with better facial recognition abilities made more correct identifications on the eyewitness identification task, but that the effect was more pronounced on simultaneous as opposed to sequential line-ups.

Whilst there appears to be little research (that the researcher is aware of) that has specifically focused on the relationship between facial recognition ability and identification performance in children, general research in this area appears to suggest that whilst younger children may possess some basic skills in this area, overall the ability to accurately identify faces does not fully develop until much later on, i.e., during adolescence (Carey, Diamond & Woods, 1980; Mondloch, LeGrand & Maurer, 2002). It is possible, therefore, that this could have an impact on identification accuracy in young children.

With regard to facial recognition ability in adults with ID and its impact on identification accuracy, there is currently very little research in this area. However, one study by Gawrylowicz et al. (2013) is of relevance here. The researchers examined facial recognition and facial description skills in adults with mild ID. In the first study, which looked at facial recognition, participants were presented with a set of five familiar and five unfamiliar faces and then asked to indicate whether or not they had seen the faces previously. It was found that the recognition performance of the adults with ID was poorer than that of their non-ID

peers. In the second study, which explored facial description skills, participants were asked to describe five unfamiliar faces. Findings again indicated that the performance of the adults with ID was much poorer than that of the non-ID group, specifically, they recalled substantially less facial information.

To shed some further light on an association between facial recognition ability and identification accuracy in adults with ID, a test of facial recognition will be included in this thesis.

1.5.3.2 Line-up Instructions

Clark (2005) maintains that when witnesses are informed that they will be asked to identify a perpetrator from a line-up, it's quite probable that this will lead them to believe that a perpetrator has actually been apprehended and thus they may feel obliged to make a definitive line-up decision. In order to mitigate against this, it's considered helpful to provide the witness with 'non-biased' instructions advising them that the perpetrator may or may not be present in the line-up (as opposed to 'biased' instructions where witnesses are not provided with such cautionary information). Malpass and Devine (1981) carried out a study to look at the impact of biased and non-biased instructions on line-up identification performance. They discovered that non-biased instructions dramatically reduced the number of false identifications on a perpetrator absent line-up (from 78% to 33%) without a detrimental impact on correct identifications. In a meta-analysis of studies examining the effect of 'biased' line-up instructions on identification accuracy, Steblay (1997) reported that overall, these instructions resulted in more choices being made across both perpetrator present and perpetrator absent line-ups. Although the instructions did not appear to have a detrimental impact on accuracy on the perpetrator present line-ups, there was a negative effect for perpetrator absent line-ups, with a substantial decrease in identification accuracy.

A study by Pozzulo and Dempsey (2006) which included *both* biased and non-biased line-up instructions, found that the use of non-biased instructions, i.e., informing participants that a perpetrator 'may or may not be present', resulted in a higher number of correct rejections (i.e., fewer false identifications) on a perpetrator absent line-up (compared to biased instructions) for both children (10 – 14 years) and adults (18 – 42 years). However, other research that has focused specifically on children has found that even when they are presented with non-biased line-up instructions, children will still make a choice on a perpetrator absent line-up e.g., Keast, Brewer and Wells (2007). A number of possible reasons for this behaviour have been suggested. For example, children may acquiesce by giving the

answer they think the person in authority wants (Ceci & Bruck, 1993). In addition, children may misunderstand the true purpose of the line-up, thinking that the researcher is telling them that the perpetrator is actually present, i.e., not heeding the additional caution that the perpetrator may not be in the line-up (Dunlevy & Cherryman, 2013).

None of the existing studies exploring line-up identification performance in adults with ID have addressed the issue of the effect of type of line-up instruction, i.e., biased versus non-biased instructions, on identification performance. However, both Ericson and Isaacs (2003) and Wilcock and Henry (2013) administered non-biased instructions prior to their identification line-ups and yet the adults with ID still demonstrated higher rates of choosing compared to the non-ID groups, possibly suggesting that this group were disregarding the instructions.

Of the three studies that have explored identification performance in adults with ID (see 1.5.2 above), only one of them (Wilcock & Henry, 2013), actually asked participants for their recall of the non-biased instructions that had been administered prior to viewing the line-ups. Of the 25 adults who had ID, only six were able to correctly recall the line-up instructions compared to 22 (out of 26) of the adults without ID. Whilst Ericson and Isaacs (2003) did not explicitly ask participants about their memory for the line-up instructions they did, however, ask those participants who did not make a choice to explain the reason why. The researchers noted that only one of the adults with ID attributed their non-choosing to the belief that the perpetrator was not in the line-up. This suggested that the majority of the adults with ID either could not remember or had misunderstood the line-up instructions.

The ability of adults with ID to accurately remember line-up identification instructions will be investigated in the identification study reported in chapter 4 of this thesis. Non-biased line-up instructions will be administered before the identification task and participants' memory for these instructions will be assessed once the task has been completed.

1.5.4 Code D (2017) of the Police and Criminal Evidence Act (1984)

In the UK, Code D (2017) of the Police and Criminal Evidence Act (1984) (PACE Code D) sets out the procedures that should be undertaken by police officers conducting identification line-ups. According to PACE Code D (p. 4), these procedures were created with two key aims in mind: 'to test the eye-witness' ability to identify the suspect as the person they saw on a previous occasion' and to 'provide safeguards against mistaken identification'.

The Code helps to counter the potential effect on identification accuracy of a number of system variables (see section 1.2.3 for a definition of these). It provides guidance relating to the construction of a line-up as well as its administration and presentation. In relation to construction, it states that a line-up 'must include the suspect and at least eight other people who, so far as possible…. resemble the suspect in age, general appearance and position in life' (PACE Code D 2017, Annex A, p.37). These 'other people', i.e., foils, are chosen on a 'match to suspect' basis (from a vast database of visual images).

With regards to mode of presentation, PACE Code D advises that identification can take place by three main methods including video identification (utilising moving images), identification parade (where the suspect is placed in a line with foils) and group identification (where the suspect is viewed in an informal group of people). The guidelines specify that, first and foremost, a suspect should be offered a video identification, unless this type of presentation is impracticable or impossible, thus this is the primary method of identification for the majority of Police Forces in the UK.

The way in which a line-up is presented, including the instructions that should be administered prior to it being undertaken, are also directed by guidance laid down in PACE Code D. These guidelines state that 'immediately before the images are shown, the eye-witness shall be told that the person they saw on a specified earlier occasion may, or may not, appear in the images they are shown and that if they cannot make an identification, they should say so' (PACE Code D 2017, Annex A, p.38). In addition, although line-ups can be presented simultaneously (images shown all together) or sequentially (images shown one at a time), the guidelines state that identification line-ups should be displayed sequentially. The line-ups used in the identification study referred to in this thesis were therefore constructed and administered in accordance with the guidance set out in PACE Code D.

It is important to point out that the PACE Code D sequential presentation which was used in this thesis, differs from the type of 'strict' sequential presentation often used in much of the identification research. With the strict sequential line-up, once an identification is made the line-up is usually halted, whereas with the PACE Code D sequential presentation, witnesses are instructed to watch the entire line-up at least twice before making a decision. Also, of note is that fact that the strict sequential line-ups often used in identification research have been found to produce fewer correct identifications when compared to PACE Code D compliant sequential line-ups (Wilcock & Kneller, 2011).

1.6 Predicting Eyewitness Performance from Individual Differences on Cognitive Measures

Research has demonstrated that when asked to recall information about a witnessed event and invited to identify perpetrators from identification line-ups, some individuals are much better than others (Darling, Martin, Hellman & Memon, 2009). It is likely that such variation in eyewitness performance is underpinned by differences in cognitive abilities and it is thus highly probable that these disparities in cognitive abilities extend to other populations, such as those with ID.

Being able to identify which cognitive abilities underlie the various facets of eyewitness memory (in this instance, verbal recall and visual identification) would in turn help predict eyewitness performance. Such an ability would prove to be of enormous benefit to professionals within the CJS, particularly in relation to measures that can be obtained with ease, e.g., age, facial and verbal memory etc.

In relation to adults from the general population, existing research has demonstrated that eyewitness performance may be linked to a number of cognitive factors such as age (West & Stone, 2013) and facial recognition abilities (Bindemann, Brown, Koyas & Russ, 2012). For example, Russ, Sauerland, Lee and Bindemann (2018) discovered that scores on two tests of unfamiliar face recognition, the 1-in-10 task and the Cambridge Face Memory Test, were correlated with line-up identification performance.

Individual differences in cognitive abilities, such as age, (Geddie, Fraddin & Beer, 2000) language (Burgwyn-Bailes, Baker-Ward, Gordon & Ornstein, 2001) and memory (e.g., Henry et al., 2017) have been shown to be effective predictors of eyewitness performance in TD children. Furthermore, a number of these cognitive abilities have also been found to be useful as predictors of eyewitness performance in *children with ID*. For example, Henry et al. (2017) discovered that age and memory (facial memory and memory for stories) were all significant predictors of eyewitness recall in children with (and without) autism.

However, very little is known about the extent of individual differences in cognitive abilities in *adults with ID*, nor their usefulness in predicting eyewitness performance, although it is thought likely that such variations will parallel those observed amongst the general population. To this end, the research presented in chapter 5 describes an exploratory study of individual differences in cognitive abilities of adults with ID and their usefulness as predictors of eyewitness performance.

1.7 Jurors and Eyewitness Evidence

Mock juror studies have consistently demonstrated the emphasis jurors place on eyewitness testimony when making a decision about a defendant's guilt (Cutler et al., 1988; Cutler et al., 1990). The perceived accuracy and reliability of eyewitness evidence is of utmost importance in jury decision making. Berman, Narby and Cutler (1995) investigated the impact of inconsistent eyewitness evidence on juror's perceptions of a witness as well as on a defendant's guilt. Participants (mock jurors) were shown a video of a witness being cross-examined on their eyewitness evidence (about an armed robbery) by an attorney. The amount of inconsistency contained in the eyewitness evidence was manipulated. Findings revealed that inconsistencies in eyewitness evidence led to mock jurors perceiving the witness to be less credible and the defendant less guilty.

1.7.1 Jurors' Perceptions of Eyewitness Evidence from Children

As jurors are members of everyday society, it is likely that they bring to the courtroom various perceptions, beliefs and stereotypical views about certain members of society, such as children, older adults and adults with ID, which could have an effect on the jury decision making process.

Children in particular have traditionally been perceived as suggestible and thus unreliable as witnesses (Brainerd & Reyna, 2012). However, these perceptions may not always be justified. Whilst there is evidence to support the notion that children can be suggestible, this is very much tempered by a swathe of social and cognitive factors such as the type of questions used during forensic interviews, as well as the age and developmental level of the child (Ceci & Bruck, 1993). With regards to research that has examined jurors' perceptions of evidence from children, the findings are somewhat mixed. Some studies have reported that children are perceived by mock jurors to be less credible eyewitnesses compared to adults (e.g. Goodman, Golding, Helgeson, Haith & Michelli, 1987) whilst, other research has found the opposite to be true (e.g., Bottoms & Goodman, 1994). Moreover, it also appears that a child witness's perceived credibility may depend somewhat on whether they are a victim or an eyewitness (i.e., a bystander). Pozzulo and Dempsey (2009) presented mock jurors with mock transcripts containing testimony from either a witness (bystander) or victim who was either a child or an adult. The mock jurors were asked to rate the credibility of the witness/victim. The researchers found that the child victim was perceived to be as credible as the adult victim, however, the perceived credibility of the child bystander was less than that of the adult bystander.

1.7.2 Jurors' Perceptions of Eyewitness Evidence from Adults with Intellectual Disabilities

Another group who are often perceived, particularly by professionals within the CJS, to be unreliable and less credible compared to individuals from the general population, are witnesses with ID (Brennan & Brennan, 1994; Nathanson & Platt, 2005). In respect of jurors, it appears that even though they may perceive witnesses with ID to be truthful, the credibility of their evidence is still called into question (Stobbs & Kebbell, 2003).

As with children, it would appear that existing stereotypes and attitudes may play a role in the perceived credibility of evidence from individuals with ID. Peled, Iarocci and Connolly (2004) presented participants with testimony described as being either from a 15-year old with mild ID (with a MA of 10 years), a TD 15-year old or a TD 10-year old. They informed participants that the young person with ID would have an approximate MA of 10 years and thus be functioning comparative to a TD 10-year old. Participants were asked to complete credibility questionnaires for each of the young people, which consisted of several different measures e.g. perceived accuracy, suggestibility and consistency of testimony. They found that the young person with ID was perceived to be less credible than both the TD 15-year old and the TD 10-year old, thus merely informing mock jurors that a witness had ID resulted in ratings of evidence transcripts as less convincing.

It is also important to point out that jurors may not always be aware that a witness has ID (e.g., the witness may not have divulged this information to their legal team, or they may not want this information revealed to jurors) and thus they may instead rely on an assessment of credibility based on the amount and accuracy of information presented in the eyewitness testimony. Henry, Ridley, Perry and Crane (2011) asked mock jurors to read written transcripts from children with and without ID and subsequently provide credibility ratings for several measures such as believability, credibility and honesty. In this study the researchers did not inform the mock jurors that some of the transcripts were from children with ID, as they wanted to ascertain whether credibility of the witness was linked to existing stereotypes or to differences in eyewitness testimony. They discovered that the mock jurors rated the transcripts of the children with ID as less credible than their TD peers which, they argued, was due to the fact the transcripts from this group contained less information and fewer details.

The study reported in chapter 6 seeks to build upon existing research in this area by investigating mock juror perceptions of adult eyewitnesses with ID, whose eyewitness evidence varies according to level of recall (amount of information recalled). The study also

investigates whether the type of information mock jurors receive about the witness has an effect on perceived credibility.

1.8 Thesis Aims

As is evident from the above literature review, very little is currently known about the eyewitness skills of adults with ID. It is also apparent that there are still significant gaps in the minimal amount of research that has been carried out in this area. This thesis seeks to go some way towards redressing these issues. Its key aims, together with some of the questions it hopes to explore, are:

(1) To examine the quality, accuracy and reliability of eyewitness memory for two similar events. Two of the main questions here are: (a) Can adults with ID provide accurate and reliable eyewitness accounts of two separate but similar events? (b) Will eyewitness recall of two similar events be subject to source monitoring errors?

(2) To assess the impact of repeat interviews on the accuracy and reliability of eyewitness evidence. Questions of interest here include: (a) Will the repeat interviews result in new recalled details about the event? (b) Will repeat interviewing lead to changed responses?

(3) To investigate the performance of individuals with intellectual disabilities in the identification of multiple perpetrators from video identification line-ups. The specific questions that will be addressed here are: (a) Can adults with ID accurately identify the perpetrators from a perpetrator present line-up? (b) Will adults with ID still make a choice from a perpetrator absent line-up? (c) Will the adults with ID be able to remember the line-up instructions *and* understand the purpose of the line-up?

(4) To investigate whether individual differences on several cognitive measures are effective predictors of eyewitness performance. The focus here will be on whether: (a) MA, memory and receptive vocabulary might be significant predictors of the amount of correct information recalled on a detailed witness interview, (b) Confabulation scores will be related to the number of confabulations produced in a detailed witness interview, (c) Facial memory scores and MA will predict line-up identification accuracy, (d) Receptive and expressive vocabulary scores will predict understanding of the purpose of the identification line-ups, (e) Receptive and

expressive vocabulary scores will predict memory for the non-biased line-up identification instructions.

(5) To assess mock juror perceptions of witnesses with intellectual disabilities. Some of the key questions that will be examined are: (a) Are adults with ID perceived as credible and reliable witnesses? (b) Do jurors perceive the testimony of witnesses with ID to be accurate, reliable and credible?

Prior to the chapters covering experimental data, a general methodology chapter has been included (chapter 2), which outlines the key methodological issues and challenges relating to research involving adults with ID and explains how these were accounted for during the course of the research. Chapter 3 presents a research study examining the interviewing of adults with ID and TD children, whilst chapter 4 focuses on the ability of these two groups to accurately identify perpetrators from ecologically valid video identification line-ups. Chapter 5 provides details of a preliminary exploration of the predictive usefulness of cognitive measures in relation to eyewitness performance, whereas the focus of chapter 6 is on mock juror perceptions of eyewitness evidence from adults with ID, using a sample of interviews from chapter 4. The final chapter (chapter 7) reviews the findings from each of the experimental chapters, drawing conclusions about the contribution of this research to existing knowledge and theory, whilst also discussing the practical implications of the findings for the CJS.

Chapter 2

Research on Adults with Intellectual Disabilities – Methodological Challenges

2.1 Introduction

Researchers carrying out studies in the area of intellectual disability (ID) face a number of very unique and challenging methodological issues. As such, this area of research is often referred to as 'hard' (Bull, 2013) with many preferring to shy away from conducting studies in this field. This can result in individuals with ID being excluded from research, thereby further marginalising a group already on the periphery of society.

This chapter seeks to give an overview of these methodological issues as well as explain how they were taken into account during the course of the research. It starts with a discussion of the difficulties the researcher faced during recruitment and how these were overcome. Participant matching is then discussed, with particular reference to the distinction between matching processes based on chronological and mental age, as well as individual and group. An explanation as to which matching approaches were adopted during the course of the research is provided, along with the rationale behind these decisions. Clarification of how an appropriate sample size was ascertained is then detailed, before an outline of the much-debated subject of ethics and 'informed consent', including a discussion of how these were accounted for in the current research. Following this, an overview of issues related to comorbidity and diagnostic confirmation are highlighted. The various cognitive and memory assessments employed in the research are described together with details of the reasoning behind the delay periods chosen for each of the stages of the research. The chapter finishes by examining the strategies put in place to ensure 'accessibility' of the language used for information and communication purposes throughout the whole research process.

2.2 Recruitment Procedures

The recruitment of adults with ID was particularly challenging and indeed, extremely time-consuming. Many of the groups and associations approached during the recruitment process either did not respond to the researcher's enquiries (by either telephone or email), or felt that they were unable to commit to the amount of time required to assist with recruitment. In addition, the researcher felt that one or two groups/clubs who declined the opportunity of being involved with the research, were being extremely cautious, possibly out of concern for protecting the adults with ID from exploitation. Whilst this was understandable given the

rather unscrupulous and questionable nature of some of the research studies from previous decades (see the section on general ethics and informed consent for a further discussion on this), it can also be viewed as a rather sad decision which excludes this group from making a valuable contribution to desperately needed research. Eventually however, after much perseverance and a number of face-to-face meetings, several establishments agreed to assist with recruitment including: two arts centres, a day centre, a local farm (offering work experience for adults with ID) and a wellbeing hub.

First and foremost, efforts were focused on the recruitment of adults with ID, mainly because it was envisaged that it would be much harder to recruit this sample and also because it was necessary to ascertain the mental ages (MAs) of this group so that the researcher knew the approximate 'target' ages for the TD comparison group.

2.3 Participant Matching

2.3.1 Chronological versus Mental Age Matching

Much psychological research involves the inclusion of a comparison group, whose purpose is to provide a baseline measure against which to compare results obtained from the group under review (Coolican, 2009). What is important however, is that steps are taken to ensure that the groups are appropriately matched on any control variables. Matching in this way helps to negate the possibility that any observed between-group differences on the variables under review have not arisen as a result of differences between the groups on the control variables.

In research involving individuals with ID the issue of matching on a control variable often revolves around that of age. Whilst this initially seems a straightforward matter, things are not as simple as they first appear, primarily because of the specific distinction between many different types of age e.g., biological, chronological and mental. Research that focuses on individuals with ID usually concerns itself with a distinction between chronological age (CA) (determined by date of birth) and mental age (MA) (based on intellectual ability, ascertained via IQ tests). Historically, this distinction has been an issue linked to the domain of research on children with ID, particularly in relation to the difference and developmental models of cognitive development. Difference theorists argue in favour of CA comparisons, as their stance is that the cognitive development of children with ID is distinctly different to that of TD children, whereas developmental theorists maintain that MA comparisons are more effective because children with ID proceed through the same developmental stages as TD children albeit at a slower rate (Mundy & Kasari, 1990).

Whilst the CA / MA distinction is mainly relevant to research on ID in children (because of the developmental aspect) it is, however, of importance to research on adults with ID. With previous studies that have examined the eyewitness skills of adults with ID some researchers have included a CA comparison group (e.g., Perlman et al., 1994; Milne et al., 1999), whilst others have gone down the MA route (e.g., Gudjonsson & Henry, 2003), and indeed some have included no comparison group at all (e.g., Cardone & Dent, 1996). One of the main weaknesses of CA comparisons is that it does not compare 'like for like', as adults with ID are likely to have very different cognitive abilities to adults from the general population (i.e., adults without ID). Alternatively, MA comparisons enable researchers to compare performance across groups, as this method helps establish, as far as is practicable, that participants' cognitive abilities are on a par. This latter approach is thus the one usually taken by researchers examining the cognitive abilities of individuals with ID (Hodapp, Griffin, Burke & Fisher, 2011).

With reference to the current study, at the outset it was planned to include both a group of TD children to facilitate MA matching, as well as a group of adults without ID to allow matching based on CA. Unfortunately, however, as the study progressed it became apparent that, time-wise, it was not possible to recruit and test both of these groups. It was thus considered the most sensible option to omit the CA group (adults without ID) and merely include the MA group (TD children). In this way performance across the groups could be compared in a much more reliable and equivalent manner, based on MA matching.

2.3.2 Individual versus Group Matching

Another issue related to the process of matching in psychological research relates to whether matching should be carried out on an individual or group basis. Matching on an individual basis involves matching each participant from the experimental group with a participant from the comparison group based on a particular variable (e.g., within +/- 3 points on a given set of scores). On the other hand, group matching involves looking at a group as a whole (e.g., its overall mean raw test scores) and comparing these with the means of a comparison group to ensure that there are no significant differences between the means. Both of these matching processes have strengths and weaknesses.

The main issue with matching on an individual basis is that it can be very time consuming and may necessitate a much larger sample size or even screening out unsuitable participants. Whilst this may, however, be tempered by the fact that individual matching can provide a much more direct comparison of participant groups and their abilities, the reality of

conducting research, particularly with 'hard to reach' populations such as individuals with ID, means that researchers may often need to adopt a pragmatic and logical approach to matching. Due to the numerous methodological challenges associated with the current research and the delays experienced in overcoming these issues, it was necessary to adopt such an approach when considering which matching process to undertake. As a result, the decision was taken to match on a group as opposed to individual basis

However, one of the concerns that arises in relation to group matching is how to ascertain whether or not the groups have been matched sufficiently well enough on the control variables to counter the potential confounding effect of between-group differences on the variables under review. The standard method used in psychological research is to carry out a statistical analysis, usually in the form of t-tests, to compare the group means. However, the *p* value traditionally used, 0.05, is often deemed to be too low to ensure confidence in the group matching process, an issue which Mervis and Klein-Tasman (2004) suggest can be overcome by using a *p* value of > .50 instead. This was therefore the *p* value adopted in the current research to ensure that the two groups (adults with ID and TD children) were matched well on the control variable of mental age.

2.4 Estimating Mental Age

Estimates of MA are usually calculated through scores achieved on intelligence tests. Participants' raw scores are compared against a table of scores listing *age equivalents*, i.e., the average age at which a child from the general population would be expected to obtain the given score. In the research presented in this thesis, the Wechsler Abbreviated Scale of Intelligence – Second Edition (WASI-II, Wechsler, 2011) was initially used to obtain MA equivalents. This test was primarily used as it was estimated that the MAs of the adults with ID would be in the range of six to 12 years and this test would therefore be suitable as it can be used with individuals aged six years and above. However, as testing progressed it soon became apparent that a large number of the raw scores obtained by the adults with ID on the vocabulary and matrix reasoning sub-tests were so low that they fell below those stated in the MA equivalents table. This indicated that these participants likely had estimated MAs below six years of age, which meant that the WASI-II was unsuitable for this sub-group. Extrapolation of these scores was an option that was considered, but this process was ultimately deemed inappropriate due to concerns regarding the reliability and validity of using such a method to obtain estimates of so many MAs, especially as MAs would subsequently be used in the matching process (with the TD children).

An equally suitable alternative for obtaining MA equivalents was therefore identified as being The Stanford-Binet Intelligence Scales, Fifth Edition (SB-5; Roid, 2003). The SB-5 overcame the issue associated with the sub-group of adults with ID who appeared to have an estimated MA of below six years, as it is suitable for use with individuals aged two years and above and furthermore, rather than having to administer the whole battery of tests, it has an abbreviated two test version which can provide a quick estimate of MA. Consequently, participants who had originally been tested using the WASI-II were re-assessed using the SB-5. Whilst this did in fact cause a delay to the research study, it was considered a necessary step to take to ensure the validity and reliability of the MA matching process.

2.5 Sample Size

One of the primary questions that every researcher must ask themselves at the outset of their study is what sample size will be required in order to achieve both the preferred outcome for the alpha level they have specified as well as the hypothesised effect size (Cohen, 1992).

The required sample size of the two groups under review in the current study had to be given careful consideration, not just because of the generic issue of 'generalisability' but because of other factors such as participant matching, repeat interviews and mode of presentation on the identification line-ups. To assist with this decision a review of sample sizes used in existing eyewitness literature was undertaken. In addition, where necessary, power calculations were conducted using G*Power (Faul, Erdfelder, Lang & Buchner, 2007) to ensure that the sample size would be sufficient to achieve the required effect size.

2.6 General Ethics and Informed Consent

One of the main areas of concern in conducting research involving individuals with ID is that of ethics and in particular the issue of protecting this group from exploitation and harm by researchers (Dalton & McVilly, 2004). This concern has arisen from many infamous studies involving individuals with ID where the ethical conduct of researchers has been called into question. In one such study that has received much media coverage, children with ID who were attending Willowbrook State School in New York in the 1960s were injected with the hepatitis virus with the aim of investigating the natural progression of the disease (Iacono & Murray, 2003). The research attracted much attention and facilitated a great deal of moral debate amongst researchers and the wider community. It also served to highlight the 'thorny' issue of consent. Whilst the researcher conducting the study, Dr Saul Krugman, argued that he had actually obtained parental consent to inject the children with the virus, critics maintained that the children themselves had neither provided consent, nor were they aware, that they

were being purposefully infected with hepatitis. Moreover, Krugman's assertion that parents had provided 'voluntary' consent was called in question with many arguing that parents had felt coerced into consenting to the research for fear of losing their child's place at the school (Iacono & Carling-Jenkins, 2012).

Events such as the one described above have undoubtedly led to many ethics committees becoming so concerned about protecting this vulnerable group that the stringent procedures they put in place actually discourage researchers from carrying out studies in this area. It would appear that one of the primary reasons for the introduction of such rigorous measures is the issue of obtaining 'informed consent' from individuals with ID. However, before addressing the issue of whether or not individuals with ID *do* possess the capacity to consent, it is important to look at the nature of 'informed consent'.

The Nuremburg Code was introduced in 1947 following the Nuremburg Trials which sought to bring about the conviction of Doctors who had carried out horrific experiments on Nazi prisoners of war. At the very heart of this Code was the subject of 'informed consent' which is covered under Principle 1:

> *"The voluntary consent of the human subject is absolutely essential. This means that the person involved should have legal capacity to give consent …… and should have sufficient knowledge and comprehension of the elements of the subject matter involved as to enable him to make an understanding and enlightened decision"* (Shuster, 1998, p. 1436)

In 1964 the Declaration of Helsinki further extended this principle of informed consent by asserting that research participants should be fully informed of the aims, methods, risks and benefits associated with any research (Fischer, 2006). Together, the 1946 Nuremberg Code and the 1964 Declaration of Helsinki form the basis of many of today's ethical guidelines that underpin research involving human participants.

Whilst individuals from the general population may be able to make an informed decision about participating in research, based on information provided, this may prove a much more challenging exercise for individuals with ID. Individuals with ID often experience specific cognitive deficits e.g., in attention and memory (Henry et al., 2011) which could make it harder for them to understand the information presented. In addition, deficits in receptive, expressive and written language (Belva et al., 2011), together with speech production

problems (Chapman, 1997) and difficulties in the use of pragmatic language (using language appropriately in social interactions) (Abbeduto & Hesketh, 1997; Hatton, 1998) could all make it difficult for adults with ID to communicate their decision to the researcher. Nevertheless, these deficits should not be used as justification for the exclusion of this group from research nor should it automatically be assumed that these deficits prevent members of this group from being able to provide informed consent.

So, given these issues, the question arises as to how to establish that an individual with ID possesses the capacity to provide informed consent? In the UK the Mental Capacity Act 2005 Code of Practice (2007) provides guidance on assessing an individual's capacity to consent. At the core of this act is the assertion that "*it should be assumed that an adult (aged 16 or over) has full legal capacity to make decisions for themselves (the right to autonomy) unless it can be shown that they lack capacity to make a decision for themselves at the time the decision needs to be made".* (Mental Capacity Act 2005 Code of Practice, 2007, p.15)

The Act sets out a two-stage test to assess whether an individual has the capacity to make a decision for themselves. This comprises the following two questions: 1) Does the person have an impairment of the mind or brain, or is there some sort of disturbance affecting the way their mind or brain works? 2) If so, does that impairment or disturbance mean that the person is unable to make the decision in question at the time it needs to be made? With reference to these fundamental principles the researcher created a flow chart (see Figure 2.1) to summarise this two-stage test and provide guidance in assessing the capacity of the adults with ID to provide informed consent to participate in the study.

In order to ensure that every adult with ID who agreed to take part in the research actually possessed the capacity to consent, an assessment was carried out at the beginning of the first research session and the results recorded (see Appendix A for the Assessment of Capacity to Consent Form). As part of this assessment, the researcher went through the Participant Information Sheet (see Appendix B) with the adult with ID, before asking them a set of questions that were based both on the two-stage test of capacity as defined by the Mental Capacity Act 2005 Code of Practice (2007), as well as the questions used by Horner-Johnson and Bailey (2013) in their study on obtaining consent from adults with ID. All of the adults with ID who agreed to participate in the research were assessed as having the capacity to provide informed consent.

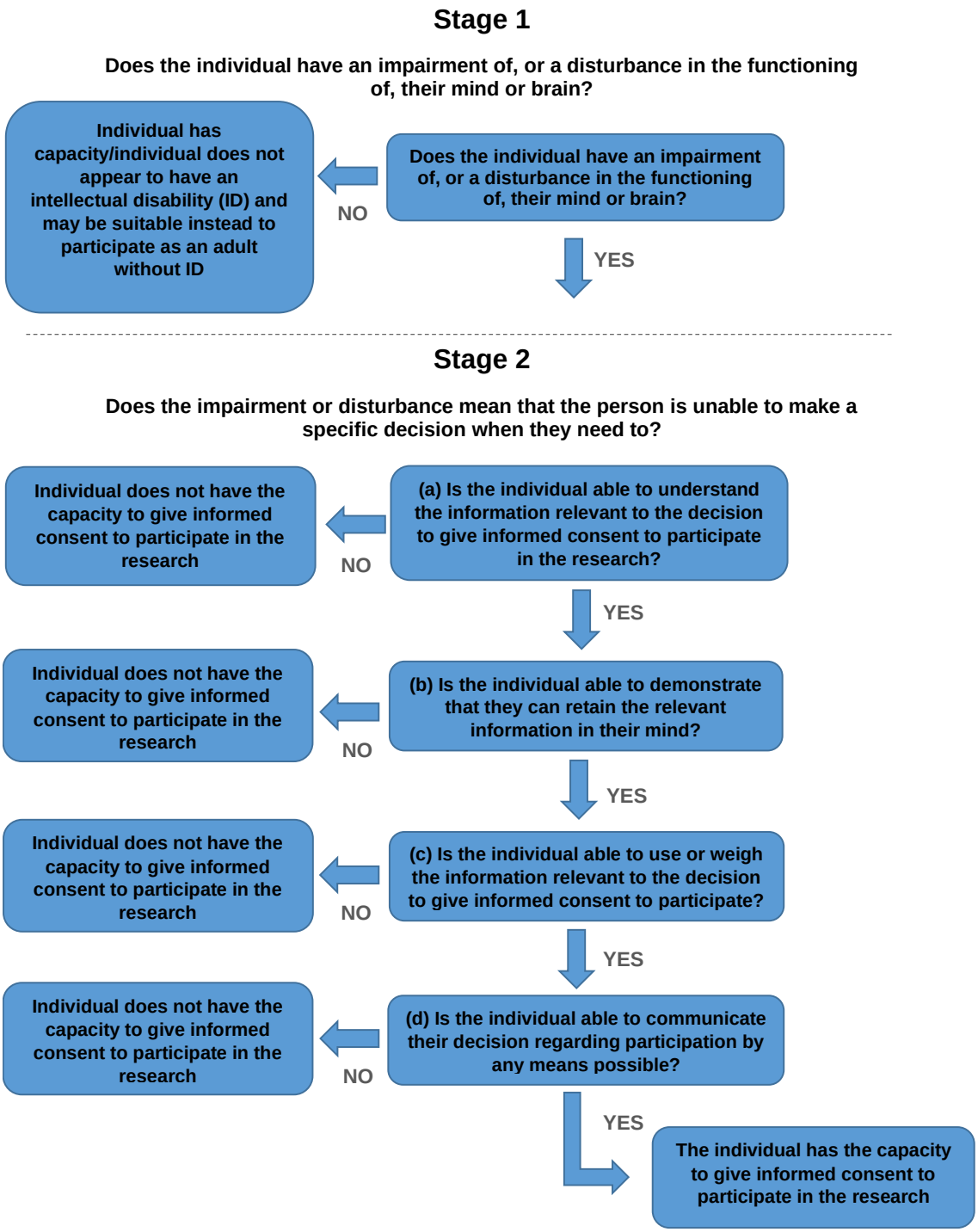


Figure 2.1 Flow chart depicting process for assessing individual's capacity to provide consent to take part in the research study (based on the two-stage Test of Capacity as defined by the Mental Capacity Act 2005 Code of Practice (2007))

The research described in this thesis was carried out in accordance with The University of Winchester's Research and Knowledge Exchange Ethics Policy and Procedures, the Economic and Social Research Council's Framework for Research Ethics (with specific reference to their guidance on research with potentially vulnerable people) and the British Psychological Society's (2014) Code of Human Research Ethics (with particular regard to Section 10.1 which

describes the special safeguards that should be put in place when conducting research with vulnerable populations including children under the age of 16 and individuals with ID).

2.7 Comorbid Diagnosis

According to Rutter (1994) comorbidity refers to a situation whereby two distinct conditions co-occur at a level above that which you could expect to obtain by chance alone. Intellectual disabilities often co-occur with other conditions such as Down syndrome (DS), Williams syndrome (WS) and Autism Spectrum Disorder (ASD), with each of these being characterised by its own individual and often, very distinctive, cognitive profile. For example, individuals with DS often possess intelligence quotient (IQ) levels in the moderate to severe ID range (25–55) and demonstrate difficulties with expressive language (Chapman, 1997; Laws & Bishop, 2004; Ypsilanti, Grouios, Alevriadou & Tsapkini, 2005) and in the provision of coherent narratives (Chapman 1997; Laws & Bishop, 2004). They also exhibit impairments in verbal short-term memory (Brock & Jarrold, 2005; Carney, Brown & Henry, 2013; Jarrold, Baddeley & Phillips, 2007) and in long-term memory for visual information (Jarrold et al., 2007). WS on the other hand is typically characterised by IQ levels in the mild to moderate ID range (40-70) and whilst the verbal skills of this group are superior to those of other conditions (Bellugi, Lai & Wang, 1997), they demonstrate deficits in *both* short-term and long-term memory for visual information (Costanzo et al., 2013; Jarrold et al., 2007; Vicari, Brizzolara, Carlesimo, Pezzini & Volterra, 1996). Unlike DS and WS, individuals with ASD often exhibit a substantial variation in both IQ levels (ranging from typical through to severe and profound), as well as cognitive abilities.

Due to the immense variation in cognitive abilities across many conditions, it was considered the most sensible approach to only include individuals in the research study who had 'non-specific ID' (i.e., where the cause of the ID was unclear/unknown) and, as far as could be ascertained, individuals without any comorbid diagnoses. Whilst it was acknowledged that in some respects adopting such an approach would limit the number of suitable/potential participants available to the researcher, this would, however, negate any complications arising from attempts to compare the performance of numerous individuals with an extensive range of cognitive deficits.

2.8 Diagnostic Confirmation and Severity of Intellectual Disability

As already explained in chapter 1, for a formal diagnosis of ID the individual must have experienced the onset of symptoms during childhood, possess an IQ of less than 70 and exhibit impairments of cognitive and adaptive functioning.

Unfortunately, however, it was not possible to have access to clinical records in order to establish the diagnoses for the adults with ID who participated in the research. On establishing contact with the various groups and clubs that assisted in the recruitment of the adults with ID, the researcher specified that the inclusion criterion was *'a formal diagnosis of a non-specific mild to moderate learning disability, without any co-morbid/dual diagnoses such as Down syndrome, autism spectrum disorder or attention deficit hyperactivity disorder etc.'* It was further specified that the adults with ID should be aged between 18 and 65 years. The upper age limit of 65 years was deemed appropriate in order to counter any potentially confounding issues relating to the onset of dementia (Janicki & Dalton, 1993; Janicki & Dalton, 2000). The researcher was thus reliant on the managers and staff at the clubs and centres, who worked closely with the potential participants, to ensure that this inclusion criterion was met.

The decision to limit the research to those individuals with mild to moderate ID (IQs in the range of 40 – 70) was based on a number of factors. To include individuals from the whole spectrum of ID (mild through to profound) would have proved extremely problematic for several reasons. There are very pronounced differences in the cognitive abilities of individuals with mild ID and those with more severe levels of ID (The British Institute of Learning Disabilities, 2019) and this would have made any statistical analysis of data and subsequent generalisability of the performance of this group as a whole very difficult and unwieldy. It might not only have proven much more difficult to ensure that those with more severe levels of ID possessed the capacity to provide informed consent, but these individuals may also have found some of the tasks employed in the research particularly challenging. From a methodological perspective, the issue of MA matching would have become even more complicated, necessitating the inclusion of a sample of much younger TD children.

It should be noted that three participants had to be excluded from the research study because their estimated IQs were found to be above the cut-off point of 70 (and thus these participants were deemed to be functioning in the non-ID range). For those participants who actually had IQ's of 70 (two in total) background information was sought from managers and other members of staff to ensure that these participants met the diagnostic criteria specified in the DSM-5; i.e., that they also required support with daily living (adaptive functioning).

2.9 Assessments of Cognition and Suggestibility

The current research necessitated the use of several assessments to provide not only an estimate of IQ and general cognitive ability (and thus MA), but also measures of vocabulary (expressive and receptive), memory (for stories and faces) and interrogative suggestibility as these were all considered to be relevant to the recall of the witnessed events and identification of the perpetrators from the video identification line-ups. The decision to use the assessments described below, as opposed to other equally viable alternatives, was tempered by not only their suitability for the groups under review, but also their proven reliability.

At the commencement of the research it was anticipated that the MAs of the adults with mild to moderate ID would be in an 'approximate' age range of 6 to 12 years, thereby requiring a group of TD children of similar MAs. However, as already mentioned in section 2.4 above, as data collection progressed it became evident that the MAs of a number of the adults with ID fell below six years. This presented an issue with the original choice of cognitive tests, i.e., the WASI-II, as the minimum age for this test was six years. The Stanford-Binet Intelligence Scales, Fifth Edition (SB-5; Roid, 2003) was therefore selected as an alternative test to provide an estimate of MA. This test was chosen as it is a highly reliable test of cognitive ability and can be administered to individuals from two years of age. Moreover, this test incorporates a two sub-test version which together provide a quick measure of general cognitive ability/IQ (Abbreviated Battery IQ – ABIQ). The ABIQ sub-test consists of two tests, one to measure verbal ability (vocabulary) and the other non-verbal ability (object series/matrices). In the vocabulary test participants are required to use their acquired verbal knowledge to answer questions such as identifying what individuals are doing in various pictures (e.g., eating, drinking etc.) and stating what particular words 'mean'. In the non-verbal test participants are required to identify patterns or series of objects and pictures.

The Peabody Picture Vocabulary Test, Fourth Edition (PPVT-4; Dunn & Dunn, 2007) provides a measure of receptive (hearing) vocabulary, i.e., listening and understanding of words. This test consists of a stimulus book with four images on each page. Participants are asked to either point to or give the number of the image that corresponds to the word spoken by the researcher and is thus suitable for non-readers and those with ID. The test can be administered in approximately 15 minutes and is suitable for individuals aged between 2 years and 6 months to 90 years plus. The PPVT-4 was therefore used to provide a reliable measure of receptive vocabulary (including MA equivalents), as this was deemed important in the

current study where the ability to provide an accurate verbal account of the witnessed events was reliant on an individual's comprehension of the films' narratives. NB: This assessment was originally chosen because of the age range it covers. As noted above in section 2.3.1, time constraints led to the exclusion of the CA group (adults without ID), however, the PPVT-4 was still appropriate for the two remaining sample groups (adults with ID and TD children). It is noted though, that the British Picture Vocabulary Scale III (BVPS-III; Dunn, Dunn & Styles, 2009), would have been equally suitable.

The Test of Memory and Learning – Second Edition (TOMAL-2; Reynolds & Bigler, 2007) is a standardised battery of tests that assesses general and specific aspects of memory functioning. It includes eight core subtests and six supplementary subtests (including Memory for Stories, Facial Memory, Word Selective Reminding, Visual Selective Reminding, Object Recall, Abstract Visual Memory, Digits Forward, Visual Sequential Memory, Paired Recall, Memory for Location, Manual Imitation, Letters Forward, Digits Backward, and Letters Backward) plus two delayed recall tasks. The test allows for the assessment of memory strengths and weaknesses and can be administered to individuals aged between 5 years and 60 years. The two sub-tests deemed to be the most suitable for this study were memory for stories and memory for faces.

As individuals with ID are often perceived to be more suggestible that their TD peers, a shortened version of the Gudjonsson Suggestibility Scale 2 (GSS2; Gudjonsson, 1997) was utilised to provide a measure of interrogative suggestibility. This test is presented to participants as a 'test of memory', i.e., participants are not informed that it is a test of suggestibility. It comprises a short test of recall following which the interviewer administers a set of questions, some of which are leading, which are repeated twice and are designed to measure participant's susceptibility to 'yield' or give in to the leading questions. This shortened version of the GSS2 has been used in previous research involving individuals with ID (Henry & Gudjonsson, 1997). In comparison to the full version of the GSS2, the shortened version merely utilises 80% of the original GSS2 story (comprising 32 of the 40 pieces of information) and 80% of the questions (16 of the 20 questions).

2.10 Delay Periods

There were three points within the current study that necessitated set periods of delay. These included between: (1) viewing the eyewitness events and the main evidence gathering interviews, (2) the first and second interview in the repeat interviewing condition and (3) viewing the eyewitness events and identifying the perpetrator(s). In a police investigation

process witnesses may not be questioned for days or even weeks following an incident. Additionally, the length of elapsed time between the incident and subsequent identification of the perpetrator(s) may be anywhere between a number of hours to a number of weeks (Behrman & Davey, 2001; Davis, Valentine, Memon & Roberts, 2015).

From a logistical perspective, and to ensure that delays were consistent for every participant, it was necessary to establish a standard period of delay for each of the specified stages. It is usually helpful to look to existing eyewitness literature to guide such decisions. In line with previous research (e.g., Brown et al., 2015; Brown, Lewis, Lamb & Stephens, 2012), the chosen period of delay used in the thesis was one week and this was for the delay between the witnessed event and main evidence gathering interviews, the witnessed event and the identification line-ups, as well as the first and repeat detailed interviews (Waterhouse, Ridley, Bull & Wilcock, in press).

2.11 Language Used in the Research

It was imperative that the adults with ID were able to comprehend both the written and verbal information presented in the research as this was crucial to the participants not only being able to make an informed decision about participation, but also having a thorough understanding of the tasks that were required to be undertaken during the sessions. A considerable amount of thought had to be given to the content and format of all the information so that it was suitable for the cognitive abilities of this group.

'Easy read' refers to a type of format used to make information more accessible for individuals with ID. There is no legal clarification or guidance on the actual format of easy read information, however, the following is a summary of the guidelines included in Mencap's 'Make it Clear' guide to producing easy read information (Mencap, 2013):

- Use short, clear sentences, without complicated language or punctuation
- Keep everything about a subject on one page and use page numbers
- Pictures can be helpful, as long as they relate to the information. Pictures should be placed on the left
- Use a clear font like Arial, with a font size of at least 16

All of the written information used in this study which was created for the adults with ID, was therefore produced with reference to Mencap's easy read guidelines. Copies of the Participant Information Sheet (for adults with ID), Parent/Guardian Information Sheet, Participant Consent Form, Parent/Guardian Consent Form and Debriefing Document (adults with ID) can be found in Appendices B – F.

With regards to the verbal information, including verbal communication, again it was imperative that the researcher was aware of, and took into consideration, the verbal and non-verbal abilities of the adults with ID. With this in mind, the researcher once again looked to guidelines provided by Mencap, in particular their website article entitled 'Communicating with people with a learning disability' (Mencap, 2017). These guidelines were designed to highlight some of the issues faced by individuals with ID and provide tips and advice on communicating with this group. Some of the advice includes:

- Think about your tone of voice, the words you use and your body language
- Use accessible language, easy to understand words and avoid jargon
- Take your time, use gestures and facial expressions to reinforce what you are saying

The researcher therefore made every effort to adhere to the above advice when communicating with the adults with ID. Communication was tailored to meet the needs of each participant and they were encouraged to inform the researcher of any words or instructions that were not understood so that suitable alternatives could be employed.

2.12 Presence of Staff/Key Workers (During Testing)

One of the things that became apparent during testing of the adults with ID was that some of them initially felt anxious due to unfamiliarity with the researcher (even though the researcher had attended the group/club previously in an attempt to build rapport). A handful of the adults with ID asked if a member of staff/key worker could sit in on the sessions. The researcher agreed to this, however, in order to ensure that the participant was not unduly influenced nor distracted by the third party, they were requested to sit behind the participant (out of view) and asked not to attempt to answer any of the questions (on behalf of the participant) that might be asked during the sessions, unless the researcher required their assistance, e.g., where a participant had speech production difficulties which made their responses difficult to understand.

2.13 Summary

Chapter 2 presented an overview of the very distinct methodological issues that researchers are presented with when conducting research with individuals with ID. These issues range from quite specific considerations such as participant matching and adherence to prescribed ethical guidelines to much more practical matters such as accessible forms of communication. All of these issues were taken into account when conducting the research presented in the following chapters.

Chapter 3

Interviewing Adults with Intellectual Disabilities

3.1 Abstract

As has already been noted in chapter 1, there is very little research that examines the interviewing of adults with ID in a forensic context, in spite of this group being at an increased risk of being victims or witnesses of abuse, and the concerns of CJS professionals regarding their reliability as eyewitnesses. Apprehension also exists in relation to the use of repeat interviews with adults with ID, especially as this group is often perceived to be susceptible to acquiescence and changed responses. The research presented in chapter 3 aimed to examine the ability of adults with mild to moderate ID, and MA matched TD children to recall information about two separate, but similar, eyewitness events at three different points: (1) in an immediate brief statement taking interview, (2) in a detailed witness interview after a one week delay and (3) in a repeat detailed witness interview following a further one-week delay. Of interest was the ability of the adults with ID to distinguish between, and accurately recall information about, the two separate eyewitness events and the impact of the repeat interview on eyewitness recall. Results demonstrated that, in comparison to the TD children, the adults with ID recalled comparative amounts of accurate information, with few source monitoring errors and confabulations and were no more likely to change their responses in a repeat interview. These findings have practical implications for the CJS, as they provide evidence that adults with ID can provide accurate and reliable verbal recall of a witnessed event across more than one interview.

3.2 Introduction

Interviewing witnesses is an integral part of the investigation process, allowing police officers the opportunity to gather crucial evidence necessary for a successful prosecution. The ability to extract a detailed and complete account of an event from an eyewitness can be influenced by a whole range of factors, from the interviewing skills, questioning style and behaviour of the interviewer (Köhnken, 1995), to the personal characteristics of the eyewitness, such as the witness being a child or having ID.

3.2.1 Interviewing Children

The reliability of children as witnesses has historically been a very contentious issue and this appears to hinge on the belief that they are susceptible to acquiescence and suggestibility (Bruck & Ceci, 1999). During the 1980s and 1990s researchers began to take an interest in the abilities of children as eyewitnesses due to a number of high-profile sexual abuse cases,

such as the Michaels nursery case in the USA (Ceci & Bruck, 1993). These criminal cases meant that young children were routinely being required to provide evidence about their experiences of abuse.

Research prompted by these cases demonstrated that even children as young as two years can provide accurate information about experienced events (Fivush, Gray & Fromhoff, 1987) and moreover, children's recall abilities appear to increase in line with age. Goodman and Reed (1986) examined age differences in eyewitness evidence by asking three year olds, six year olds and adults to play a game with a man they had not met before and subsequently interviewing them about this interaction. They found that the amount of information recalled increased with the age of the participant, such that the adults produced more correct information than the six year olds and the six year olds in turn produced more correct information than the three year olds.

Episodic memory, the ability to remember past experiences (Tulving, 2002), plays an extremely important role in eyewitness memory and research suggests that there is a distinct and noticeable improvement in episodic memory during early childhood (Riggens, Blankenship, Mulligan, Rice & Redcay, 2015), which is likely bound with developmental changes in the acquisition of knowledge and language (Pipe, Thierry & Lamb, 2007). This finding regarding the age-related development of episodic memory appears to parallel the findings from research on children's recall abilities (e.g., Goodman & Reed (1986) above).

The amount of information recalled and level of detail contained in information provided by children about a witnessed event may depend on a number of different factors relating to the manner in which the account was elicited, the child's abilities and the actual event itself (Pipe, et al., 2007). It does appear that children can be reliable as eyewitnesses if they are questioned appropriately. Lamb, Orbach, Hershkowitz, Horowitz and Abbott (2007) examined the types of questions used by forensic investigators in actual cases of sexual abuse against children aged between three and 13 years. They found that the use of open-ended free-recall type questions (e.g., 'tell me everything that happened') resulted in the recall of more information with greater accuracy compared to more focused or option-posing prompts. Such findings regarding the beneficial effect on recall of open-ended questions have been corroborated by other researchers, e.g., Brown et al., 2013; Horowitz, 2009.

One of the primary concerns with regards to children as witnesses is their purported vulnerability to suggestibility, particularly in response to certain types of questions. For

example, younger children find it hard to contest misleading or suggestive questions (see Ceci & Bruck, 1993 for a review of research in this area), whilst more specific questions (e.g., requiring either a one-word response or a yes/no response) and multiple-choice/option-posing questions (e.g., presentation of more than one option from which to make a choice) can increase susceptibility to suggestibility and acquiescence (Mehrani & Peterson, 2018; Rocha, Marche & Briere, 2013). This is of particular concern in a forensic context as the accounts of children are sometimes much less complete that those of adults (Goodman & Reed, 1986), which can lead to interviewers using more specific prompts to elicit information (Davies, Westcott & Horan, 2000; Lamb, Sternberg & Esplin, 2000; Peterson & Grant, 2001).

Concerns also exist about the negative effect that repeat interviews (where individuals are interviewed more than once about the same topic or event) might have on susceptibility to suggestibility. Research has indeed demonstrated that repeat interviews can result in an increase in suggestibility, but much of this research has relied on the use of misleading or suggestive questioning methods, often in relation to never experienced events (e.g. Brainerd & Reyna, 1996; Bruck, Ceci & Hembroke, 2002). Furthermore, researchers have been especially concerned that repeated investigative interviewing of children may lead to previously recalled inaccurate information being sustained and consolidated. Whilst a number of researchers have reported that the use of repeat interviews with children does indeed lead to an increase in errors (see La Rooy, Lamb & Pipe (2008) for an evaluation/overview of research in this area) others have found the opposite. For example, suggestibility aside, repeat interviews may have a beneficial effect in that they can result in the production of new, and potentially forensically relevant, information (Hershkowitz & Terner, 2007). Indeed, Waterhouse, Ridley, Bull, La Rooy and Wilcock (2016) examined transcripts of first and second interviews conducted with child witnesses and victims and found that the amount of information recalled in the second interviews (repeat) was consistent with that of the first interviews and moreover, repeat interviews resulted in the recall of new information with very few contradictions (changed responses between the first and second interviews).

However, it does seem that the length of delay between both an experienced/witnessed event and initial interview, as well as initial and subsequent interviews, may also have an effect on both the amount and accuracy of information recalled as well as a child's vulnerability to suggestibility. This is of particular importance given that lengthy delays are common place in the Criminal Justice System (CJS). Interviewing children promptly has been found to preserve memory for an event (Pipe, Sutherland, Webster, Jones & La Rooy, 2004; Salmon & Pipe, 2000) and may also serve to protect them from the effects of suggestibility (Quas et al., 2007).

Longer delays though can have a deleterious effect on the amount and accuracy of information recalled (Flin, Boon, Knox & Bull, 1992; Salmon & Pipe, 2000). With regards to delays *between* interviews, research does suggest that even following a long delay, i.e., of around five years, children are able to recall new details about a witnessed event (Fivush & Schwarzmueller, 1998). However, as Salmon and Pipe (2000) found, compared to a shorter delay of just a few days, a longer delay of around one year can have a potentially negative impact on the accuracy of the newly recalled information.

In addition to the above, it is also important to note that other factors, such as individual differences and social influences, may play a role in both the amount and accuracy of information recalled by children, as well as their tendency to acquiesce. Roebers and Schneider (2001) examined the effect of individual differences in intelligence and shyness on children's recall for an eyewitness event. They reported that children with higher intelligence (*M* IQ = 120.2) recalled more correct information than those with lower intelligence (*M* IQ = 89.4), but there were no differences between the two groups in relation to suggestibility. Furthermore, shy children were less accurate in answering specific questions compared to peers who were not shy. With regards to social influences, this is a factor that could play a significant role in children's proneness to acquiescence and susceptibility to misleading information. It is quite likely that children find it hard to challenge the authority of interviewers, because they are socially programmed to accept that adults have more power and control and ultimately much more knowledge (Ceci, Ross & Toglia 1987; Fielding & Conroy, 1992).

Another issue that is purported to influence recall of an experienced event, particularly when events are highly similar, as with repeated abuse, is that of the child confusing details about individual events, i.e., being less able to cognitively monitor the source of the information (Poole, Dickinson, Brubacher, Liberty & Kaake, 2014). In a study that investigated source monitoring for a repeated event in children (using a timeline) aged between six and nine years, Zhang, Roberts and Teoh (2019) gave participants different activities, such as drawing and puzzles, that were repeated on four occasions over a period of two weeks. Within these activities, there were 16 target items, for example, type of sticker, or colour of the sticker sheet. These target items were the focus of subsequent interviews. The researchers reported that when the children were asked to provide details about a particular event, they confused details from the four separate occurrences.

3.2.2 Interviewing Witnesses with Intellectual Disabilities

Many of the challenges associated with interviewing children are also present when interviewing adults with ID. Moreover, these challenges can be further exacerbated by the wide-ranging cognitive deficits they may experience and the potential impact these might have on the interviewing process. Deficits in attention (Sterr, 2004) together with poor facial recognition abilities (Gawrylowicz et al., 2013) could mean that witnesses do not encode sufficient information about a witnessed event, whilst problems with working memory (Swanson & Siegel, 2001) and long-term memory (Nolan et al., 1985) could lead to difficulties in retention and retrieval of details. These issues could be further exacerbated by the language and communication problems often exhibited by individuals with ID (Abbeduto & Hesketh, 1997; Belva et al., 2012).

The perceptions and beliefs that are pervasive amongst some professionals within the CJS about the eyewitness skills of adults with ID (Nathanson & Platt, 2005) can put this group at a particular disadvantage before the interview even commences. Police Officers may not be aware of the additional level of support this group might need and may not adapt their language and behaviour to suit the needs of these witnesses (Brennan & Brennan, 1994). This lack of awareness could result in the accounts of witnesses with ID being less complete, meaning that police officers resort to the repetition of questions and the use of more prompts and a closed questioning style to extract more detailed information (Milne et al., 2013). As noted in chapter 1, open questions (e.g., free recall prompts), are most effective at eliciting accurate information from individuals with ID (Collins & Henry, 2016; Henry & Gudjonsson, 1999; 2003), whilst more specific prompts can have a detrimental impact on accuracy rates (Agnew & Powell, 2004) and closed question types can lead to an increase in acquiescence (Heal & Sigelman, 1995).

Whilst individuals with ID are at an increased risk of being abused, there is also the likelihood that left undetected, this abuse may be repeated over many months or even years (McCormack et al., 2005). It is therefore likely that these individuals would need to be repeatedly interviewed. However, the potential effects of repeat interviewing on the reliability of eyewitness evidence is subject to much debate. In children with mild and moderate ID, the use of repeat interviews can lead to an increase in the amount of information produced, particularly in response to free recall and general questions (Henry & Gudjonsson, 2003). However, whilst repeat interviews can result in the reporting of new information, this information may be less reliable (Brown et al., 2015). In addition, some of the reservations about using repeat interviews are that they may encourage witnesses to produce

contradictory information, i.e., change details of their account from one interview to the next, (which could consequently affect the perceived accuracy and credibility of eyewitness evidence), whilst also causing witnesses additional distress (at having to repeat information about potentially upsetting events) (Odinot, Memon, La Rooy & Millen, 2013). Research does suggest, however, that concerns regarding the production of contradictory information may be unfounded as Cederborg et al. (2008) in their study of repeated interviews with children with ID, found that only 3% of the information in the repeat interview was contradictory. With regards to adults with ID, as far as the researcher is aware, there is currently no research that has explored the impact of repeat interviews on this group's eyewitness evidence.

Repeat instances of abuse may also raise concerns about confusing specific details from separate events, i.e., source misattribution. This is especially problematic when events are similar (Johnson et al., 1993), as might be the case with abuse. Indeed, research has shown that exposure to similar events in TD children can result in increased source misattribution errors (Roberts & Blades, 1999) and this could also prove a problem for individuals with ID since research has found that this group experience issues with source monitoring (Lorsbach & Ewing, 1995).

The research presented here explores the ability of adults with ID and TD children to recall information about two separate but similar eyewitness events. Being able to discriminate between the two events is pertinent, not only because the abuse or victimisation of these two groups can often be repeated and sustained (Cambridge et al., 2011; Finkelhor, Ormrod, Turner & Hamby, 2005), but also because they will be required to recall events separately for particularisation purposes. Approximately 30 minutes after viewing the two eyewitness events, the participants, who were matched based on mental age, undertook a brief witness interview, as per a police officer taking a statement at the scene of a crime. Little research has examined witness performance in statement taking interviews. One-week later participants undertook a much more detailed witness interview. Due to the mixed findings regarding the use of repeat interviews with TD children and the fact that, as far as the researcher is aware, no such research exists in relation to adults with ID, this study also investigated the effect of a second (repeat) detailed witness interview on the amount and accuracy of information recalled.

The key aims of this study were therefore:

(1) To examine the quality, accuracy and reliability of eyewitness memory in adults with ID and TD children for two separate but similar eyewitness events.

(2) To ascertain if the requirement to recall information about two separate but similar events will result in source monitoring errors.

(3) To assess the effect of repeat witness interviews on eyewitness evidence, including whether: (a) new details will be recalled and (b) participants will change their responses.

Based on findings from previous research it is predicted that, for the brief and first detailed witness interviews, the mental age matched adults with ID and TD children will recall comparative amounts of correct, incorrect and confabulated information, with similar levels of accuracy. It is further predicted that the adults with ID will produce more source monitoring errors, across both the brief and detailed witness interviews, than the TD children. Definitive predictions have not been made in relation to the repeat interviews, due to the mixed findings of previous studies in relation to TD children and the lack of research regarding adults with ID. However, the key questions that will be addressed here are whether the repeat detailed interviews will have a beneficial effect on recall i.e., result in recall of new information, or whether the effect will be detrimental, i.e., result in changed responses (contradictions).

3.3 Method

3.3.1 Participants

A total of 80 participants took part in the study: 40 adults with ID (17 males and 23 females, aged between 23 years and 64 years 5 months) and 40 TD children (19 males and 21 females, aged between 4 years 7 months and 8 years). The adults with ID were recruited through two arts and craft centres, a wellbeing hub and a farm providing work-based training experience for adults with learning disabilities. The TD children were recruited through family and friends as well as two local primary schools. As far as could be ascertained (from the Centre or Club Managers), each of the adults with ID had received a diagnosis of a non-specific intellectual disability (without any co-morbid diagnoses such as Williams syndrome, Down syndrome or Autistic Spectrum Disorder) in the mild to moderate ID range (i.e., an approximate IQ of between 40 and 70). In addition, parents and teachers of the TD children were also advised

that the children should not have an intellectual disability. The range of IQ's for the adults with ID was 47 - 70, whilst for the TD children it was 82 - 118. See Table 3.1 below for participant demographics.

Power Analysis

A post-hoc power analysis was conducted using G*Power (Faul et al., 2007) to examine the statistical power required for a small (w = .10), medium (w = .25), and large (w = .40) effect size with an alpha level of $p < .05$ (Cohen, 1992). This power analysis was conducted for: correct and incorrect information, as well as *overall* total information (correct + incorrect + SMEs + confabulations) and *overall* total incorrect information (incorrect + SMEs + confabulations) recalled in the (main) first detailed witness interview.

For a MANOVA with 80 participants, examining the effect of the main independent variable (group: adults with ID and TD children) on correct and incorrect information recalled, the statistical power required was .14 for detecting a small effect, .60 for detecting a medium effect and .94 for detecting a large effect. The power analysis results were exactly the same for *overall* total information (correct + incorrect + SMEs + confabulations) and *overall* total incorrect information (incorrect + SMEs + confabulations). Thus, there was ample power to detect medium and large effect sizes.

Table 3.1 Means (and standard deviations) for chronological age, mental age and abbreviated Stanford-Binet Intelligence Test score (ABIQ) for the adults with ID and TD children

Measure	Adults with ID	TD Children
Chronological age	39yrs 4m (11yrs 4m)	6yrs 1m (11m)
Mental age*	6yrs 5m (1y 1m)	6yrs 7m (11m)
ABIQ **	53.40 (7.12)	104.65 (7.66)

* No significant difference in mental age between the two groups, $t(78) = -0.62$, $p = .53$
** Significant difference in ABIQ between the two groups, $t(78) = -31.01$, $p < .001$

3.3.2 Design

A between-subjects design was employed for this study. The independent variables were group which had two levels (adults with ID and TD children) and type of interview, which had two levels (detailed interview and repeat detailed interview). The dependent variables consisted of the information types as described in section 3.3.4.1 below.

3.3.3 Materials

3.3.3.1 Eyewitness Events

There were two filmed eyewitness events, the presentation of which was counterbalanced to guard against order effects[1]. Film A, which was 3 minutes and 51 seconds in duration, depicted a very mild disability hate crime and was set inside in a council office training room. A female in a wheelchair (the victim) attends a first aid course run by a male instructor (perpetrator). During the course the male asks the female to carry out a number of training exercises (bandaging an arm and assisting someone who has fainted), one of which she is unable to perform, much to the male's annoyance. The film culminates with a confrontation between the male and female over the use of a disabled toilet, during which the male is very rude to the female.

Film B was 3 minutes and 48 seconds long and again depicted a very mild disability hate crime that occurs outside in a park. It involves the same female in a wheelchair (the victim) taking her dog for a walk and a different male (the perpetrator) to the first film, who is cycling along on his bike. Tensions between the two begin to escalate after the male obstructs the pathway with his bike. The film concludes with the female's dog picking up the man's ball and the male verbally abusing the female (calls her and her dog 'stupid'). The films contained no violent content so as to minimise potential psychological distress.

The same female (victim), but different males (perpetrators) were used in each film to simulate the situation whereby adults with ID and TD children may be subjected to repeated abuse by multiple perpetrators. Of interest here was the participant's ability to distinguish between, and accurately recall information from, two separate events.

To ensure that both films contained similar amounts of quantifiable information, each film was coded (both by the researcher and a second coder) for the number of people, locations, items, actions and speech details. Film A contained 40 pieces of information relating to people, 8 for location, 14 for items, 50 for actions and 43 for speech. Film B contained 43 pieces of people information, 6 for location, 16 for items, 54 for actions and 39 for speech. There was a high level of agreement between the researcher and second coder.

[1] There were no effects of presentation order on any recall measure for the main evidence gathering interview.

3.3.3.2 Investigative Interviews

All participants (*N* = 80) undertook a brief interview and a detailed witness interview. Half of the participants (*N* = 40: 20 adults with ID and 20 TD children) undertook a second (repeat) detailed witness interview (which was completed in an identical manner to the first).

Brief Statement Taking Interview

The brief statement taking interview consisted of a set of evidence gathering questions similar to those a First Response Police Officer would ask upon arriving at the scene of a crime. The questions included a free recall question ('tell me what you remember about what you just saw') as well as more specific questions ('who was there?', 'what did they do?', 'what did they look like?' etc.) (see Appendix G for a copy of the Brief Statement Taking Interview)

Detailed Witness Interview Protocol

The detailed witness interview, which was used for both the first and repeat interviews, was based on current police practice and as per the ABE (Ministry of Justice, 2011) it consisted of a phased questioning approach, compromising seven separate phases in total.

In the first phase the participant was thanked for coming and asked if they were happy to take part in the research. Phase 2 comprised the establishment of rapport with the interviewer asking the participant some general questions about hobbies and pets etc. Phase 3 sought to establish that the participant understood the difference between a 'truth' and a 'lie'. This was carried out using an example such as, 'can you tell me whether what I say is true or a lie' and then pointing to a computer and stating 'that is a television, is that true or a lie?'. In phase 4 the purpose of the interview was explained and the interviewer clarified which film the participant would be questioned about. This was done by referring to film A as the film that was 'inside' and film B as 'outside' to differentiate clearly between the two films, without divulging anything regarding their content. The participant was reminded that they should tell the truth. In the next section of the interview, phase 5, participants were prompted to provide a free recall narrative of the relevant film and reminded 'never to guess or make anything up'. Phase 6 consisted of specific questioning, with participants being asked one question for each main piece of information recalled during the free narrative phase.

The order of questioning was led by the order in which information had been recalled using open-ended questions and suggestive questions (i.e., suggesting the answer) were not used. In the final 'closure' phase participants were offered the opportunity to add to or amend their eyewitness account before being thanked for their assistance.

This detailed witness interview is a tried and tested protocol which has been used in previous research on child witnesses with and without autism spectrum disorder (Henry et al., 2017) (see Appendix G for a copy of the Detailed Witness Interview Protocol).

3.3.3.3 Assessments of Cognition and Suggestibility

The following measures of cognition and suggestibility were used in this study:

(1) An abbreviated version of the Stanford-Binet Intelligence Scales, Fifth Edition (SB-5; Roid, 2003) – employed to provide an estimate of overall intellectual functioning (nonverbal and verbal ability)

(2) The Peabody Picture Vocabulary Test, Fourth Edition (PPVT; Dunn & Dunn, 2007) – included to measure receptive (hearing) vocabulary.

(3) Two sub-tests from the Test of Memory and Learning (memory for stories and memory for faces), Second Edition (TOMAL-2; Reynolds & Bigler, 2007) - to assess participants' memory functioning in these two areas.

(4) An abbreviated version of the Gudjonsson Suggestibility Scale 2 (GSS2; Gudjonsson, 1997) – employed to ascertain participants' susceptibility to interrogative suggestibility.

Further information about these measures, their scoring criteria, and their relationships with witness performance, is included in chapter 2 (Methodological Challenges) and chapter 5 (Individual Differences).

3.3.4 Procedure

All of the participants were tested on an individual basis and testing took place at the group, club or school they attended. There were up to three sessions in total. Half of the participants undertook two sessions (a brief statement taking interview and a detailed witness interview) and half undertook three sessions (a brief interview, a detailed witness interview and a repeat detailed witness interview). Questions were asked based upon the order in which the films were presented, i.e., film A followed by film B or film B followed by film A. The researcher referred to film A as the film that was 'inside' and film B as the film that was 'outside', so that the participants were clear as to which film the interview questions related.

Parental consent was obtained for the TD children and where applicable, from the parents of the adults with ID (see Appendices C and E for the Parent Information Sheet and Consent Form). In the first session the researcher discussed the relevant Information Sheet with each participant (see Appendix B for the adults with ID and Appendix H for the TD children). Capacity to consent was then assessed for the adults with ID. This entailed asking the adults a set of questions to ensure that they understood what the study was about and what they would be required to do if they decided they would like to take part (see chapter 2 Methodological Challenges, for further information about the capacity to consent process). After written consent was obtained (see Appendices D and I), participants were instructed to watch the two eyewitness events (films) on a laptop. Once the films had been viewed, the two sub-tests from the TOMAL-2 (memory for faces and memory for stories) followed by the two-subtests from the SB-5 (nonverbal fluid reasoning and verbal knowledge) were administered. These tests served as a 'buffer task' between viewing the films and the brief interview. They were administered in the same order for every participant. The session finished with the administration of the brief interview, with the order of questions following that of the presentation of the films. The brief interviews were video recorded.

The second session was conducted after a delay period of one week and commenced with the PPVT-4 followed by the detailed witness interviews, which were video recorded. The interviews were conducted in the same order in which the films had been presented. Once the interviews were complete, participants were provided with instructions for the video identification line-ups and then the line-ups were administered (See chapter 4 – Identification in adults with ID, for a more detailed discussion about the identification line-ups). Finally, the abbreviated GSS2 was administered (responses were audio recorded).

Half of the participants, i.e., every second participant, undertook a third session after a further delay of one week (i.e., one week after the first interview, two weeks after viewing the eyewitness films). During this session the detailed witness interview was again administered (as with the first interview, this repeat interview was also video recorded).

Participants were debriefed after each session (see Appendices F and J) and offered the opportunity to ask questions.

3.3.4.1 Transcribing and Coding

All of the interviews (brief statement taking, detailed witness and repeat detailed witness) were transcribed verbatim to facilitate coding. During this process any references to names and places etc. were removed to ensure participant anonymity.

The transcripts were coded as follows with each piece of information recalled being awarded one point:

Brief statement taking interview and detailed witness interview

- Correct
- Incorrect (inaccurate information)
- Source monitoring errors (SME, i.e., information from the other film)
- Confabulations (fabricated information)

Repeat detailed witness interview

- New correct (not mentioned in first detailed interview)
- Repeated correct (mentioned in first detailed interview)
- New incorrect (not mentioned in first detailed interview)
- Repeated incorrect (mentioned in first detailed interview)
- New SME (not mentioned in first detailed interview)
- Repeated SME (mentioned in first detailed interview)
- New confabulations (not mentioned in first detailed interview)
- Repeated confabulations (mentioned in first detailed interview)
- Contradictions (i.e., changed responses, mentioned in first detailed interview but changed in repeat detailed interview)

Information from each film was coded separately as well as in combination, i.e., film A plus film B, for each interview.

3.3.4.2 Inter-rater Reliability

20% of the transcripts from the brief, detailed and repeat detailed interviews were re-coded by a second rater. This was undertaken following a detailed discussion between the two coders, during which the main ideas relating to each piece of information were explained and examples highlighted. See Table 3.2 below for details regarding the correlational analyses for each of the question types across all 3 interviews for the inter-rater reliability checks. The

acceptable level of consistency between coders was based on a correlational coefficient of at least *r* = 0.80 (indicating a strong relationship; Coolican, 2009). In relation to recall for film B in the repeat detailed interview, initial correlational analyses indicated inconsistency between the two coders for new source monitoring errors and repeat incorrect questions. Resolution and agreement of these inconsistencies between the coders was achieved by further discussion and clarification of the key concepts behind these two dependent variables, before analyses were repeated.

Table 3.2 Inter-rater reliability correlation coefficients (*r*) for each question type across all three interviews and both eyewitness films

Interview and Question Type	Eyewitness Film	
	Film A	Film B
	Brief statement taking interview	
Correct	.917	.957
Incorrect (inaccurate)	.876	.955
SMEs	.942	.873
Confabulations	.845	.889
	First detailed witness interview	
Correct	.953	.964
Incorrect (inaccurate)	.934	.818
SMEs	.992	.902
Confabulations	.960	.959
	Repeat detailed witness interview	
New correct	.952	.907
Repeat correct	.978	.982
New incorrect (inaccurate)	.945	.940
Repeat incorrect (inaccurate)	.936	.801
New SMEs	.800	.889
Repeated SMEs	1.00	.913
New confabulations	.828	.906
Repeat confabulations	.941	.802
Contradictions	.938	.934

3.4 Results

Data for both films was combined to counter the fact that participants recalled more total information for film B compared to film A. Descriptive statistics for each individual film are however, provided in the relevant tables and data was examined separately with regards to SMEs.

Non-normality and homogeneity of variance

Prior to running any detailed analyses, statistical checks were undertaken in relation to non-normality and homogeneity of variance. As the data for SMEs, confabulations and contradictions was highly positively skewed (i.e., > 1.96 (Field, 2009)), (due to a high number of low scores) and transformations were unsuccessful in reducing this skew, descriptive statistics for these data have been presented, as opposed to subjecting this data to formal statistical analyses. Moreover, as percentage accuracy across the three types of interview demonstrated varying levels of negative skew, which was also not reduced sufficiently by the use of transformations, this data was analysed using a Kruskal-Wallis test.

Multicollinearity

In order to ensure that none of the variables were highly correlated (r >.80 according to Field, 2009) (i.e., there was no multicollinearity), a correlation matrix was produced for each interview using all of the dependent variables (type of information). This revealed correlations of > .80 for the relationship between correct information and total information recalled (r = .979), and between incorrect information (not SME) and total incorrect information recalled (incorrect, SME and confabulations) (r = .900) for the brief interviews. In relation to the first detailed interviews, correlations were > .80 for the relationship between correct information and total information recalled (r = .960) and between incorrect information (not SME) and total information recalled (r = .846). For the repeat detailed interviews, correlations of >.80 were discovered for the relationship between repeat correct information and total information recalled (r = .928), between repeat correct and total correct information recalled (r = .972), between new incorrect and total incorrect (r = .887), between total correct and total information recalled (r = .963) and between total incorrect and total information recalled (r = .842).

As it appeared that it was primarily the 'total' variables that were creating the issue of multicollinearity, these variables were analysed in a separate MANOVA (after further checks were undertaken to ensure that none of the 'totals' variables were highly correlated).

3.4.1 Brief Statement Taking Interview

The mean number of items of information recalled by the adults with ID and TD children for the brief statement taking interviews for both film A and film B are provided in Table 3.3 below.

To examine group differences in the amount of correct, incorrect, *overall* total information (correct + incorrect + SMEs + confabulations) and *overall* total incorrect information (incorrect + SMEs + confabulations) recalled, two separate MANOVAs were conducted to overcome the previously mentioned issues with multicollinearity. Correct and incorrect information was analysed in the first MANOVA and *overall* total information and *overall* total incorrect information was analysed in the second MANOVA. For both MANOVAs, group was entered as the independent variable and type of information entered as the dependent variable.

A Bonferroni correction of $p < .025$ (the usual p value (.05) divided by number of tests used, i.e., two) was applied to the MANOVAs and follow-up univariate ANOVA test results.

The MANOVA relating to correct and incorrect information revealed that Levene's test was significant for the incorrect data ($p = .043$), despite skew and kurtosis of < 1.96 (Field, 2009). The incorrect data was therefore subjected to square root transformation and the MANOVA re-run. The square root transformed data was successful in reducing variance however, use of the transformed data made no difference to the MANOVA results. Results relating to the non-transformed incorrect data are therefore reported for ease of interpretation.

Data relating to *overall* total incorrect information (incorrect + SMEs + confabulations) was also subject to a square root transformation in order to reduce skew and kurtosis. The square root transformed data was successful in reducing variance however, use of the transformed data made no difference to the MANOVA results. Results relating to the non-transformed *overall* incorrect data are therefore reported.

3.4.1.2 Amount of Information Recalled (Correct and Incorrect)

Using Pillai's trace, it was found that group had a significant effect on the amount of information recalled (correct and incorrect), $V = 0.19$, $F(2, 77) = 9.23$, $p < .001$. Follow up univariate ANOVAs revealed a significant effect of group on the amount of incorrect information recalled, $F(1, 78) = 11.20$, $p = .001$, $r = 0.22$, representing a small effect size. The TD children produced more incorrect information ($M = 5.70$. $SD = 3.64$) compared to the adults

with ID (*M* = 3.25, *SD* = 2.86). There were however, no significant group differences in the amount of correct information recalled, $F(1, 78) = .15$, $p = .70$.

Using Pillai's trace, it was also determined that group had a significant effect on the total amount of information recalled (*overall* total information and *overall* total incorrect information), $V = 0.23$, $F(2, 77) = 11.69$, $p < .001$. Follow up univariate ANOVAs revealed a significant effect of group on *overall* total incorrect information recalled, $F(1, 78) = 15.61$, $p < .001$, $r = .24$, representing a small effect size. The TD children produced more *overall* total incorrect information (*M* = 7.80, *SD* = 4.34) than the adults with ID (*M* = 4.23, *SD* = 3.73). There were no significant group differences in the amount of *overall* total information recalled, $F(1, 78) = 0.22$, $p = .64$.

3.4.1.3 Accuracy of Information

A Kruskal-Wallis test revealed that there was a significant difference between the groups in relation to percentage accuracy of the information recalled, $H(1) = 21.16$, $p < .001$. A follow up Mann-Whitney test established that the accuracy of information recalled was higher for the adults with ID (*M* = 89.67, *SD* = 8.83) compared to the TD children (*M* = 81.26, *SD* = 8.05), *U* = 322, *r* = -.51.

3.4.1.4 Source Monitoring Errors (SMEs) and Confabulations

Whilst SMEs overall (for both films) were very low across the two groups, the TD children produced slightly more SMEs (*M* = 1.40, *SD* = 1.61) compared to the TD adults (*M* = 0.60, *SD* = 1.01). The number of confabulations was also very low across both groups. However, the TD children produced more confabulations (*M* = 0.70, *SD* = 1.54) than the adults with ID, (*M* = 0.37 *SD* = 1.31).

Table 3.3 Means (and standard deviations) for type of information recalled in the brief statement taking interview

Type of information	Brief Interview (*N* = 80)					
	Adults with intellectual disabilities (*N* = 40)			Typically developing children (*N* = 40)		
	Film A	Film B	Film A + B	Film A	Film B	Film A + B
Correct	15.10 (7.88)	20.65 (10.35)	35.75 (17.49)	13.30 (7.31)	20.95 (10.56)	34.25 (16.92)
Incorrect (inaccurate)	1.37 (1.48)	1.88 (1.83)	3.25 (2.86)	3.05 (1.95)	2.65 (2.42)	5.70 (3.64)
SMEs	0.40 (.81)	0.20 (.52)	0.60 (1.01)	0.75 (1.03)	0.65 (1.19)	1.40 (1.61)
Confabulations	0.08 (.27)	0.30 (1.30)	0.37 (1.31)	0.37 (1.05)	0.32 (.69)	0.70 (1.54)
Total incorrect information[†]	1.85 (2.02)	2.38 (2.38)	4.23 (3.73)	4.17 (2.50)	3.62 (2.85)	7.80 (4.34)
Total information recalled[#]	16.95 (8.78)	23.03 (11.41)	39.98 (19.37)	17.47 (9.13)	24.58 (12.00)	42.05 (19.85)
% accuracy[‡]	87.47 (17.76)	90.06 (10.59)	89.67 (8.83)	72.28 (19.86)	85.42 (10.70)	81.26 (8.05)

[†] Total incorrect information = inaccurate information + SMEs + confabulations

[#] Total information recalled = correct + incorrect + SMEs + confabulations

[‡] % accuracy = correct information as a percentage of total information recall

3.4.2 First Detailed Witness Interviews

The mean number of items of information recalled for the first detailed interview (for all participants), for both film A and B, are provided in Table 3.4 below.

To examine group differences in the amount of correct, incorrect, *overall* total information (correct + incorrect + SMEs + confabulations) and *overall* total incorrect information (incorrect + SMEs + confabulations) recalled, two separate MANOVAs were conducted to overcome the previously mentioned issues with multicollinearity. Correct and incorrect information was analysed in the first MANOVA and *overall* total information and *overall* total incorrect information was analysed in the second MANOVA. For both MANOVAs, group was entered as the independent variable and type of information entered as the dependent variable.

A Bonferroni correction of $p < .025$ (the usual p value (.05) divided by number of tests used, i.e., two) was applied to the MANOVA and follow-up univariate ANOVA test results.

Data relating to *overall* total incorrect information (incorrect + SMEs + confabulations) was subject to a square root transformation in order to reduce skew and kurtosis. The square root transformed data was successful in reducing variance however, use of the transformed data made no difference to the MANOVA results. Results relating to the non-transformed *overall* total incorrect data are therefore reported.

3.4.2.1 Amount of Correct and Incorrect Information

Using Pillai's trace, it was found that group did not have a significant effect on the amount of information recalled (correct and incorrect), $V = 0.05$, $F(2, 77) = 1.82$, $p = .17$. The adults with ID and TD children recalled a comparable amount of correct ($M = 36.93$, $SD = 19.78$ and $M = 40.70$, $SD = 20.72$ respectively) and incorrect information ($M = 6.43$, $SD = 5.53$ and $M = 8.80$, $SD = 5.75$ respectively).

With regards to *overall* total amount of information and *overall* total incorrect information recalled, again using Pillai's trace, it was revealed that there were no significant group differences, $V = 0.06$, $F(2, 77) = 2.55$, $p = .086$. The adults with ID recalled just as much overall total information ($M = 45.73$, $SD = 22.52$) and overall total incorrect information ($M = 8.80$, $SD = 6.97$) as the TD children ($M = 53.35$, $SD = 26.55$ and $M = 12.65$, $SD = 8.19$ respectively).

Table 3.4 Means (and standard deviations) for type of information recalled in the first detailed witness interview

Type of information	Detailed Witness Interview (*N* = 80)					
	Adults with intellectual disabilities (*N* = 40)			Typically developing children (*N* = 40)		
	Film A	Film B	Film A + B	Film A	Film B	Film A + B
Correct	15.23 (10.34)	21.70 (11.16)	36.93 (19.78)	15.73 (8.84)	24.97 (13.56)	40.70 (20.72)
Incorrect (inaccurate)	3.10 (3.22)	3.32 (2.86)	6.43 (5.53)	4.38 (3.13)	4.42 (3.41)	8.80 (5.75)
SMEs	0.90 (2.70)	0.35 (.92)	1.25 (3.23)	0.95 (1.22)	0.85 (.89)	1.80 (1.54)
Confabulations	.13 (.40)	1.00 (3.72)	1.13 (3.72)	1.20 (2.42)	0.85 (1.12)	2.05 (3.01)
Total incorrect information[†]	4.12 (3.98)	4.68 (4.83)	8.80 (6.97)	6.53 (4.91)	6.13 (4.35)	12.65 (8.19)
Total information recalled[#]	19.35 (12.21)	26.37 (12.67)	45.73 (22.52)	22.25 (12.08)	31.10 (16.83)	53.35 (26.55)
% accuracy[‡]	68.28 (29.71)	80.41 (21.68)	79.90 (17.07)	67.96 (20.57)	76.61 (19.37)	74.45 (15.68)

[†] Total incorrect information = inaccurate information + SMEs + confabulations

[#] Total information = correct + incorrect + SMEs + confabulations

[‡] % accuracy = correct information as a percentage of total information recalled

3.4.2.2 Accuracy of Information

A Kruskal-Wallis test revealed that there was a significant difference between the groups in relation to percentage accuracy of the information recalled, $H(1) = 6.70$, $p = .01$. A follow up Mann-Whitney test showed that that the accuracy of information recalled was higher for the adults with ID ($M = 79.90$, $SD = 17.07$) compared to the TD children ($M = 74.45$, $SD = 15.68$), $U = 531$, $r = -.29$.

3.4.2.3 Source Monitoring Errors (SMEs) and Confabulations

Whilst SMEs overall (for both films) were very low across the two groups, the TD children produced slightly more SMEs ($M = 1.80$, $SD = 1.54$) compared to the adults with ID ($M = 1.25$, $SD = 3.23$).

The number of confabulations was also very low across both groups. However, the TD children produced more confabulations ($M = 2.05$, $SD = 3.01$) than the adults with ID ($M = 1.13$, $SD = 3.72$).

3.4.3 Repeat Detailed Witness Interview

The mean number of items of information recalled for the repeat detailed interview (for all participants), for both film A and B, are provided in Table 3.5 below.

To overcome issues with multicollinearity two separate MANOVAs were utilised with the amount of new correct and new incorrect information recalled entered into one MANOVA and total correct (new correct and repeat correct), total incorrect (new incorrect and repeat incorrect) and *overall* total incorrect information recalled (inaccurate information, SMEs and confabulations) entered into another MANOVA. For both MANOVAs, group was entered as the independent variable and type of information entered as the dependent variable.

Overall total information recalled (new and repeat correct, new and repeat incorrect, SMEs and confabulations) was analysed using an independent samples *t*-test as this variable was highly correlated with each of the other 'total' variables (i.e., total correct, total incorrect and overall total incorrect information).

Data relating to new incorrect information as well as overall total incorrect information (incorrect + SMEs + confabulations) was subject to a square root transformation in order to reduce skew and kurtosis. The square root transformed data was successful in reducing variance however, use of the transformed data made no difference to the MANOVA results.

Results relating to the non-transformed new incorrect data and *overall* total incorrect data are therefore reported.

A mixed design MANOVA was used to determine the effect of both group and interview on the amount of correct and incorrect information recalled for the 40 participants who undertook both a first and repeat detailed interview.

A Bonferroni correction of $p < .0125$ (the usual p value (.05) divided by number of tests used i.e., four (including the mixed design MANOVA)) was applied to the MANOVAs and follow-up univariate ANOVA test results.

Table 3.5 Means (and standard deviations) for type of information recalled in the repeat detailed witness interview

Type of information	Repeat Detailed Witness Interview (*N* = 40)					
	Adults with intellectual disabilities (*N* = 20)			Typically developing children (*N* = 20)		
	Film A	Film B	Film A + B	Film A	Film B	Film A + B
New correct	4.25 (3.46)	6.05 (4.14)	10.30 (6.91)	5.00 (3.61)	7.75 (5.18)	12.75 (6.69)
Repeat correct	9.35 (9.14)	14.65 (10.77)	24.00 (19.19)	11.55 (7.30)	17.00 (10.12)	28.55 (16.44)
Total correct	13.60 (11.51)	20.70 (13.55)	34.30 (24.19)	16.55 (9.75)	24.75 (13.14)	41.30 (21.16)
New incorrect (inaccurate)	2.20 (1.85)	3.10 (3.16)	5.30 (4.68)	2.35 (1.76)	3.20 (2.24)	5.55 (3.09)
Repeat incorrect (inaccurate)	0.70 (1.13)	1.30 (1.59)	2.00 (2.34)	1.90 (2.20)	1.55 (1.40)	3.45 (3.15)
Total incorrect (inaccurate)	2.90 (2.51)	4.40 (4.01)	7.30 (6.10)	4.25 (2.85)	4.75 (3.08)	9.00 (5.20)
New SMEs	0.35 (.59)	0.30 (.66)	0.65 (.93)	0.65 (.75)	0.35 (.75)	1.00 (.97)
Repeat SMEs	0.10 (.31)	0.15 (.37)	0.25 (.55)	0.55 (.76)	0.60 (.75)	1.15 (1.04)
Total SMEs	0.45 (.76)	0.45 (.95)	0.90 (1.37)	1.20 (1.11)	0.95 (.95)	2.15 (1.35)
New confabulations	0.70 (2.16)	0.95 (2.56)	1.65 (4.69)	0.80 (1.15)	1.65 (2.46)	2.45 (3.17)
Repeat confabulations	0.05 (.22)	0.50 (1.67)	0.55 (1.70)	0.70 (1.26)	0.10 (.45)	0.80 (1.28)
Total confabulations	0.75 (2.15)	1.45 (4.21)	2.20 (6.34)	1.50 (1.61)	1.75 (2.43)	3.25 (3.60)
Contradictions	0.80 (1.15)	1.00 (1.38)	1.80 (2.31)	1.15 (1.50)	1.40 (2.04)	2.55 (2.80)
Total incorrect information[†]	4.1 (3.37)	6.3 (5.89)	10.40 (8.82)	6.95 (3.79)	7.45 (4.03)	14.40 (6.96)
Total information recalled[#]	17.70 (13.45)	27.00 (16.34)	44.70 (28.67)	23.50 (11.91)	32.20 (15.08)	55.70 (25.16)
% accuracy[‡]	60.38 (33.92)	70.30 (28.85)	70.18 (28.07)	64.87 (20.47)	71.02 (22.45)	72.03 (16.63)

[†] Total incorrect information = inaccurate information + SMEs + confabulations

[#] Total information = correct + incorrect + SMEs + confabulations

[‡] % accuracy = correct information as a percentage of total information recalled

3.4.3.1 New Correct and New Incorrect Information Recalled

Using Pillai's trace it was found that there were no significant group differences in amount of new correct and new incorrect information recalled, $V = 0.05$, $F(2, 37) = 0.89$, $p = .42$. The adults with ID recalled just as much new correct ($M = 10.30$, $SD = 6.91$), and new incorrect information ($M = 5.30$, $SD = 4.68$), as the TD children ($M = 12.75$, $SD = 6.69$ and $M = 5.55$, $SD = 3.09$ respectively).

3.4.3.2 Total Information

Using Pillai's trace, it was found that group did not have a significant effect on the amount of total correct, total incorrect and *overall* total incorrect information recalled, $V = 0.08$, $F(3, 36) = 1.09$, $p = .37$. The adults with ID and TD children recalled a comparable amount of total correct ($M = 34.30$, $SD = 24.19$ and $M = 41.30$, $SD = 21.16$ respectively), total incorrect ($M = 7.30$, $SD = 6.10$ and $M = 9.00$, $SD = 5.20$ respectively) and *overall* total incorrect information ($M = 10.40$, $SD = 8.82$ and $M = 14.40$, $SD = 6.96$ respectively).

An independent samples *t*-test showed that there was no significant group difference in the amount of overall total information recalled, $t(38) = 1.290$, $p = .21$. The adults with ID recalled just as much overall total information ($M = 44.70$, $SD = 28.67$) as the TD children ($M = 55.70$, $SD = 25.16$).

3.4.3.3 Accuracy of Information

A Kruskal-Wallis test revealed no significant group differences in relation to percentage accuracy of the information recalled, $H(1) = 0.949$, $p > .05$. The accuracy of the information recalled for the adults with ID ($M = 70.18$, $SD = 28.07$) was comparative to the TD children ($M = 72.03$, $SD = 16.63$).

3.4.3.4 Source Monitoring Errors (SMEs) and Confabulations

Levels of SMEs were overall very low across both of the groups however, the TD children produced slightly more new ($M = 1.00$, $SD = 0.97$), repeat ($M = 1.15$, $SD = 1.04$) and total SMEs ($M = 2.15$, $SD = 1.35$) compared to the adults with ID *(*$M = 0.65$, $SD = 0.93$, $M = 0.25$, $SD = 0.55$, $M = 0.90$, $SD = 1.37$ respectively).

The number of confabulations was also very low across both groups. However, as with SMEs, the TD children produced more new ($M = 2.45$, $SD = 3.17$), repeat ($M = 0.80$, $SD = 1.28$) and total confabulations ($M = 3.25$, $SD = 3.60$) in comparison to the adults with ID ($M = 0.80$ $SD = 1.15$, $M = 0.70$, $SD = 1.26$ and $M = 1.50$, $SD = 1.61$ respectively).

3.4.3.5 Effect of Repeat Detailed Witness Interview on Recall of Correct, Incorrect, Confabulated and Contradictory Information

A mixed design MANOVA was conducted to determine the effect of both group and interview on the amount of correct and incorrect information recalled for the 40 participants who undertook both a first and repeat detailed interview. For this analysis correct and incorrect information from the first detailed interview was compared to new correct and new incorrect information from the repeat detailed interview. Group was entered as the between subjects factor and interview as the within subjects factor. Inclusion of the square root transformed data for incorrect (from the first detailed interview) and new incorrect information (from the repeat detailed interview) made no difference to the MANOVA results, thus results relating to the non-transformed data have been reported.

Using Pillai's trace, it was found that there was no significant effect of group when comparing the amount of correct and incorrect information recalled $V = 0.04$, $F(2, 37) = 0.86$, $p = .43$.

There was however, a significant main effect of interview (first / repeat detailed witness interview) on the amount of correct and incorrect information recalled, $V = 0.71$, $F(2, 37) = 44.29$, $p < .001$. Across both groups univariate ANOVAs revealed that there was a significant effect of interview on correct information, $F(1, 38) = 86.47$, $p < .001$, $r = 0.83$, representing a large effect size. For the adults with ID and TD children more correct information was recalled in the first detailed interview ($M = 36.93$, $SD = 19.78$ and $M = 36.93$, $SD = 19.78$ respectively) compared to the repeat detailed interview ($M = 10.30$, $SD = 6.91$ and $M = 12.75$, $SD = 6.69$ respectively).

The interaction between interview and group was not significant, $V = 0.08$, $F(2, 37) = 1.54$, $p = .23$, indicating that there were no group differences in the effect of the repeat interview on the amount of correct and incorrect information recalled.

In relation to confabulations, when comparing the first detailed interview to the repeat detailed interview there was a small increase in confabulations in the latter interview for both the adults with ID ($M = 1.13$, $SD = 3.23$ vs $M = 1.65$, $SD = 4.69$) and TD children ($M = 2.05$, $SD = 3.01$ vs $M = 2.45$, $SD = 3.17$).

Whilst there was a reduction in total SMEs between the first and repeat detailed interview for the adults with ID ($M = 1.25$, $SD = 3.23$ vs $M = 0.90$, $SD = 1.37$), the number of SMEs increased slightly for the TD children ($M = 1.80$, $SD = 1.54$ vs $M = 2.15$, $SD = 1.35$).

With regards to contradictions (changed responses between the first and repeat detailed interviews), on the whole these were fairly low however, the TD children were more likely to change their responses (*M* = 2.55, *SD* = 2.80) compared to the adults with ID (*M* = 1.80, *SD* = 2.31).

To summarise, across the three interviews, there were no significant group differences in the amount of correct and overall total information recalled, although the TD children produced more SMEs and confabulations across each of the three interviews and recalled more incorrect information in the brief statement taking interview. There were group differences in accuracy rates for the brief statement taking and first detailed witness interviews only, with the TD children producing less accurate information. With regards to the actual effect of the repeat detailed witness interview on eyewitness recall, there was a small increase in confabulations for both groups, however, the TD children changed their responses more often and also produced more SMEs. Both groups recalled less correct information in the repeat detailed witness interview in comparison to the first detailed witness interview.

3.5 Discussion

The aims of this study were twofold: firstly, to examine the overall quality, accuracy and reliability of eyewitness memory in adults with ID and TD children for two separate but similar events and secondly, to assess the effect of a repeat interview on eyewitness evidence. In relation to the brief statement taking and first detailed witness interviews it was predicted that, in comparison to the TD children, the MA matched adults with ID would provide comparative amounts of information (correct, incorrect and confabulated) with similar accuracy rates, but produce more SMEs and confabulations. Whilst a prediction was not made in relation to the repeated detailed witness interview, due to a lack of existing research, of interest here was the effect, negative or positive, of the repeat interview on recall and changed responses (contradictions).

3.5.1 Brief Statement Taking Interview

Whilst there were no significant differences between the two groups in relation to the amount of correct and *overall* total information recalled, there was a significant group difference with regards to incorrect and *overall* total incorrect information recalled. The TD children produced significantly more incorrect information and more *overall* total incorrect information compared to the adults with ID. These findings only provide partial support for the hypotheses.

With regards to accuracy of the information recalled, this was significantly higher for the adults with ID in comparison to that of the TD children. Furthermore, although the number of SMEs produced across both groups was quite low, the TD children produced more SMEs than the adults with ID. Neither of these findings were as predicted.

3.5.2 First Detailed Witness Interview

There were no significant group differences in the amount of correct, incorrect, *overall* total incorrect and *overall* total information recalled, which was consistent with the predicted findings. However, as with the brief interview, there was a significant group difference in relation to accuracy, with the adults with ID producing more accurate information compared to the TD children. Whilst total confabulation and SME rates were low overall, the TD children produced more confabulations and more SMEs than the adults with ID. Again, these findings were not in line with those predicted.

3.5.3 Repeat Detailed Witness Interview

There were no significant group differences with regards to the amount of new correct, new incorrect, total correct, total incorrect, *overall* total incorrect and *overall* total information recalled. In addition, group did not have a significant effect on accuracy levels of the recalled information, as these were comparative for the adults with ID and TD children.

As with the brief and detailed interviews, levels of SMEs and confabulations were on the whole low. However, once again the TD children produced more SMEs and confabulations compared to the adults with ID.

3.5.4 Effect of Repeat Detailed Witness Interview

With regards to the actual effect of the repeat detailed witness interview (i.e., examining the effect of the repeat detailed witness interview in comparison to the first detailed witness interview) on eyewitness recall, there was an increase in confabulations for both groups. Whilst there was a reduction in the number of SMEs for the adults with ID, SMEs rose slightly for the TD children. Moreover, although the number of changed responses (contradictions) across both groups was on the whole low, the repeat interview led to more changed responses in the TD children.

There were no significant group differences in the effect of the repeat detailed witness interview on the amount of correct and incorrect information recalled. However, there was a significant effect of interview on the amount of correct information recalled by both the adults

with ID and TD children. Both groups recalled less (new) correct information in the repeated detailed witness interview compared to the first detailed witness interview. In addition, there was a slight reduction in accuracy in the repeat detailed interview, with the decrease being greater for the adults with ID (9.72%) compared to the TD children (2.42%).

3.5.5 General Discussion

Overall, the results of this study demonstrate that when matched for MA with a group of TD children, adults with ID recall comparable amounts of accurate information and produce very few confabulations, source monitoring errors and contradictions.

Across all three interviews accuracy levels were fairly high. However, the highest levels for both groups were seen in the brief interview, which could potentially be attributed to the fact that the delay between witnessing the events and undertaking the brief interview was fairly minimal, i.e., approximately 30 - 40 minutes, and as such would have been too short a period for memory decay to have occurred. Indeed, it appeared that as the length of time between the interviews increased, accuracy rates decreased accordingly. When comparing the initial brief statement taking interview with the repeat detailed witness interview, it is evident that the effect of length of delay between interviews was more pronounced on the accuracy rates for the adults with ID, who experienced an overall reduction of 19.5% compared to 9.2% in the TD children. This effect could have been due to the adults experiencing problems with long-term retention of information (Nolan et al., 1985).

Whilst it is difficult to compare, on a like-for-like basis, the information recalled from the brief interview with the detailed witness interview because the question format was different, the brief interview does, however, serve a very important purpose. It not only provides a baseline for the subsequent detailed witness interview, but it also acts to replicate what would actually happen in a real investigation. Even more importantly, this brief interview may have functioned to strengthen memory for the two witnessed events and thus aid recall in the subsequent detailed interviews, as was evidenced by the high levels of accuracy and amount of information recalled. Fivush and Schwarzmueller (1995) in their review of research on the impact of repeated interviews on TD children's recall, maintain that an interview carried out fairly soon after a witnessed event may be particularly useful to long-term recall by safeguarding memory against forgetting. Beneficial effects of an early interview on the amount and accuracy of information recalled in subsequent interviews have also been reported in research involving children with ID (Brown et al., 2015; Henry & Gudjonsson, 2003).

The number of new correct details that participants reported in the repeat interview ranged from 0 to 27 for the adults with ID and 1 to 24 for the TD children. In a police investigation any new correct information would undoubtedly be of huge benefit to the investigation process. It could provide new leads as well as helping to bolster the completeness of an account (La Rooy, Katz, Malloy & Lamb, 2010). This last point is especially pertinent given the fact that previous research, such as that by Agnew and Powell (2004) and Henry et al. (2011), has found that the accounts of children with ID tend to be less complete. However, it is important to point out that both groups also recalled a significant number of new incorrect details (ranging from 0 to 18 for the adults with ID and 1 to 11 for the TD children). Whilst this may not have a detrimental impact in an experimental setting, where the researcher is afforded the advantage of being able to corroborate the accuracy of information recalled, it is likely to be problematic in a forensic setting.

Of particular concern in relation to repeat interviews is the effect they might have on accuracy rates. As already touched upon above, it is argued that repeat interviews may be beneficial in that they may help to strengthen original memory traces thus facilitating recall of additional information (Fivush & Schwarzmueller, 1995). However, there is concern that errors such as confabulations and incorrect information might become integrated into existing accurate memories of an event thereby contaminating the original memories (Ceci, Huffman, Smith & Loftus, 1994). With regards to the current study, in comparison to the first detailed interview, accuracy rates in the repeat interview remained fairly consistent for the TD children. However, there was almost a 10% reduction in accuracy rates for the adults with ID, although, as already noted, this reduction in accuracy for the adults with ID merely brought their accuracy rates in line with those of the TD children. Furthermore, whilst the repeat interview did lead to a small increase in confabulations for both groups, this was fairly minimal (1.2% for the adults with ID and 0.6% for the TD children) and concerns regarding confabulations and incorrect information contaminating original memories appeared unfounded, due to the low number of repeat confabulations and incorrect details.

Contradictions (i.e., changed responses) can prove an issue with regards to perceived credibility of eyewitness evidence, with jurors more likely to perceive witnesses who have changed their answers to be less reliable and less accurate (Berman et al., 1995). The number of contradictions in the current study was however, low for both groups, which demonstrates that the two groups were quite consistent in their responses across both the first and repeat detailed interviews. Such findings are in line with those of other studies that have employed

repeat interviews with children who do (e.g., Cederborg et al., 2008) and do not have ID (e.g., Waterhouse, 2016).

As to why the adults with ID produced less contradictory information than the TD children, an answer to this may lie in social factors. The use of repeat interviews may lead individuals to change their response because they believe their original answer in the first interview to be incorrect, which suggests that societal influences are at play. These societal influences may be even more pronounced when there is a perceived imbalance of power between the interviewee and the interviewer, as might be the case when interviewing adults with ID or TD children. Perhaps the adults with ID have learnt to better cope with such societal influences and imbalances of power, whereas the TD children have not yet acquired the same knowledge and experience.

The fact that children consistently produced more source monitoring errors (across each interview) compared to the adults with ID is an interesting finding, given the cognitive deficits adults with ID are likely to experience and the fact that the two groups were matched for MA. An answer for the difference between the two groups may lie in developmental differences. Research that has examined source monitoring in TD children has found that when compared to adults (from the general population), young children (i.e., between 4 and 6 years) produce many more source monitoring errors, especially where events are similar. However, the ability to distinguish between different sources of information appears to improve in line with age, i.e., be developmental (Lindsay, Johnson & Kwon, 1991; Sprondel, Kipp & Mecklinger, 2011). Whilst the adults with ID were matched to the TD children according to MA, it is important to point out that this is merely based on cognitive ability. The MA matching process cannot take into account the effects of life experience, knowledge, societal influences, nor the impact of maturity generally. It is therefore possible, as has been touched upon above with contradictions, that a combination of these factors was to some extent influencing the production of source monitoring errors in the adults with ID. It is further possible that, in accordance with the source monitoring framework (Johnson et al., 1993), the adults with ID have more experience of assessing the likely source of an event based on qualitative characteristics of that memory. As such a combination of these factors may have afforded the adults with ID an advantage in being better able to determine the source of their recalled memories.

If, as it appeared, the TD children were experiencing more problems with source monitoring compared to the adults with ID, this in turn might help explain why this group also produced

more confabulations. Researchers have suggested that confabulations stem from an individual's inability to determine the source of a memory (Johnson, Hayes, D'Esposito, & Raye, 2000). On this basis it is possible that when the TD children could not establish the actual source of the recalled information they instead resorted to confabulations. It is further possible that these confabulations were actually source monitoring errors, whose source was distinct from the two eyewitness events.

Taken as a whole, the results of this study have demonstrated, for the first time, that adults with ID can provide a substantial amount of reliable information about two separate but similar witnessed events with very few source monitoring errors and confabulations. Moreover, the repeat interview appeared to have a beneficial effect on recall, as many of the adults with ID produced several pieces of new correct information, without a particularly deleterious effect on contradictions, confabulations or accuracy rates when compared to the TD children.

Obviously, the key limitation with the current study, as with much of the research on eyewitness memory, is that participants were not exposed to the same levels of emotional and psychological distress associated with witnessing a real crime. Moreover, participants were interviewed in familiar surroundings surrounded by familiar faces as opposed to the alien environment of a police station. This undoubtedly makes a big difference to the anxiety that an individual might experience in a real-life situation and is of particular relevance in relation to individuals with ID, who may find it especially difficult to contend with novel circumstances and unfamiliar environments (Bull, 1995).

3.6 Conclusion

In spite of the common perception of adults with ID as being less credible and reliable eyewitnesses, the results of this study demonstrate that this group can provide substantial amounts of accurate information about a witnessed event and moreover, are able to discern between two separate but similar witnessed events, with few source monitoring errors. Additionally, the results of this study not only add to the small body of existing literature in this area but also provide an insight into two previously unexplored areas, those of repeat interviews and eyewitness memory for multiple similar events.

These findings also have important practical implications for the forensic investigation process. One of the main concerns regarding adults with intellectual disabilities is that they are prevented from participating fully in the CJS. This can be due to several reasons which might

include: low reporting rates, the claims of adults with ID not being taken seriously (either by caregivers/guardians or police officers), stereotypical perceptions of adults with ID as unreliable and inaccurate witnesses as well as police officers and other CJS professionals not being aware of the most effective interviewing techniques (and appropriate questions) to facilitate recall of an accurate and reliable account from adults with ID. However, the findings reported here demonstrate that, with the right interviews and the use of appropriate questioning (informed by previous research), adults with ID are just as capable of providing detailed and accurate eyewitness evidence as MA matched TD children.

Moreover, although this group might be perceived to be at risk of confusing details from similar events (source monitoring errors), due to cognitive deficits in memory and attention, this does not appear to be the case, at least in the data from this study. The present research demonstrates that this group are able to discern between two events and indeed, provide a narrative account of separate witnessed events. Whilst there might be concern about the use of repeat interviews with adults with ID, it would appear that they can have a positive effect on eyewitness evidence by aiding recall of new (correct) details. As already noted, any new detail, big or small, could be highly valuable in terms of the forensic investigation, possibly leading to the apprehension and subsequent identification of a perpetrator. Indeed, it is this next part of the investigation process, that of eyewitness identification, that we turn to look at in the following chapter.

Chapter 4

Line-up Identification Performance in Adults with Intellectual Disabilities

4.1 Abstract

Whilst a considerable amount of eyewitness identification research has been conducted with the general population, very little has been carried out regarding individuals with ID. The research reported in this chapter sought to address this imbalance by investigating the ability of adults with ID and MA matched TD children to accurately identify two perpetrators from PP and PA identification line-ups. It also examined both groups' memory for the non-biased line-up instructions and understanding of the line-up's purpose. Results revealed that, in comparison to the TD children, across both line-ups the adults with ID made more false identifications, less correct identifications and less correct rejections. Both groups struggled to remember the non-biased line-up instructions, however, the adults with ID demonstrated a better understanding of the line-up purpose than the TD children. These findings have revealed that, for adults with ID, the task of identifying perpetrators from identification line-ups is a particularly challenging element of the investigation process, thereby highlighting the need for much more research in this area.

4.2 Introduction

Eyewitness identification not only plays a key role in the ability of police officers to link an offence to a specific perpetrator (Wells et al., 1998), but is also a highly persuasive form of evidence for a jury (Cutler et al., 1990). However, as has already been noted in chapter 1, eyewitness identification evidence is not always accurate and can be influenced by a number of wide-ranging factors from both within and outside the control of the CJS (Wells, 1978). Of notable interest with regards to the current study are witness factors such as age and cognitive ability and the role they might play in line-up identification accuracy.

4.2.1 Line-up Identification Performance in Children

A substantial proportion of the line-up identification research on children has reported equivalent accuracy rates on perpetrator present (PP) line-ups for children over the age of five years with adults (Pozzulo & Lindsay, 1998; Pozzulo & Balfour, 2006). Whilst this was a well-established and often quoted finding in the eyewitness literature, a meta-analytic review of research in this area found that adults actually make *more* correct identifications than young children on PP line-ups (Fitzgerald & Price, 2015). Whilst there might be debate as to children's identification accuracy on PP line-ups, the finding in relation to perpetrator absent

(PA) line-ups appears much clearer. Even when informed that the perpetrator may not be present children still like to make a choice. This is a finding that has been reported consistently across numerous research studies and does not appear to differ in relation to line-up type (simultaneous versus sequential) nor mode (photographic versus video) of line-up presentation (Havard, Memon, Clifford & Gabbert, 2010; Humphries, Holliday & Flowe, 2012).

The propensity for children to make a choice on PA line-ups has led researchers to investigate the use of alternative selection options (e.g., in the form of pictures), with the aim of assisting children in their ability to correctly reject the line-up choices. In one such study, Zajac and Karageorge (2009) showed children aged between eight and eleven years a live eyewitness event and asked them to view a PP or PA line-up following a delay of between 24 and 48 hours. If children believed the perpetrator was not present, they were asked to either state this or point to a picture of a silhouetted figure superimposed with a question mark (wildcard). It was found that use of the wildcard significantly reduced the number of false identifications i.e., it led to an increase in correct rejections on the PA line-ups, without a detrimental impact on accuracy on the PP line-ups. These findings regarding the effective benefits of pictorial prompts or aids on identification accuracy rates on PA line-ups have been corroborated in other research studies, for example, Dunlevy and Cherryman (2013); Havard and Memon, (2013).

A number of explanations for the low identification accuracy rates often exhibited by children have been proposed, including the assertion that facial recognition abilities may develop in line with age, progressing from less accurate featural processing in childhood to more accurate holistic face processing in adulthood (Pozzulo & Lindsay 1998). Indeed, research does exist which appears to provide support for this assertion, demonstrating a dramatic increase in children's facial recognition ability from the age of five, with levels reaching those of adults during adolescence (Flin, 1980; Johnston & Ellis, 1995). At first glance this would fit well with early identification research which has reported adult-like line-up identification performance in children aged five years and over (see Pozzulo & Lindsay, 1998 for a meta-analysis of such research). However, other researchers have since reported evidence of holistic face processing in children around four years of age (de Heering, Houthuys, & Rossion, 2007).

Another explanation as to children's low accuracy rates, particularly in relation to PA line-ups, is related to the possibility that children feel compelled to acquiesce, (Dunlevy & Cherryman, 2013). Dunlevy and Cherryman (2013) suggest that if children do not fully understand the task they have been given, i.e., the identification line-up, and believe that the line-up administrator

requires them to make a choice, they will ignore the non-biased line-up instructions (advising that 'the perpetrator may or may not be present') and acquiesce by making a choice from the line-up. This is obviously of particular concern in a forensic setting where an innocent suspect is erroneously included in the line-up, as children may not only struggle to remember the non-biased line-up instructions but may also be prone to making false identifications.

4.2.2 Line-up Identification Performance in Adults with Intellectual Disabilities

Much of the research that has explored line-up identification accuracy has focused on the general population, whilst individuals with ID have been largely neglected. Indeed, there are currently only a handful of published studies that have explored line-up identification performance in individuals with ID. In the first of these, Ericson and Isaacs (2003) investigated line-up identification performance in adults with ID using simultaneous PP and PA photo identification line-ups. They reported no differences in identification accuracy for the adults with and without ID on the PP line-up, however, for the PA line-up, the adults with ID made more false identifications.

In a study by Ternes and Yuille (2008) adults with and without ID were asked to identify a photographer who had taken the participants' photos up to two weeks previously. As per Ericson and Isaacs (2003), the line-ups were photographic and consisted of both PP and PA line-ups, however, the mode of presentation was sequential as opposed to simultaneous. In contrast to Ericson and Isaacs (2003), Ternes and Yuille (2008) found that the identification performance of the adults with ID was less accurate than the adults without ID on the PP line-ups and moreover, there were no group differences in performance on PA line-ups.

In a subsequent study, Wilcock and Henry (2013) showed adults with and without ID a short film of a burglary and subsequently asked participants to identify the two perpetrators from simultaneously presented photographic PP and PA line-ups. The identification performance of the adults with ID was less accurate across both line-ups, with this group making more false identifications overall and being less likely to make correct rejections on the PA line-ups, compared to the adults without ID.

It is noteworthy, however, that whilst the adults with ID in both the Ericson and Isaacs (2003) and Wilcock and Henry (2013) studies had IQs in the moderate to mild ID range, Ericson and Isaacs (2003) extended the IQ cut-off point for their study to 75 instead of 70, thus some participants would have possessed a much milder level of ID. As Ternes and Yuille (2008) did not assess IQ it is not possible to ascertain the level of ID experienced by their participants.

Individuals with ID often exhibit deficiencies in a number of cognitive areas that could have an impact on their ability to provide accurate identification evidence, for example in relation to attention (Sterr, 2004), memory (Nolan et al., 1985; Swanson & Siegel, 2001) and language (Abbeduto & Hesketh, 1997). One of the key skills required to accurately identify someone from an identification line-up is face recognition. Whilst individuals with ID might be *perceived* to have deficient facial recognition abilities, perhaps because of the general cognitive deficits they are likely to experience, very little research has actually explored whether such perceptions are in fact accurate. Gawrylowicz et al.'s (2013) study of facial recognition and facial description abilities in adults with mild ID reported that this group's performance was deficient on both counts compared to adults without ID. Moreover, Wilcock and Henry (2013) in their study described above, noted that whilst the adults with ID exhibited deficient facial recognition abilities in comparison to the adults without ID (as measured by the Benton Facial Recognition Test (BFRT); Benton, Hamsher, deS, Varney & Spreen, 1983), there was also a positive correlation between these abilities and line-up identification accuracy, i.e., better facial recognition skills were associated with more accurate identifications.

Adults with ID may also struggle to understand the purpose of an identification line-up, which could have an impact on their identification performance. If this group experience problems in understanding the objective of the line-up they may not therefore understand what it is they are required to do. Indeed, Ericson and Isaacs (2003) reported that adults with ID were confused as to the aim of an identification line-up and suggest that this could have been due to the fact that some members of this group thought the aim of the task was to choose the individual with the closest *resemblance* to the perpetrator. These findings regarding a lack of understanding of the identification task were further corroborated by Wilcock and Henry (2013) who reported that none of the adults with ID in their study demonstrated a full and complete understanding of the nature of the identification line-up.

Linked to the above is the ability to accurately recall the instructions given prior to undertaking an identification line-up. In accordance with PACE Code D (2017), the administration of an identification line-up (in the UK) should be preceded with a witness being informed that *"the person they saw on a specified earlier occasion may, or may not, appear in the images they are shown and that if they cannot make an identification, they should say so"*. These 'non-biased' line-up instructions are extremely important as they can act to reduce the incidence of false identifications (Malpass & Devine, 1981; Steblay, 1997). However, research suggests that witnesses *without* ID can sometimes struggle to recall these instructions (Rose, Bull & Vrij, 2005). It thus follows that recall of these non-biased line-up instructions may prove

problematic for adults with ID, particularly if they are prone to memory and attention deficits. Again, the research of Ericson and Isaacs (2003) and Wilcock and Henry (2013) provides an insight into this supposition, with the former finding that adults with ID were more likely to disregard these instructions and still make a false identification and the latter reporting that when asked to recall the non-biased line-up instructions, only six of the 25 adults with ID were able to correctly do so.

Having to identify multiple perpetrators might also be a factor that can have an impact on the ability of witnesses, especially those with ID, to accurately identify a perpetrator from a line-up. This issue is a pertinent one, as a study carried out into reported allegations of abuse involving individuals with ID found that 33% of the confirmed cases involved multiple abuses or multiple perpetrators (Cambridge et al., 2011). There is currently no research that has explored the identification of multiple perpetrators in individuals with ID. However, research involving adults without ID has demonstrated that the presence of multiple perpetrators has a negative impact on identification accuracy of a single perpetrator (Megreya & Burton, 2006), and moreover, identification accuracy is further compromised when witnesses view and are then required to identify multiple perpetrators (Hobson & Wilcock, 2011).

The study reported here will seek to provide some clarity on the mixed findings reported by previous researchers regarding the eyewitness identification performance of adults with ID. In addition, it will also attempt to fill some of the gaps in existing knowledge and literature and it aims to do this in a number of ways. Unlike previous research, which has employed photographic line-ups, the current study will use PACE Code D compliant video identification line-ups. Video identification line-ups are much more ecologically valid, as this is the most common type of media currently used by Police Forces in England and Wales to present line-ups. In addition, the current study will use sequentially presented line-ups as opposed to some other previous studies that have used simultaneous. Again, this is deemed to be more ecologically valid as it is the mode of presentation for line-ups in England and Wales. As there is evidence to suggest that the abuse of adults with ID can be repeated and involve multiple perpetrators, this group's ability to accurately identify more than one perpetrator is of much interest. To explore this matter adults with ID and MA matched TD children will be asked to identify two perpetators (from two distinct but similar events) from separate line-ups. In light of the findings from previous studies regarding the difficulties that adults with ID appear to experience in their understanding of the purpose of a line-up and issues relating to accurate recall of the non-biased line-up instructions, both of these aspects will be measured in the current study.

The key objectives of the current study are therefore:

(1) To explore whether adults with ID and TD children can accurately identify one or more perpetrators from separate *PP* identification line-ups

(2) To ascertain if adults with ID and TD children can correctly reject *PA* identification line-ups.

(3) To determine if adults with ID and TD children are able to: (a) remember the non-biased instructions provided before viewing the identification line-ups and (b) understand the purpose of an identification line-up

It is predicted that for both the PP and PA line-ups, when matched for MA, identification performance of the adults with ID and TD children will be comparative. It is further anticipated that rates of full understanding of the line-up's purpose and full recall of the non-biased line-up instructions will also be similar across the two groups.

4.3 Method

4.3.1 Participants

Adults with intellectual disabilities (ID)

A total of 40 adults with ID (17 males and 23 females), aged between 23 years and 64 years, took part in the study.

Typically developing (TD) children

A total of 40 TD children (19 males and 21 females), aged between 4 years and 8 years, took part in the study.

These were all the same participants that took part in the research described in chapter 3 (see Table 3.1 for participant demographics).

Power Analysis

A review of existing identification literature revealed that the norm regarding the number of participants included in each cell for chi square analysis is between 20 and 30 participants. In the current study there were between 17 and 23 participants per cell (there was a slight difference for the number of adults with ID viewing a PP line-up for film A and a PA line-up for film B due to the fact that 3 participants were excluded from the original sample, as their

estimated IQs were found to be above the cut-off point for functioning in the ID range). A post-hoc power analysis was conducted using G*Power (Faul et al., 2007) to examine the statistical power required for a small (w = .10), medium (w = .30), and large (w = .50) effect size for a chi square analysis with an alpha level of $p < .05$ (Cohen, 1992).

For an analysis with 80 participants, examining the effect of the main independent variable (type of line-up i.e. PP and PA) on line-up accuracy (correct versus incorrect), the statistical power required was .12 for detecting a small effect, .64 for detecting a medium effect and .97 for detecting a large effect. Thus, there was sufficient power to detect a medium and large effect.

The adults with ID were matched according to mental age with the TD children on a group basis as described in chapter 2.

4.3.2 Design

A 2 x 2 mixed design was employed for this study. The between participant independent variable was group, which had two levels: adults with ID or TD children, the within participant independent variable was the type of line-up, which had two levels: PP and PA. The dependent variables consisted of the participant's performance on the identification line-ups (PP: correct identification, false identification, incorrect rejection and refused e.g. where the participant advised that they could not remember or did not know, PA: false identification, correct rejection and refused) as well as memory for the line-up instructions (i.e., full, partial or no memory) and understanding of the line-up's purpose (i.e., full, partial or no understanding).

4.3.3 Materials

4.3.3.1 Eyewitness Event

The two eyewitness events (i.e., films), were the same as those used in the interviewing study described in chapter 3.

The two films were edited so that the amount of facial exposure for each of the perpetrators was comparable in each film. In film A the total length of facial exposure for the perpetrator was 58 seconds (full, side and partial), with 11 seconds of this consisting of the full face. For film B the perpetrator's face was in view for one minute and two seconds (full, side and partial) of which 14 seconds consisted of the full face.

Perpetrator 1 (film A) was of medium height, with short blonde hair and a stocky build. Perpetrator 2 (film B) was also of medium height, with short brown hair and slim build. Both of the perpetrators were Caucasian, male and were aged between 23 and 30 years. Neither of the perpetrators had any distinguishing features, e.g., scars, tattoos.

4.3.3.2 Video Identification Line-ups

Assistance in the production of the video identification line-ups was provided by two Police Officers from the Metropolitan Police who possessed considerable experience in visual identification. The line-ups were created using the PROMAT Video Identification System, a national database used by approximately half of the police forces in England and Wales to facilitate profile matching. The line-ups were produced in accordance with the guidelines provided under PACE Code D 2017, Annex A (p.37) which states that a line-up 'must include the suspect and at least eight other people who, so far as possible…. resemble the suspect in age, general appearance and position in life'.

A PP (where the perpetrator in the line-up is the perpetrator) and a PA (where the perpetrator is replaced by a designated 'innocent' suspect) line-up was produced for each film. As per PACE Code D, each line-up consisted of nine images: eight foils plus the perpetrator for the PP line-up, eight foils plus an 'innocent suspect' for the PA line-up. The 'search criteria' (e.g., age range, gender, race, build, hair colour etc.) was entered into the PROMAT database to extract a set of potentially suitable foils. The foils were then chosen by the officers on a 'match to suspect' basis (see Appendix K for static images of the PP and PA identification line-ups). Each of the colour images consisted of a moving head and shoulders shot displayed from a side and frontal view which was presented sequentially (one at a time) for a duration of 15 seconds. The images were set against the same plain background, with the line-up position number shown in the top left-hand corner.

The perpetrators' positions in the line-ups were counterbalanced to negate any potential order effects.

Line-up Fairness

One of the key concerns regarding identification line-ups is that they should be 'fair', i.e., they should not be unfairly biased in favour of the suspect. To test for line-up bias, individuals who were not witnesses to the crime (or in the current instance were not shown the eyewitness films) are asked to identify a suspect based solely on a description. According to Doob and Kirshenbaum (1973) a line-up can be deemed to be fair or non-biased when the number of

people selecting the perpetrator from a line-up is equal to that which would be expected by chance alone, i.e., 1/N, where N is the number of people in the line-up. With nine people in the line-up, as per the current study, the line-up would therefore be deemed to be fair if .11, i.e., 11% of the individuals chose the perpetrator from the line-up.

Furthermore, in the construction of an identification line-up it is also important to ensure that each of the foils are suitable alternative choices, in other words the line-up has an 'effective size' (Malpass & Lindsay, 1999). Ensuring the effective size of a line-up further counters against bias towards a suspect and it is often measured in terms of Tredoux' *E* (calculated using the total number of mock witnesses, total number of line-up members and the number of witnesses choosing each line-up member). Whilst two drawbacks of effective size are that it can be complicated to calculate and it has an unknown sampling distribution, its benefits lie in the fact that its calculation is based on information from every member of the line-up and it also has clear upper (total number of people in the line-up) and lower (zero) limits (Malpass & Lindsay, 1999).

To assess line-up bias and effective size (Tredoux' *E)* prior to the study, 20 individuals (11 males and 9 females, aged between 23 years and 55 years) watched the eyewitness films and were asked to complete an online survey using Qualtrics (a surveying tool that enables the collection and analysis of data) in order to provide descriptions of the two perpetrators using a pre-defined set of descriptors relating to gender, age, ethnicity, build and hair colour. Responses were collated to provide an overall description of each perpetrator.

In respect of line-up bias, 17 additional individuals (4 males and 13 females, aged 19 – 60 years (M = 29.7 years, SD = 11.2 years)), who had not viewed the eyewitness films, were subsequently asked to identify the perpetrator from a PP photographic line-up, based on the overall description which had been created as described above. For film A, three of the 17 participants (18%) chose the perpetrator from the line-up. For film B, one participant (6%) chose the perpetrator from the line-up. Although for film A 18% of the participants chose the perpetrator, this was actually within the 1% confidence interval of -0.06 – 0.42, thereby indicating that this line-up was not biased towards the perpetrator.

Tredoux' *E (effective size)* was calculated for each line-up by using an auto calculating spreadsheet template created by Malpass (1999). For Film A, Tredoux' *E* was calculated as 7.61 and for film B it was 6.88, indicating that the majority of the line-up members were suitable alternative choices.

Pilot Study

A pilot study was carried out to test the efficacy of the identification line-ups and ensure that neither the perpetrators nor foils 'stood out'. 11 adults from the general population (six females and five males, aged between 37 years and 61 years, *M* = 47.73, *SD* = 7.42) viewed the two films and were subsequently asked to identify the two perpetrators from a PP identification line-up. Five of the participants undertook this task directly following the viewing of the film, whilst six were asked to identify the perpetrators following a delay of one week. Of the five participants who undertook the identification without a delay, four correctly identified both perpetrators. For those who identified the perpetrators after a delay of one week, four correctly identified both perpetrators. The line-ups were therefore deemed appropriate for use in the study.

4.3.3.3 Assessments of Cognition and Suggestibility

The measures of cognition and suggestibility employed in this study (SB-5, PPVT-4, TOMAL-2 and GSS2) were the same as those used in the study described in chapter 3 (further information about these measures and their scoring criteria is included in chapter 2). An analysis of participants' scores on a number of the cognitive measures (specifically memory and language) was conducted to ascertain whether any of these might prove good predictors of line-up identification performance. See chapter 5 for further discussion on this.

As facial memory is likely to be associated with identification performance, particularly in relation to the PP line-ups, an analysis of raw scores on the TOMAL-2 memory for faces sub-test was conducted to check for group differences. An Independent Samples t-test revealed no significant difference in scores between the two participant groups (adults with ID and TD children), $t(78) = -3.21$, $p = .10$.

4.3.4 Procedure

All of the participants were tested on an individual basis and testing took place at the group, club or school they attended.

The format of the first session is described in detail in chapter 3 so only a brief overview is provided here. During the first session participants were shown the two eyewitness events on a laptop and then undertook the sub-tests from the TOMAL-2 and the SB-5. The final task during this session was the brief interview.

The second session took place after a delay period of one week and commenced with the PPVT-4 followed by the detailed witness interview (video recorded). Once the interview was complete, participants were advised that they would be asked to identify the perpetrators from the two films they had viewed the week before. Participants viewed two line-ups in total (one PP and one PA), i.e., one for each film. Before viewing the line-ups, the researcher informed the participant which perpetrator they were required to identify, i.e., either the perpetrator from film A or the perpetrator from film B. As per the interviews (see chapter 3), the researcher used the terms 'inside' or 'outside' to differentiate between film A and film B. The line-ups were presented in the same order in which the films had been presented, with the researcher seated behind the participant to avoid administrator (researcher) bias (i.e., inadvertently providing the participant with cues as to the perpetrator's position in the line-up). The type of line-up, i.e., PA and PP, was counterbalanced such that participant one viewed a PP line-up for film A and a PA line-up for film B and vice versa for participant two. As per PACE Code D guidelines, the participants were instructed to watch each line-up twice before making a decision. They were also advised, in accordance with PACE Code D guidelines, that the perpetrator may or may not be present in the line-up and if they did not see or recognise him, they should say so. These instructions were given before each identification line-up.

When the participant had viewed each line-up twice through, they were given the opportunity to either see the whole line-up again or view an individual image. Once the participant had made a decision, they were shown the image of the individual they had chosen for confirmation purposes and their decision was recorded on a response sheet. Participants were then asked to recall the instructions they had been given before viewing the identification line-ups and were also asked about their understanding of the purpose of a line-up. The responses to these questions were recorded as full remembering / full understanding (e.g., 'I had to watch the films twice and tell you which was the man from the film that was inside and say if I can't see him' / 'to identify the faces from the films'), partial remembering / partial understanding (e.g., 'watch the faces twice and at the end say which face it is' / 'to remember the people'), or no memory / no understanding (e.g., 'can't remember' / 'don't know'). In addition, participants were also asked to state anything they could think of that might have helped them further in carrying out the identification task. Again, these responses were recorded.

Once the identification line-ups had been completed, the shortened GSS2 was administered (responses were audio recorded) following which the participants were debriefed (if not undertaking a repeat interview) and asked if they had any questions.

4.4 Results

Tables 4.1 and 4.2 provide details of line-up identification performance for both the PP and PA line-ups for film A and film B (PP: correct identifications, false identifications, incorrect rejections and refusals: PA: correct rejections, false identifications and refusals) respectively. For film A, 17 adults with ID and 19 TD children viewed a PP line-up, whilst 23 adults with ID and 21 TD children viewed a PA line-up. For film B, 23 adults with ID and 21 TD children viewed a PP line-up, whilst 17 adults with ID and 19 TD children viewed a PA line-up. The order in which the line-ups were shown was determined by the order in which the participants had viewed the eyewitness films. There was no significant effect of the order in which the line-ups were shown on line-up accuracy (correct: correct identifications and rejections, incorrect: false identifications and refusals) for either film A, $\chi 2$ (1, n = 80) = 1.08, p = .44, φc = .116 or film B, $\chi 2$ (1, n = 80) = 0.013, p = .57, φc = .013.

To ascertain the effect of group on the line-ups, as well as memory for line-up instructions and understanding of the line-up's purpose, individual chi-square tests were conducted. Chi square tests were also carried out to examine the effect of perpetrator presence on accuracy of participant's responses on both the PP and PA line-ups individually (as opposed to overall accuracy). Where the rules of chi-square were violated (i.e., the expected cell frequencies fell below 5), Fisher's Exact test values are reported.

4.4.1 Line-up Identification Performance

Perpetrator presence

With regards to film A, there was no significant effect of perpetrator presence (whether or not the perpetrator was in the line-up) on line-up accuracy for the TD children, Fisher's Exact test p = .53. However, there was a significant effect for the adults with ID, Fisher's Exact test p = .009. Accuracy rates for the adults with ID were higher when the perpetrator was in the line-up.

For film B there was no significant effect of perpetrator presence on line-up accuracy for either the TD children Fisher's Exact test p = .74, or adults with ID, Fisher's Exact test p = .25.

Perpetrator present line-ups

Chi-square analysis revealed no significant effect of group on line-up performance (correct hits, false identifications, incorrect rejections and refusals) for film A, Fisher's Exact test p = .08. As can be seen from Table 4.1, correct identification rates for the PP line-ups for film A were

low across both groups, with the percentage of correct identifications being 29% and 32% respectively for the adults with ID and TD children.

For film B there was a significant effect of group on participants' line-up identification performance, Fisher's Exact test $p = .002$. Whilst overall correct identification rates were again low across both groups (adults with ID = 13%, TD children = 29%) the adults with ID made fewer correct identifications and more false identifications compared to the TD children.

Table 4.1 Performance on perpetrator present line-ups for Film A and Film B for adults with ID and TD children

	Adults with intellectual disabilities			Typically developing children		
	Film A (*N* = 17)	Film B (*N* = 23)	Total (*N* = 40)	Film A (*N* = 19)	Film B (*N* = 21)	Total (*N* = 40)
Correct ID	29% (5)	13% (3)	20% (8)	32% (6)	29% (6)	30% (12)
False ID	59% (10)	83% (19)	73% (29)	26% (5)	38% (8)	33% (13)
Incorrect Rejection	12% (2)	0% (0)	5% (2)	42% (8)	33% (7)	37% (15)
Refused	0% (0)	4% (1)	2% (1)	0% (0)	0% (0)	0% (0)

Note: Data shown as percentages (frequencies)

Perpetrator absent line-ups

For film A, there was a significant effect of group on line-up performance (correct rejections, false identifications and refusals), Fisher's Exact test $p = .001$. The adults with ID were less likely to make a correct rejection and more likely to make a false identification compared to the TD children.

With regards to film B there was also a significant effect of group on line-up performance, Fisher's Exact test $p = .008$. Once again, the adults with ID were less likely to make a correct rejection and more likely to make a false identification compared to the TD children.

Table 4.2 Performance on perpetrator absent line-ups for Film A and Film B for adults with ID and TD children

	Adults with intellectual disabilities			Typically developing children		
	Film A (*N* = 23)	Film B (*N* = 17)	Total (*N* = 40)	Film A (*N* = 21)	Film B (*N* = 19)	Total (*N* = 40)
Correct Rejection	0% (0)	0% (0)	0% (0)	43% (9)	37% (7)	40% (16)
False ID	96% (22)	100% (17)	98% (39)	52% (11)	53% (10)	53% (21)
Refused	5% (1)	0% (0)	2% (1)	5% (1)	10% (2)	7% (3)

Note: Data shown as percentages (frequencies)

4.4.2 Memory for Line-up Instructions

Data for participants' memory for the non-biased line-up instructions (advising that the perpetrator may or may not be present) is provided in Table 4.3 below.

Table 4.3 Memory for non-biased line-up instructions for adults with ID and TD children

	Memory for line-up instructions		
	Full memory	Partial memory	No memory
Adults with intellectual disabilities (N = 40)	10% (4)	42% (17)	48% (19)
Typically developing Children (N = 40)	3% (1)	40% (16)	57% (23)

Note: Data shown as percentages (frequencies)

Fisher's Exact test revealed no significant effect of group on memory for the non-biased line-up instructions $p = .36$. Rates of full remembering were very low across both groups, four for the adults with ID and one for the TD children. 17 adults with ID and 16 TD children reported partial memory for the line-up instructions whilst 19 adults with ID and 23 TD children had no memory for the line-up instructions.

There was no significant association between memory for the non-biased line-up instructions and line-up accuracy rates for each film for either the adults with ID (Film A, Fisher's Exact test $p = .62$ and Film B Fisher's Exact test $p = .44$) or TD children (Film A, Fisher's Exact test $p = .84$ and Film B Fisher's Exact test $p = .62$). When line-ups for the films were analysed separately,

for the TD children these non-significant effects remained for each line-up (PP and PA) and each film (film A and film B). For the adults with ID, on the PP line-ups the non-significant effect remained for both films. It was however, not possible to conduct the same analysis for the PA line-ups for the adults with ID for either of the films, as none of the participants made a correct choice (correct rejection).

4.4.3 Understanding the Purpose of the Line-up

Data relating to participants' understanding of the line-up's purpose is provided in Table 4.4 below.

Table 4.4 Understanding of line-up purpose for adults with ID and TD children

	Understanding line-up purpose		
	Full understanding	Partial understanding	No understanding
Adults with intellectual disabilities (*N* = 40)	25% (10)	18% (7)	57% (23)
Typically developing children (*N* = 40)	5% (2)	30% (12)	65% (26)

Note: Data shown as percentages (frequencies)

There was a significant effect of group on understanding of the line-up purpose, $\chi 2$ (2, *n* = 80) = 6.83, *p* = .03, φc = .292. The adults with ID reported a better understanding of the line-ups purpose compared to the TD children.

There was no significant association between understanding the line-up purpose and line-up accuracy rates for each film for either the adults with ID (Film A, Fisher's Exact test *p* = .26 and Film B Fisher's Exact test *p* = .39) or TD children (Film A, Fisher's Exact test *p* = .55 and Film B Fisher's Exact test *p* = .16).

When the line-ups for the films were analysed separately, for the TD children these non-significant effects remained for both of the line-ups (PP and PA) and both films (film A and film B). For the adults with ID, on the TP line-ups the non-significant effect remained for both films. As with memory for the line-up instructions, it was not possible to conduct the same analysis for the PA line-ups for either of the films, as none of the adults with ID made a correct decision (correct rejection).

4.5 Discussion

Whilst performance on the PP line-ups for film A was comparative for the adults with ID and TD children, for film B the adults with ID were less likely than the TD children to make correct identifications and more likely to make false identifications. These findings provide only partial support for the hypotheses.

On the PA line-ups for both films, there was a significant effect of group, with the adults with ID making fewer correct rejections and more false identifications compared to the TD children. These findings are not in line with the hypotheses.

As predicted, there were no group differences in rates of full remembering of the non-biased line-up instructions. Both the adults with ID and TD children struggled to recall the instructions provided before viewing the line-ups. Furthermore, in contrast to the predicted findings, the adults with ID reported a better understanding of the actual purpose of the line-ups in comparison to the TD children.

Across the two films, for the PP line-ups, only 20% of the adults with ID made a correct identification with the majority of this group i.e., 73%, making a false identification. Whilst the level of correct identifications were in line with those reported by Ericson and Isaacs (2003), they were far lower than those reported by Wilcock and Henry (2013). Moreover, false identifications were much higher than those obtained in both the Ericson and Isaacs (2003) and Wilcock and Henry (2013) studies. With regards to the PA line-ups, in the current study almost all of the adults with ID (98%) made a false identification. These rates were considerably higher than those found in the research of Ericson and Isaacs (2003) and Wilcock and Henry (2013).

The findings overall, i.e., across both the PP and PA line-ups, appear to be more consistent with those of Ternes and Yuille's (2008) study. On PP line-ups Ternes and Yuille (2008) reported correct identification rates for adults with ID of 18% and false identification rates of 64%, while for the PA line-ups, false identifications accounted for 82% of the line-up decisions made by the adults with ID. The similarity in findings between the current study and those of Ternes and Yuille (2008) are interesting, because both of these studies used sequential line-ups, whereas Ericson and Isaacs (2003) and Wilcock and Henry (2013) both employed simultaneous line-ups. It is important to note though, that Ternes and Yuile (2008) employed a strict sequential presentation for their line-ups, thus the line-up was stopped once a decision had been made. This differs from the current study which employed a PACE Code D sequential

presentation, which advises witnesses to watch the entire line-up at least twice before making a decision. Research has demonstrated that strict sequential line-ups produce fewer correct identifications in comparison to PACE Code D compliant sequential line-ups (Wilcock & Kneller, 2011).

The number of overall correct identifications for the TD children on the PP line-ups was fairly low (30%) and moreover, these levels were much lower than those reported in other studies (e.g. Dunlevy & Cherryman, 2013). On the other hand, whilst rates of false identifications on the PA line-ups for the TD children (53%) were far lower than the adults with ID, levels of choosing overall were still fairly high and these findings provide support for other research in this area (e.g. Pozzulo & Lindsay, 1998; Roebers & Schneider, 2001).

An alternative explanation specifically for the TD children's performance on the line-ups relates to the purported existence of an 'own age bias', i.e., where people are better at identifying faces when they are of a similar age to themselves. In the current study the targets, i.e., the perpetrators, were both adults and this could have been a factor which led to a detrimental effect on the TD children's identification performance. Havard, Memon, Laybourn and Cunningham (2012) explored the existence of own age bias in both adults and six to eight-year-old children. The researchers manipulated the age of the target (the individual to be identified) such that they were either a child aged nine years of age or an adult (26 years of age). It was found that the children, but not the adults, demonstrated an own age bias exemplified by the fact that they made more correct identifications on a PP line-up and more correct rejections on a PA line-up when the target was a child as opposed to an adult.

It is noted that during the assessments of line-up bias (carried out before the testing of participants) the rate of choosing the perpetrator for film A (18%) was both higher than that for film B (6%) and higher than the 11% choosing rate deemed appropriate for a 9-person line-up (Doob & Kirshenbaum, 1973). Whilst this rate was still within the 1% confidence interval of the 11% choosing rate, it is accepted that concerns may be raised as to the impact this might have on the performance of participants on the PP line-ups for this film. On reviewing identification accuracy rates for film A, it is evident that the adults with ID did make more correct identifications for film A (29%) compared to film B (13%). However, the number of correct identifications for the TD children was comparative across the two films. As a result, it is not possible to state with any degree of certainty that line-up bias played a part in the identification performance of the two groups.

Although there was no significant association between identification accuracy and either memory for the non-biased line-up instructions (advising that the perpetrator may or may not be present and that the participant should state if they do not see or recognise him) nor understanding of the line-ups' purpose across either line-up (PP or PA), it was evident from the information provided (in response to the associated questions) that each of the groups were experiencing some issues on both these counts. A combination of these two factors might therefore go some way towards providing a partial explanation for identification performance across the two line-ups.

Memory for the non-biased line-up instructions could contribute to the findings that we see in relation to the PP line-ups. Although there was no significant association between identification accuracy and recall of line-up instructions for either of the two groups, it did however, appear that memory for line-up instructions was in some way influencing line-up decisions, as two adults with ID and 15 TD children rejected (albeit incorrectly) the line-up choices. It was initially thought that a possible explanation for these incorrect rejections might lie in these participants having undertaken a PA line-up first followed by a PP line-up, i.e., the repetition of the line-up instructions could have led to a better understanding of them. However, a review of the order in which the participants were presented with the line-ups did not provide support for this hypothesis, as all those participants who made incorrect rejections on the PP line-ups viewed a PP line-up first followed by a PA line-up.

It was also thought that perhaps participants (mis)understanding of the purpose of the line-up could have been playing a part in the performance of the two groups on the PA line-ups. Maybe those participants who had originally made an incorrect rejection on the PP line-up (where this was presented first) believed that they now had to make a choice on the PA line-up because they'd failed to make a choice first time round, i.e., on the PP line-up. Whilst this seemed like a sensible postulation a review of the line-up choices for these participants revealed a very different picture. Whilst all the adults with ID (two in total) who had made an incorrect rejection on the PP line-up went on to make a false identification on the PA line-ups, the situation was not as clear cut for the TD children as only three of the 15 went on to make a false identification on the PA line-up. It is possible that the adults with ID did indeed feel pressurised to make a choice on the second line-up but for the TD children there were other factors influencing their line-up decisions.

Whilst feeling obliged to make a choice may not be the sole explanation for the line-up identification performance of the TD children in the above scenario, perhaps instead it might

help explain the high number of false identifications observed on the PA line-ups overall. Adults with ID often experience a lack of authority and imbalance of power, stemming from having to depend on others for caregiving (Thornberry & Olson, 2005) or for assistance with general decision making and everyday tasks such as managing finances (Williams, Abbotwrightt, Rodgers, Ward & Watson, 2007). This might make it difficult for them to challenge those deemed to have more authority and certainly research suggests that adults with ID find it much harder to provide a 'don't know' answer to those perceived to be authoritative figures (Brown & Geiselman, 1990).

With regards to TD children, they also appear to struggle to admit that they do not know an answer when the person asking the question is an adult. It is suggested that TD children, particularly those who are younger, defer to the perceived authority of adults, thereby providing an answer which they believe the adult wants (Pozzulo & Lindsay, 1998; Pozzulo, Dempsey, Bruer & Sheahan, 2011). In a study that sought to demonstrate the influential nature of social demand factors on line-up identification performance, Lowenstein, Blank and Sauer (2010) presented TD children with both PP and PA line-ups whilst manipulating the type of clothing that the line-up administrator wore, i.e., either a police-type uniform, or casual clothes. They discovered that identification performance on the PP line-ups was comparative for the uniform and casual clothes conditions, however, on the PA line-ups the uniform condition led to a significant increase in false identifications. For both groups, research examining instructions that explain that it is acceptable to say 'none of them' may be warranted.

Memory deficits, which have already been touched upon above, might also have been a contributory factor in the overall poor identification performance of the adults with ID, particularly in relation to long-term memory (Nolan et al., 1985) and working memory (Swanson & Siegel, 2001). In addition, research on the development of working memory in TD children has revealed age-related differences, suggesting that, like other aspects of memory e.g., episodic memory, working memory appears to improve in line with age (Gathercole, Pickering, Ambridge, & Wearing, 2004; Huizinga, Dolan, & van der Molen, 2006). Taken together, these findings regarding working memory in adults with ID and TD children could have a negative effect on the amount of information encoded at the time of viewing the events, whilst also affecting the temporary storage of information during the identification task and thus the participants' decision-making abilities.

Viewing the identification line-ups twice through (as per PACE Code D) entailed a great deal of concentration and a focusing of attention for a substantial amount of time (just over 10 minutes). Casual observations during this process revealed that for some of the adults with ID and indeed, some of the younger TD children, the identification task appeared to place a significant demand on their attentional abilities. Some participants stopped looking at the screen and had to be reminded to re-focus their attention on the line-ups. This observation is interesting, particularly in relation to the adults with ID, since Sterr (2004) found that on the whole, everyday attention performance in young adults with ID was poorer than that of their non-ID peers, and more specifically this group exhibited marked difficulties in visual selective attention (the ability to focus solely on information appropriate to a task whilst inhibiting inappropriate information). In addition, Swanson and Siegel (2001) in a review of research on working memory in adults (and children) with ID, conclude that this is an area of short-term memory which is deficient in this group. This could mean that the identification line-up procedure, as specified in PACE Code D, is particularly challenging for adults with ID because of the cognitive demands associated with this task.

Research on the development of attention in TD children has also demonstrated that, as with many other cognitive abilities, there is a dramatic improvement during childhood, especially in relation to a child's ability to maintain their attention for longer periods of time (Reynolds & Romano, 2016) and filter out irrelevant information (Enns & Akhtar, 1989). Furthermore, it is also important to point out that the development of attention and working memory are interlinked, with attention playing a key part in the performance of working memory. In the current study it is therefore possible that working memory and attention, both singularly as well as in combination, may not have been as fully developed in the younger TD children when compared to the older TD children, which in turn may have had a negative effect on both the initial encoding of information (from the eyewitness films) as well as the identification task itself.

Rather than any one single factor it is possible that a combination of factors, specifically social and cognitive, could help explain performance on both the PP and PA line-ups across both groups. Indeed, Pozzulo et al. (2011) sought to shed light on this notion in their research on TD children's choosing rates on PA line-ups. The researchers manipulated the cognitive load of the identification task by using highly familiar cartoon characters as targets, thus reducing the cognitive demand and increasing the ease of the task. The idea here was that if the children correctly identified the target 100% of the time on the PP line-ups, but subsequently demonstrated much lower correct rejection rates on the PA line-ups, then this would provide

strong evidence for the influence of social factors on line-up choosing rates. As predicted, the TD children opted to make a false identification of the wrong cartoon character rather than correctly reject the line-up, i.e. the social demands of the task far outweighed the cognitive ones. It is thus possible that in relation to the PA line-ups in the current study, even those participants who reported some memory of the non-biased line-up instructions still chose to ignore them because they felt social pressure to make a choice.

It became evident during the course of the study that the literacy and numeracy skills of the adults with ID varied widely. This is especially pertinent given that every image in the line-ups is numbered and thus the adults with ID were expected to remember the number of the image they had identified as the perpetrator. Once the line-ups had been viewed participants were asked if they wanted to see all or part of the line-up again (three participants accepted this offer). If participants were struggling to make a decision, they were shown a matrix of the still images to assist them. In addition, once they had made a choice, participants were shown that image to confirm identification. However, it is likely that this still did not go far enough towards overcoming any potential issues relating to numeracy. In hindsight, it would therefore have been beneficial to include a measure of numeracy skills, as this could have helped identify any adults with ID who might have required additional support in carrying out the identification task.

Conclusion

This study has helped shed light on the ability of both adults with ID and TD children to identify more than one perpetrator from video identification line-ups. Of particular interest was the identification performance of the adults with ID and whilst identification accuracy rates for this group were lower than those reported in previous research, the findings regarding this group's apparent difficulties in understanding the nature of the identification task and failure to remember the 'non-biased' line-up instructions, were in line with previous studies (e.g., Ericson & Isaacs, 2003; Wilcock & Henry, 2013).

As already noted at the start of this chapter, adults with ID are at increased risk of abuse (Lin, Yen, Kuo, Wu & Lin, 2009), so it is imperative that we have a thorough understanding of the abilities of this group as eyewitnesses. However, very little is known about the identification skills of this group because of the scarcity of research in this area. This is of concern as it is quite probable that the cognitive deficits experienced by adults with ID will in some way impact their skills as eyewitnesses. Moreover, it is also likely that there will be considerable variation in this group's cognitive abilities and thus eyewitness skills. Being able to ascertain

which cognitive abilities are linked to which aspects of eyewitness performance could potentially prove useful in helping criminal justice professionals predict both the recall and identification performance of vulnerable witnesses, something which will be explored further in chapter 5.

Hopefully the research presented in this chapter will help fill a number of gaps in existing knowledge regarding the ability of adults with ID to accurately identify perpetrators from identification line-ups. However, the results of this study also demonstrate the need for further research in this area, not just on the identification skills of adults with ID, but also on the aspects of the line-up which appear to cause issues for this group, together with potential solutions.

Chapter 5

Predicting Eyewitness Performance in Adults with ID and TD Children from Individual Differences in Cognitive Measures

5.1 Abstract

The ability to predict eyewitness performance of adults with ID through individual differences in cognitive abilities would undoubtedly prove to be of enormous benefit to professionals within the CJS, particularly in relation to measures that can be obtained with ease, for example, MA and verbal memory. The research presented in this chapter provides a preliminary investigation of the relationship between several cognitive measures (MA, memory, confabulation and language) and eyewitness performance, both in a detailed witness interview, and on a subsequent identification line-up, in adults with ID and MA matched TD children. Results indicated that for the adults with ID, memory for stories and faces and receptive vocabulary were all significant predictors of the amount of total correct information recalled in the detailed witness interview, whilst MA and memory for stories and faces were all significant predictors for the TD children. There was no significant relationship between a measure of confabulation and the number of confabulations produced during the detailed witness interview and neither were measures of MA and memory for faces significant predictors of line-up identification accuracy for either group. Whilst none of the language measures predicted understanding of the line-up's purpose nor recall of the line-up instructions for the TD children, receptive vocabulary predicted understanding of the purpose of the line-up and expressive vocabulary predicted recall of the line-up instructions in the adults with ID. These novel findings indicate the potential usefulness of certain cognitive measures in being able to predict eyewitness performance of adults with ID in a forensic context.

5.2 Introduction

As human beings we are all unique, with wide ranging variations in many different domains including physiology, emotion and cognition to name but a few. Such individual differences underpin the varying levels of skills and abilities evident in everyday life and the wider society more generally. Undoubtedly, these individual differences, especially in relation to cognitive abilities such as attention, memory, language, and IQ, could have an impact on eyewitness performance.

With particular regard to individual differences amongst individuals with ID, it is important to note that ID is often referred to as an 'umbrella term', used to describe a group of individuals

who experience deficits in cognitive (e.g., language, memory, attention) and adaptive (i.e., the skills necessary to carry out everyday tasks) functioning. In effect, this term gives the impression that individuals who possess an ID are a uniform group, yet this is a misleading concept. Just as the cognitive abilities of individuals from the general population are wide-ranging and diverse, so too are the cognitive abilities of those with ID.

Whilst there is very little research on the relationship between cognitive abilities and eyewitness performance in TD children, there is even less in relation to individuals with ID, and what research does exist tends to focus on *children* with ID (hence a limited discussion of research regarding ID in the following section). Yet, being able to identify which cognitive factors are related to eyewitness performance, as well as ascertaining how effective these factors might be in actually predicting eyewitness performance, could prove extremely helpful in a forensic setting. Such information could not only assist in identifying individuals who may require additional support with various aspects of the forensic investigation process, but it would also help inform the implementation of appropriate adaptations to help ensure access to justice for these vulnerable witnesses.

5.2.1 Individual Differences in Cognitive Abilities and their Capacity to Predict Eyewitness Performance

5.2.1.1 Age

There is a large variation in the MA of individuals with ID, which is often underpinned by the actual severity of the ID itself, with MAs ranging from between 8 to 12 years for those with mild ID, to below three years for profound ID (World Health Organisation (WHO), 2016). Thus, not only are there wide-ranging variations between the various levels of ID, but also within each level as well. Not all research on individuals with ID includes a measure of MA, but studies that do have highlighted these individual differences in MA and their potential effect on eyewitness performance. For example, in a study by Bettenay, Ridley, Henry and Crane (2014), in which the researchers assessed the recall (for a live magic event) and cross-examination performance in children with and without ID, the MAs of the children in the mild to moderate ID category (IQs of between 35 and 69) ranged from 39 months to 83 months (3 years 3 months to 6 years 11 months), whilst those in the 'borderline' ID range (IQs of between 70 and 84) had MAs ranging from 77 to 97 months (6 years 5 months to 8 years 1 month). Furthermore, with regards to the actual relationship between MA and eyewitness performance, in the same study the researchers found that the amount of information recalled was higher for the borderline ID group compared to the mild to moderate ID group, which

appears to suggest a relationship between MA and eyewitness recall for a witnessed event in that those children with a higher MA were able to recall more information.

As has already been highlighted in the chapter on identification (see chapter 4), the abilities of TD children in several key cognitive areas, e.g., memory (Goodman & Reed, 1986), attention (Reynolds & Romano, 2016) and facial recognition (Flin, 1980; Johnston & Ellis, 1995), appears to improve in line with age. Such age-related improvements in cognitive abilities correspond with findings from existing eyewitness literature, although it is important to note that there is very little research that has specifically focused on the relationship between cognitive abilities and eyewitness performance in TD children. It has, however, consistently been reported that the ability of TD children to recall information about a witnessed event increases as a function of age (e.g., Bruck & Ceci, 1999; Goodman & Reed, 1986; Roebers & Schneider, 2002). In addition, Humphries et al. (2012) found a significant effect of age on identification accuracy rates of TD children aged between five to six years and nine to ten years, with the older children making more correct identifications (on PP line-ups) and more correct rejections (on PA line-ups) compared to the younger children. These findings regarding age-related differences in identification accuracy when comparing older and younger TD children have been further supported in a meta-analysis of identification accuracy across the life-span (Fitzgerald & Price, 2015). Although, it is also important to point out that even when children have the same CA, there can be extreme variability in MA which in turn might also result in substantial variation in eyewitness performance.

CA may be a particularly useful predictor of eyewitness performance because it is a fairly straightforward and easy measure to obtain, unlike other cognitive measures, which rely on the administration of assessments. For example, Geddie et al. (2000) included age as a predictor of recall performance in TD children and found that this simple cognitive measure is, on the whole, the best predictor of accurate recall. However, the researchers did also point out that a combination of individual differences, such as those relating to certain aspects of memory and IQ, are also likely to play a significant role in predicting recall accuracy. Furthermore, in a recent study involving children with and without autism, Henry et al. (2017) also found, across both groups, that CA was a significant predictor of performance in a brief eyewitness interview.

The predictive usefulness of age also appears to extend to MA. In a study of recall performance in children with ID, Henry and Gudjonsson (2007) showed participants a video of a crime and subsequently asked them a set of questions about the video during a brief

eyewitness interview. They found that, in comparison to verbal and non-verbal IQ (measured using the British Picture Vocabulary Scale II (BPVS-II) and the British Ability Scales II (BAS-II)), MA was a much better predictor of eyewitness memory performance.

5.2.1.2 Intelligence

It is possible that general intellectual ability is related to eyewitness performance, particularly in the context of the eyewitness skills pertinent to the current research, i.e., recall and identification. It has been suggested that those individuals with lower levels of intellectual functioning may struggle to process information effectively, thereby leading to a reduction in encoded event information (Brown & Pipe, 2003). This group may also experience issues with understanding the event, which might affect the storage of memories and they may also lack the intellectual ability to form and subsequently use, effective memory retrieval strategies (Brown & Pipe, 2003).

When comparing groups with dissimilar IQs, i.e., those with and without ID, research has indeed demonstrated that those with lower IQs both recall less information about a witnessed event and have lower identification accuracy levels (Ternes & Yuille, 2008; Wilcock & Henry, 2013). However, it is extremely important to point out here that the lower IQ level, which characterises a diagnosis of ID, is also accompanied by deficits in cognitive abilities across several key areas. As such, it is unlikely that intelligence alone is associated with eyewitness performance in this group and that instead it can be explained by an interplay between several cognitive abilities

Findings from research that has examined a link between intelligence and eyewitness recall in TD children have been mixed, with some reporting no relationship between the two factors (e.g., Allexander & Schwanenflugel, 1994) and others reporting a significant positive relationship between intelligence and amount of information recalled (e.g., Brown & Pipe, 2003; Geddie et al., 2000; Roebers & Schneider, 2001). Moreover, some studies that have used separate measures of verbal and non-verbal IQ have found that verbal IQ has a stronger relationship with eyewitness recall (particularly in relation to the use of general questions) compared to non-verbal IQ (e.g., Henry & Gudjonsson, 2007). However, there are a number of potential explanations for the mixture of findings seen in this area, including a wide variation in the type of measures of intelligence used, differences in the form of recall task (e.g., Alexander & Schwanenflugel employed a category sorting task as opposed to an eyewitness paradigm) as well as an interaction between intelligence and various other

individual differences for example, pre-existing subject knowledge (Bjorklund, Schneider, Cassel & Ashley, 1994).

Eyewitness identification and intelligence has already been touched upon above in relation to adults with ID, but there appears to be very little research that has explicitly examined links between this aspect of eyewitness evidence and intellectual ability in the general population. Whilst it is possible that those with a higher level of intellectual functioning and thus more effective encoding, storage and subsequent retrieval of information, may consequently be at an advantage when it comes to accurate identification of perpetrators, this may not always be the case. Not only has research demonstrated that there is little association between intelligence and facial recognition abilities (Davis et al., 2011; Wilmer, 2017) but recent twin studies on the heritability of face recognition skills has established that this ability is inherited separately to general intelligence or IQ (Zhu et al., 2010).

The issue of intelligence actually being a predictor of eyewitness performance may in some respects seem common-sense, but the findings from research that have included measures of IQ do not, however, appear clear. Henry and Gudjonsson (2003) discovered that IQ, in comparison to other measures of memory and suggestibility, was not as useful as a predictor of eyewitness recall in both children with and without ID. Moreover, Henry et al. (2017), also included non-verbal IQ as one of the cognitive measures in their assessment of eyewitness performance (in children with and without autism) and once again found that IQ was less effective as a predictor of eyewitness recall when compared to measures of memory.

5.2.1.3 Facial Recognition

There is arguably substantial variation between individuals in the general population when it comes to the ability to recognise faces (Wilmer, Germine & Nakayama, 2014). Some individuals are extremely good at recognising faces, even when they have only seen the face once (Russell, Duchaine & Nakayama, 2009), whilst others struggle considerably with facial recognition, even when the faces are highly familiar (Behrman & Avidan, 2005). Such a variation in individual differences could potentially have an impact on eyewitness performance, particularly in relation to the ability of witnesses to accurately identify perpetrators from an identification line-up.

With regards to adults with ID, there is a scarcity of research that has examined the extent of variation in the face recognition abilities of this group, however, it is likely, given the other cognitive deficits that this group can experience, that any variation is wide ranging. It is

further likely that any individual differences in face recognition skills could have an effect on recall of information specific to the perpetrator e.g., provision of a description, as well as perpetrator identification. In a study by Dobson and Rust (1994) high school children with and without mild ID were asked to learn both pictures of objects and unfamiliar faces until they had achieved a 100% recognition rate. The children were subsequently asked to identify the objects and faces following three different periods of delay. The researchers found that whilst the children with ID initially took longer to learn the faces, recognition rates at each of the delay periods were comparative for those with and without ID. In a more recent study, Gawrylowicz et al. (2013) presented adults with ID with a set of faces to learn and subsequently tested their memory for the faces by asking them to state whether or not the face was familiar. In addition, the researchers presented the same group of adults with a photograph of an unfamiliar face following which they were asked to provide a facial description. They discovered that the facial recognition abilities of the adults with ID were impaired compared to the non-ID group and furthermore, the facial descriptions of the adults with ID were less detailed and less accurate.

Research exploring links between individual differences in facial recognition skills and identification accuracy in TD children is scarce. However, some research does exist that has examined these two aspects in adults from the general population. For example, Hosch (1994) found that participants' scores on the BFRT (Benton et al., 1983) were positively correlated with line-up identification accuracy, whilst Morgan et al. (2007) in their study involving military personnel, reported a significant association between scores on the Wechsler Face Test and participants' performance on an identification task.

Facial recognition skills are another common-sense aspect of cognitive abilities that might be expected to not only be associated with, but also be good predictors of eyewitness performance, particularly in relation to line-up identification accuracy, and there exists some evidence to support this pragmatic assumption. In a study that explored, amongst other things, whether individual differences in facial recognition ability might predict eyewitness identification performance in young adults (without ID), Anderson et al. (2014) reported that scores on facial recognition tasks predicted correct identification accuracy rates on simultaneous line-ups and false identification rates on both simultaneous and sequential line-ups. In other words, those who had higher scores on this cognitive measure were more likely to correctly identify a perpetrator from a simultaneous line-up and less likely to make a false identification on both simultaneous and sequential line-ups. As well as being a potential predictor, performance on a test of face recognition ability may also serve as a useful

postdictor of eyewitness identification accuracy (Bindemann et al., 2012), something which could prove particularly helpful in preventing false identifications in a forensic setting.

5.2.1.4 Memory

Many aspects of memory will in some shape or form be related to eyewitness performance, both in terms of recall and identification. In everyday life it would appear that there is considerable variation in people's memory abilities, for example in relation to both working memory and long-term memory (Miller, Gross & Unsworth, 2019; Unsworth 2019) as well as episodic memory (Kirchhoff, 2009). Such variation may in turn affect the creation and subsequent retrieval of memories. However, rather surprisingly, there are few studies, in either those with or without ID, that have actually examined the association between memory ability and recall.

The cognitive deficits that adults with ID experience extend into several key areas of memory, including both short and long-term memory (Nolan et al., 1985) as well as working memory (Swanson & Siegel, 2001). Substantial variation in working memory skills have been found to exist both within and across various levels of ID (e.g., Henry, 2001; Nolan et al., 1985). Such individual differences in memory ability will likely impact on both recall for an eyewitness event as well as line-up identification performance.

In research involving TD children, working memory ability and consequently rates of forgetting (Bayliss & Jarrold, 2015) also appear to vary widely, which could help explain the varying levels of recall exhibited by TD children of a similar age. In a study by Jack, Leov and Zajac (2014) which investigated links between individual differences in several cognitive variables (including memory and free-recall), the researchers found a positive relationship between general memory and amount of correct information recalled in TD children.

As might be expected, there is some evidence to suggest that particular aspects of memory may play a role in predicting eyewitness recall performance. Henry and Gudjonsson (2003) reported that verbal memory (assessed using the Test of Memory and Learning - TOMAL; Reynolds & Bigler, 1994) in particular predicted the amount of information provided during free-recall in both TD children *and* children with ID. Moreover, these findings, albeit only in relation to TD children, have been provided with further support by Henry et al. (2017) where verbal memory (again assessed using the TOMAL) was discovered to be a significant predictor of recall for an eyewitness event.

5.2.1.5 Language

According to Hayne and Jack (2011), language is essential for the effective encoding, storage and retrieval of event memories. Language thus underpins an individual's ability to not only understand a witnessed event and the questions posed by the interviewer, but also the provision of an intelligible and comprehensive narrative account.

Speech production problems are a particular characteristic of individuals with ID and such issues often vary in line with both the individual as well as severity of ID. Research that has included adults with mild and moderate ID has found that not only is there an association between the frequency of certain speech errors and severity of ID, but this also extends to intelligibility. Thus, those with less severe levels of ID exhibit more speech intelligibility and fewer speech errors (Coppens-Hofman, Terband, Snik & Maasen, 2016). Moreover, language impairments are likely to vary between individuals with similar levels of ID due to individual differences in cognitive deficits and IQ. The impact that individual differences in language skills might have on various aspects of eyewitness performance can only be hypothesised from a common-sense perspective (see above) due to a lack of research in this area.

As with adult members of the general population, language abilities vary considerably amongst TD children, regardless of age (Bornstein & Putnick, 2012). Yet it is surprising that findings from studies investigating a link between language ability and eyewitness performance have been inconsistent. For example, Greenhoot, Ornstein, Gordon and Baker-Ward (1999) found no evidence of a relationship between scores on a test of early language development and recall for a personally experienced event (an examination), whereas, Salmon, Roncolato and Gleitzman (2003) reported that TD children who had higher scores on a test of expressive vocabulary (i.e., the ability to verbally express thoughts using vocabulary) reported more information about an emotional experience than TD children with lower scores. Moreover, Brown and Pipe (2003) found that TD children's vocabulary scores (from the Wechsler Intelligence Scale for Children - WISC) were significantly positively related to event recall.

Individual differences in various aspects of language e.g., expressive and receptive (the ability to understand spoken words), may prove effective in predicting performance in different elements of the investigation process. For example, it is possible that expressive language skills might predict the amount and accuracy of information recalled following a witnessed event, whilst receptive language abilities may prove valuable in predicting an individual's understanding and thus accuracy on identification line-ups. In research with TD children, Burgwyn-Bailes et al., (2001) discovered that receptive vocabulary (measured with the

Peabody Picture Vocabulary Test – PPVT) predicted recall of emergency medical treatment, but only after a delay of one year, i.e., it did not predict recall which was immediate.

5.2.1.6 Suggestibility

A substantial proportion of the research that has examined relationships between individual differences in TD children and individuals with ID and their eyewitness performance has tended to focus on suggestibility (e.g., Agnew & Powell, 2004; Volpini, Melis, Petralia & Rosenberg, 2016) and this has mainly been driven by concerns amongst professionals regarding the proclivity of these two groups to suggestibility and thus their reliability as eyewitnesses. However, with specific reference to TD children, research points to quite a large variation in this group's susceptibility to suggestibility, as some children are quite able to resist suggestive questioning whilst others acquiesce with ease (Chae & Ceci, 2005).

In an examination of eyewitness memory and suggestibility in children with and without ID, Henry and Gudjonsson (1999) found that scores from certain aspects of the Gudjonsson Suggestibility Scale 2 (GSS2) were related to distinct elements of eyewitness performance that varied according to group membership. For example, in relation to the children with ID, higher yield scores (giving in to leading questions) and higher total suggestibility scores (yield plus number of changed responses) were significantly related to lower levels of free recall. Conversely, for the TD children, higher yield scores were related to more accurate performance on correctly leading yes/no questions, whereas higher scores on total suggestibility were related to increased performance on open-ended misleading questions. Furthermore, in research that has included adults with below average intellectual ability (i.e., a score of below 100 on the Wechsler Adult Intelligence Scale, revised (WAIS-R)) a relationship has been reported between lower levels of intellectual functioning and higher levels of interrogative suggestibility on the GSS (Gudjonsson, 1988).

A handful of studies have investigated the predictive nature of suggestibility in relation to eyewitness performance. In the Henry and Gudjonsson (2003) study the researchers examined eyewitness performance in children with ID (mild and moderate), who were matched with TD peers based on both CA and MA. Amongst a number of other things, the researchers were interested in whether measures of suggestibility (again, obtained from the GSS2) would be related to recall for a live eyewitness event. For the children with ID only, they found that the GSS yield score (see above) was a significant predictor of both suggestibility in response to yes/no misleading questions, as well as number of changed responses in a repeat interview.

It is evident from the studies highlighted in this section that research examining the role of individual differences in being able to predict eyewitness performance in both individuals with ID and TD children is rather limited. Moreover, what research does exist in relation to individuals with ID has solely focused on children with ID. To the best of the researcher's knowledge, there currently exists no research that has explored the predictive nature of cognitive abilities in relation to adults with ID. However, the potential usefulness of being able to identify which cognitive abilities might predict strengths and weaknesses in eyewitness performance has already been highlighted at the beginning of this chapter.

Consequently, the study reported here reflects a preliminary investigation of whether measures relating to MA, memory and language may be effective predictors of eyewitness recall and line-up identification performance in both adults with ID and TD children. It further explored a possible relationship between confabulation scores on the GSS2 and confabulations produced in the first detailed witness interview. These measures have been identified as not only holding the most potential for being predictors of eyewitness performance in adults with ID and TD children, but also being the most useful to professionals within the criminal justice system because of possible links with a number of areas of eyewitness testimony.

It is tentatively predicted that:

(1) Individual differences in MA (Stanford Binet MA equivalents), memory (verbal and facial memory assessed using TOMAL) and receptive vocabulary (assessed using the PPVT) will be significant predictors of the amount of correct information recalled on the first detailed witness interview.

(2) Total confabulation scores (distortions and fabrications) on an abbreviated version of the GSS2 will be related to the number of confabulations produced in the first detailed witness interview.

(3) Facial memory scores and MA will predict line-up identification accuracy.

(4) Receptive and expressive (assessed using Stanford Binet) vocabulary scores will predict understanding of the purpose of the identification line-ups.

(5) Receptive and expressive vocabulary scores will predict memory for the non-biased line-up identification instructions.

5.3 Method

5.3.1 Participants

Adults with intellectual disabilities (ID)

A total of 40 adults with ID (17 males and 23 females), aged between 23 years and 64 years, took part in the study.

Typically developing (TD) children

A total of 40 TD children (19 males and 21 females), aged between four years and eight years, took part in the study.

These were all the same participants that took part in the research described in chapters 3 and 4. Full details of the two groups are provided in Table 5.1 below.

Table 5.1 Mean (SD) scores for age (chronological and mental) and cognitive measures for the adults with ID and TD children

Measure	Adults with ID	TD children	Group differences
Chronological Age	39yrs 4m (11yrs 8m)	6yrs 1m (11 m)	$t(39.53) = 18.43^{\#}$, $p < .001$
Mental Age[†]	6yrs 5m (1yr 1m)	6yrs 7m (11 m)	$t(78) = -0.62$, $p = .53$
SB Verbal Knowledge	25.90 (3.82)	24.38 (2.84)	$t(72.12) = 2.03^{\#}$, $p = .05$
SB Fluid Reasoning	14.50 (4.43)	16.87 (3.70)	$t(78) = -2.60$, $p = .01$
SB-5 (ABIQ)	53.40 (7.12)	104.65 (7.66)	$t(78) = -31.01$, $p < .001$
TOMAL-2 - Memory for Stories	10.63 (6.55)	16.58 (9.72)	$t(68.34) = -3.21^{\#}$, $p = .002$
TOMAL-2 - Memory for Faces	20.33 (5.46)	22.40 (4.34)	$t(78) = -1.68$, $p > .05$
PPVT-4 – Receptive Vocabulary	128.05 (26.65)	111.90 (18.68)	$t(69.86) = 3.14^{\#}$, $p = .002$
GSS2 – Total Confabulations	1.95 (2.22)	.90 (1.11)	$t(57.23) = 2.68^{\#}$, $p = .01$

[†] Obtained by averaging mental age equivalent scores across the SB verbal knowledge and SB fluid reasoning tests

[#] Equal variances not assumed

Power Analysis

A post-hoc power analysis was conducted using G*Power (Faul et al., 2007) to examine the statistical power required for a small (w = .02), medium (w = .15), and large (w = .35) effect size with an alpha level of $p < .05$ (Cohen, 1992) for the main multiple regression.

For a multiple regression with 40 participants, examining the effect of the predictor variables (MA, memory for stories, memory for faces and receptive vocabulary (PPVT)) on the total amount of correct information recalled in the first detailed witness interview, the statistical power required was .09 for detecting a small effect, .42 for detecting a medium effect and .81 for detecting a large effect. Thus, there was ample power to detect medium and large effect sizes.

5.3.2 Design

The design of the study was correlational. The predictor variables consisted of participants' scores on the various cognitive measures (see below for further information). The dependent variables were: the total amount of correct information recalled and number of confabulations produced in the first detailed witness interview, line-up identification accuracy (correct versus incorrect), understanding of the line-up's purpose and memory for the non-biased line-up identification instructions.

5.3.3 Materials

A number of cognitive measures were employed to assess participants' MA, memory, language and suggestibility. As already noted in chapter 2 (Methodological Challenges), the decision to use the following assessments, was dependent not only on their suitability for the groups under review, but also their proven reliability, as well as more practical issues such as finances and availability. It is however, accepted that for some of the measures, there are a number of other equally suitable alternative assessments.

5.3.3.1 Eyewitness Events

The two eyewitness events were the same as those described in chapter 3 and depicted very mild disability hate crimes.

5.3.3.2 Detailed Witness Interview

The detailed witness interview was based on current police practice and as per the ABE (Ministry of Justice, 2011) it consisted of a phased questioning approach compromising seven separate phases in total. The interview was the same as that described in chapter 3.

5.3.3.3 Cognitive Measures

Stanford-Binet Intelligence Scales

A two sub-test abbreviated version of the Stanford-Binet Intelligence Scales (Abbreviated Battery IQ), Fifth Edition (SB-5; Roid, 2003) was employed to provide an estimate of overall intellectual functioning in the form of MA, as well as verbal (expressive) ability. The two sub-tests consisted of verbal knowledge (expressive vocabulary) and fluid reasoning.

Test of Memory and Learning

Two sub-tests (Memory for Stories and Memory for Faces) from The Test of Memory and Learning – Second Edition (TOMAL-2; Reynolds & Bigler, 2007) were used to assess participants' story recall abilities (verbal memory) and facial recognition skills (facial memory).

Peabody Picture Vocabulary Test

Participants' receptive vocabulary was assessed using The Peabody Picture Vocabulary Test, Fourth Edition (PPVT-4; Dunn & Dunn, 2007).

Gudjonsson Suggestibility Scale

A shortened version of the Gudjonsson Suggestibility Scale 2 (GSS2; Gudjonsson, 1997) was used to ascertain participants' susceptibility to interrogative suggestibility. The GSS2 provides individual measures of free recall, total confabulations (distortions and fabrications), yielding to misleading questions and changed answers in response to negative feedback (i.e., shift). The entire test was administered for completeness, however, only the scores relating to 'total confabulations' were used for the subsequent analyses. This was due to the fact that misleading questions were not included in the investigative interview phase and the main point of interest in relation to suggestibility was whether there might be an association between total confabulations on the GSS and number of confabulations produced in the first detailed interview. This shortened version has been used in previously published research (Henry & Gudjonsson, 2007).

5.3.4 Procedure

Detailed information relating to the interviewing and identification procedures carried out in each session is provided under the relevant chapters (see chapter 3 for Interviews and chapter 4 for Identification). Only a brief summary of these two procedures is provided here, with the key focus being on the cognitive measures that were administered. All participants were tested on an individual basis, whilst all of the cognitive measures were administered in the same order for each participant.

The format of the sessions is described in detail in chapters 3 and 4, so only a brief overview is provided here. After assessing capacity to consent for the adults with ID and asking participants to sign a simply worded consent form, participants were shown the two eyewitness films. Following this, the two sub-tests from the TOMAL-2 (memory for stories and memory for faces) were administered. For the first sub-test, memory for stories, the participant was instructed to listen to a story that was read out by the researcher, following which they were requested to repeat the story back to the researcher, just as they had heard it. This process was repeated twice with two different stories. Each part of the story correctly recalled was awarded one point, with a maximum score of 27 for the first story and 35 for the second. Recall of the stories was audio recorded to facilitate scoring. For the second sub-test, participants were instructed to look at a face/faces presented in a booklet and then identify them from a set of images by placing a purple plastic chip on each of the face(s) seen. The amount of time permitted to view the faces was defined in the test and increased in line with test difficulty, i.e., number of faces to be identified. There were 41 faces in total (thus the maximum score was 41) split across 7 sets and all test items were administered for every participant.

Upon completion of the TOMAL-2, the two-subtests from the SB-5 (non-verbal, i.e., object series/matrices, and verbal, i.e., verbal knowledge/vocabulary) were administered. As the start points for each of the sub-tests were determined by the participant's age, for the adults with ID it was deemed appropriate to start the tests at item 1 (the very beginning) whereas for the TD children, the start points were based on their CA. The non-verbal sub-test was completed first. For this sub-test participants were either asked to identify a missing object or a missing piece in a series of patterns or sequences (denoted by a question mark), with the task gradually increasing in difficulty. There were 36 items in total, with one point being awarded for each correct response (and 0 awarded for an incorrect response). For items one, two and three if the participant received a score of 0 testing was to be discontinued (this did not occur for any of the participants in this research study). For the remaining items the test was stopped when the participant received four consecutive scores of 0.

For the verbal sub-test, items one through to nine required the participant to identify parts of the body followed by various objects. In items 10 through to 14 participants were presented with a set of images and asked to state what the individual was doing in each of them (e.g., drinking, cutting etc.). For item 15 only, the participant was shown a word (which was also read out by the researcher) and asked to tell the researcher what it was (e.g., the word was 'cup' and the participant was asked 'what is a cup?'). For the remaining items participants

were shown various words (which were read out by the researcher) and asked to state what they meant (e.g., what is a 'hat?'). For items one through to 14, participants were awarded a score of one point for each correct response (and 0 awarded for an incorrect response). For items 15 onwards, the participant was awarded a score of either 0, 1 or 2 based upon the quality of the response. There were 44 items in total, with the task gradually increasing in difficulty. As for the non-verbal sub-test, if the participant received a score of 0 on items one, two and three, testing was discontinued (this did not occur for any of the participants in this research study). For the remaining items the test was stopped when the participant received four consecutive scores of 0. The participants' responses for both sub-tests were noted in a record booklet.

The last task that was administered in this session was the brief eyewitness interview.

In the second session, seven days later, participants' receptive vocabulary was assessed using the PPVT-4. Participants were asked to either point to, or give the number of, the picture that depicted the word spoken by the researcher. Two practice items were first administered to ensure the participant understood the task. The stimulus items were presented in a flip page booklet with 4 numbered images per page. There were 228 items in total, split into 19 sets (12 items in each set). Each correct answer received a score of 1 point. The start point for each participant was defined by their estimated mental age (assessed by the use of the SB-5 in the first session), whilst testing stopped once the participant had made eight or more errors in a set. The participant's raw score was calculated by subtracting the number of errors from the last number of the item administered (e.g., 130 items administered with 10 errors = a raw score of 120).

Once the PPVT-4 had been completed the participant undertook a detailed witness interview followed by the identification line-ups. The final task during the second session was the shortened GSS2. Participants were first instructed to listen to a short story and then asked to recall everything they could remember about it. Each idea recalled correctly was awarded one point, with a maximum total score of 32 points. Half a point was awarded for a partially correct/incomplete recalled idea. In addition, distortions i.e., a change to the original idea, and fabrications i.e., the introduction of new elements, were also scored (one point per distortion/fabrication), the sum of which constituted 'total confabulations'. Participants were subsequently informed that they would be asked some questions about the story and instructed to be as accurate as possible in their answers. There were 16 questions in total, 12 of which were leading and these questions were administered twice. On the first occasion, if

the participant 'yielded' (gave in) to the leading question this was scored as one point (and the total score termed as 'yield 1'). The researcher then gave the participant some negative feedback, advising that they had done well but had made some mistakes so the questions would have to be asked again to see if they could do better. The participants' responses were again scored for yield (termed 'yield 2') and in addition, the number of times participants 'shifted', i.e., changed their response (between yield 1 and yield 2), was also scored. Total suggestibility was calculated by adding together the scores obtained from yield 1 and shift (total range of scores was 0 to 28).

It should be noted that half of the participants undertook a repeat detailed witness interview following a further delay of one week. However, for the purposes of the study reported here only data relating to the first detailed witness interview, which was administered to *all* participants, has been included.

5.4 Results

Mean scores (including standard deviations) for CA, MA and the cognitive measures for both the adults with ID and TD children are provided in table 5.1 above. For the cognitive measures this data is based on raw scores. Group differences (ascertained using independent samples *t* tests) have also been provided.

To simplify the analysis process in relation to the multiple regression (to ascertain if scores on the cognitive measures were predictive of amount of correct information recalled in the first detailed witness interview), as well as the correlation relating to confabulation scores on the GSS and confabulations produced in the first detailed witness interview, data for both films was combined. For the logistic regressions relating to line-up identification accuracy, data for films A and B was analysed separately.

In addition, data relating to the number of confabulations produced in the first detailed witness interview was highly positively skewed, i.e., > 1.96 (Field, 2009), (due to a high number of low scores) and transformations were unsuccessful in reducing this skew. As a result, the confabulations data was subject to a Spearman's as opposed to a Pearson Correlation.

Data pertinent to each group was analysed separately, since relationships between variables are likely to differ as a function of group and correlations between cognitive measures are often higher in individuals with ID (Detterman & Daniel, 1989). As data from the two groups

was not combined for the analysis, it was not necessary to enter group (adults with ID or TD children) as a predictor.

Statistical Checks

With regards to the regression analyses, all data was subject to the appropriate statistical checks (e.g., Cook's and Mahalanobis distances, average leverage, tolerance, VIF, Durbin-Watson and DFBeta) to ensure that no individual cases were exerting excessive influence on the regressions. In addition, data for the logistic regressions was tested for linearity of the logit and multicollinearity (Field, 2009). See Appendix L for a table providing details of the correlations between the cognitive measures.

5.4.1 Predicting Total Amount of Correct Information Recalled in the First Detailed Witness Interview from Measures of Mental Age, Memory and Receptive Vocabulary

Two multiple regression analyses (one for each group) were employed to explore the relationship between the cognitive measures and performance on the first detailed witness interview. MA (Stanford Binet MA equivalents), memory (TOMAL memory for stories and faces) and receptive vocabulary (PPVT) were all entered (using forced entry) as predictor variables, with total amount of correct information recalled entered as the dependent variable.

For the TD children, a review of the casewise diagnostics highlighted one case with high standardised residuals, i.e., a potential outlier. Further investigations were therefore carried out, i.e., using all the statistical checks specified above, however, all values were within the relevant ranges specified. A review of this participant's data revealed zero scores in relation to information recalled (i.e., they were unable to remember anything about either of the two eyewitness films). As a result, the decision was taken to exclude this case from the analysis[2]. The results of the multiple regression analyses are reported in Table 5.2 below.

[2] The overall model, when the outlier was included, was statistically significant, $F(4,35) = 15.92$, $p < .001$, with the model accounting for 65% (r^2 adjusted, = 61%) *of* the variance. Both SB MA and memory for stories (verbal memory) were significant predictors of total amount of information recalled in the first detailed witness interview, $\beta = .55$, $p = .008$ and $\beta = .34$, $p = .013$ respectively.

Table 5.2 Summary of regressions predicting the amount of total correct information recalled in the first detailed witness interview (significant values are indicated where relevant)

	Adults with ID[#] (*N* = 40)			TD Children[##] (*N* = 39)		
	B	*SE B*	β	*B*	*SE B*	β
Constant	14.82	13.38	-	-56.99	13.88	-
SB MA	0.15	0.21	.10	1.18	0.30	.68****
TOMAL: Memory for Stories	1.83	0.37	.61****	0.52	0.23	.26**
TOMAL: Memory for Faces	1.53	0.45	.42***	1.04	0.51	.23*
PPVT: Receptive Vocabulary	- 0.32	0.08	-.43****	- 0.23	0.15	-.22

[#]R^2 adjusted = .69, [##]R^2 adjusted = .71

* p = .05, ** p < .05, *** p < .01, **** p < .001

For the adults with ID the overall model was significant, $F(4,35) = 22.55$, $p < .001$, accounting for 69% (adjusted) of the variance. Verbal memory (β = .61, $p < .001$) and facial memory (β = .42, p= .002) were significant positive predictors of the total amount of correct information recalled whereas receptive vocabulary (β = -.43, $p < .001$) was a significant negative predictor.

The overall model was also significant for the TD children, $F(4,34) = 24.01$, $p < .001$, accounting for 71% (adjusted) of the variance. SB MA (β = .68, $p < .001$), verbal memory (β = .26, p = .03) and facial memory (β = .23, p = .05) were all positive significant predictors of total amount of correct information recalled[3].

5.4.2 Relationship Between GSS Confabulation Scores and Confabulations Produced on the Detailed Witness Interview

The relationship between confabulation scores on the GSS and the number of confabulations produced during the detailed witness interview was investigated using a Spearman's correlation. This revealed that there was no significant relationship between these two variables for either the adults with ID, $r_s = .20$, $p = .22$ or the TD children, $r_s = .18$, $p = .27$[4].

[3] The regression was also carried out with CA substituted for MA and this made no difference to either the significance of the overall model nor individual predictors.

[4] As the confabulation scores on the GSS comprise of two separate elements: distortions and fabrications, analyses were also run separately for each of these elements to ensure that none of these

5.4.3 Predicting Line-Up Identification Accuracy from Measures of Facial Memory and Mental Age

The ability of measures of MA and facial memory to predict identification accuracy on line-ups was explored using forced entry logistic regressions (two for each group: one for film A and one for film B), with overall identification accuracy (correct or incorrect) entered as the dependent variable and MA and memory for faces entered as the predictor variables. See Table 5.3 below for a summary of the regression analyses.

For Film A, for the adults with ID the overall model did not significantly predict line-up accuracy, omnibus $\chi^2 = 1.20$, $df = 2$, $p = .55$ and MA ($p = .54$) and memory for faces ($p = .29$) were not significant predictors. The model accounted for between 3% and 5.6% of the variance, with 0% of accurate performance and 100% of inaccurate performance successfully predicted[5]. For the TD children the overall model did not significantly predict line-up accuracy, omnibus $\chi^2 = 0.06$, $df = 2$, $p = .97$ and MA ($p = .82$) and memory for faces ($p = .94$) were not significant predictors. The model accounted for between .1% and .2% of the variance, with 0% of accurate performance and 100% of inaccurate performance successfully predicted.

For Film B, for the adults with ID the overall model did not significantly predict line-up accuracy, omnibus $\chi^2 = 1.63$, $df = 2$, $p = .44$ and MA ($p = .32$) and memory for faces ($p = .96$) were not significant predictors. The model accounted for between 4% and 9.7% of the variance, with 0% of accurate performance and 100% of inaccurate performance successfully predicted. For the TD children the overall model did not significantly predict line-up accuracy, omnibus $\chi^2 = 1.62$, $df = 2$, $p = .44$ and MA ($p = .23$) and memory for faces ($p = .32$) were not significant predictors. The model accounted for between 4% and 5.5% of the variance, with 7.7% of accurate performance and 100% of inaccurate performance successfully predicted[6].

elements were individually related to the number of confabulations recalled during the detailed witness interview. Neither of these correlations were significant for either group.

[5] Three potential outliers were identified, however, excluding these cases made no difference to the significance of the model overall nor individual predictors. Analyses reported thus include all cases.

[6] One potential outlier was identified, however, excluding this case made no difference to the significance of the model overall nor individual predictors. Analyses reported thus include all cases.

Table 5.3 Summary of regressions predicting line-up identification accuracy for film A and film B for the adults with ID and TD children

	Adults with ID (*N* = 40)							TD Children (*N* = 40)						
	B (SE)	Wald	*df*	Sig.	Exp *B*	95% confidence interval		*B (SE)*	Wald	*df*	Sig.	Exp *B*	95% confidence interval	
						Lower	Upper						Lower	Upper
Film A[#]														
Constant	-2.06 (3.09)	0.44	1	.51	0.13	-	-	-1.01 (2.37)	0.18	1	.67	0.37	-	-
SB MA	-0.03 (0.06)	0.38	1	.54	1.00	.87	1.08	0.10 (0.04)	0.05	1	.82	1.01	.94	1.09
TOMAL: Memory for Faces	0.13 (0.12)	1.14	1	.29	1.14	.90	1.44	-0.01 (0.10)	0.01	1	.94	0.99	.82	1.20
Film B[##]														
Constant	-7.45 (4.26)	3.06	1	.08	0.001	-	-	0.85 (2.56)	0.11	1	.74	2.33	-	-
SB MA	0.06 (0.06)	0.98	1	.32	1.07	.94	1.21	-0.01 (0.04)	1.42	1	.23	0.95	.88	1.03
TOMAL: Memory for Faces	-0.01 (0.14)	0.00	1	.96	0.99	.75	1.31	0.11 (0.11)	0.98	1	.32	1.11	.90	1.37

[#]R^2 = Adults with ID: .04 (Hosmer & Lemeshow), .03 (Cox & Snell), .06 (Nagelkerke), TD Children: .001 (Hosmer & Lemeshow), .001 (Cox & Snell), .002 (Nagelkerke)

[##]R^2 = Adults with ID: .08 (Hosmer & Lemeshow), .04 (Cox & Snell), .10 (Nagelkerke), TD Children: .03 (Hosmer & Lemeshow), .04 (Cox & Snell), .06 (Nagelkerke)

5.4.4 Predicting Understanding of the Purpose of the Identification Line-ups from Measures of Language

For the identification line-ups, data relating to scores on the PPVT and SB verbal tests were analysed using forced entry multinomial logistic regressions (one for each group).

Understanding of the purpose of the line-up (full, partial or no understanding) was entered as the dependent variable, with scores for the PPVT and SB verbal tests entered as covariates (predictor variables). See Table 5.4 below for summarised results from these regressions.

For the adults with ID the overall model significantly predicted understanding of the purpose of the line-up, $\chi^2 = 22.50$, $df = 4$, $p < .001$. Receptive vocabulary was a significant predictor, $\chi^2 = 8.21$, $df = 2$, $p = .016$, although expressive vocabulary was not, $\chi^2 = .3.74$, $df = 2$, $p = .15$. The model accounted for between 43% and 50.2% of the variance, with 50% of full understanding, 0% of partial understanding and 91.3% of no understanding successfully predicted. In comparison to no understanding of the purpose of the line-up, the odds ratio of a partial understanding was 1.06, whilst the odds ratio for a full understanding was also 1.06.

For the TD children the overall model did not significantly predict understanding of the purpose of the line-up, $\chi^2 = 6.56$, $df = 4$, $p = .16$ and receptive and expressive vocabulary were not significant predictors ($\chi^2 = 5.30$, $df = 2$, $p = .07$ and $\chi^2 = 4.88$, $df = 2$, $p = .09$ respectively). The model accounted for between 15.1% and 19% of the variance, with 0% of full understanding, 25% of partial understanding and 92.3% of no understanding successfully predicted.

Table 5.4 Summary of regressions predicting understanding of the purpose of the identification line-up for the adults with ID and TD children

	Adults with ID							TD Children						
	B (SE)	Wald	*df*	Sig.	Exp *B*	95% confidence interval		*B (SE)*	Wald	*df*	Sig.	Exp *B*	95% confidence interval	
						Lower	Upper						Lower	Upper
Full understanding vs. No understanding														
Intercept	-16.54 (5.30)	9.73	1	.002	-	-	-	1.93 (8.26)	0.05	1	.82	-	-	-
PPVT: Receptive Vocabulary	0.06 (0.03)	4.70	1	.03	1.06	1.01	1.11	-0.05 (0.06)	0.59	1	.44	0.95	.84	1.08
SB Verbal: Expressive Vocabulary	0.32 (0.18)	3.19	1	.07	1.38	.97	1.96	0.03 (0.49)	0.00	1	.95	1.03	.39	2.7
Partial understanding vs. No understanding														
Intercept	-12.21 (4.86)	6.31	1	.012	-	-	-	-4.13 (3.50)	1.40	1	.24	-	-	-
PPVT: Receptive Vocabulary	0.06 (0.03)	4.52	1	.03	1.06	1.01	1.12	-0.07 (0.04)	3.95	1	.05	0.93	.87	1.00
SB Verbal: Expressive Vocabulary	0.14 (0.18)	0.62	1	.43	1.15	.81	1.64	0.46 (0.24)	3.67	1	.06	1.58	.99	2.53

Note: R^2 = Adults with ID: .43 (Cox & Snell), .50 (Nagelkerke), TD Children: .15 (Cox & Snell), .19 (Nagelkerke)

5.4.5 Predicting Memory for the Non-Biased Identification Line-up Instructions from Measures of Language

To assess the usefulness of language measures as predictors of memory for the non-biased identification line-up instructions, data relating to receptive and expressive vocabulary was analysed using two forced entry multinomial logistic regressions (one for each group). See Table 5.5 below for a summary of the results from the logistic regressions.

For the adults with ID the overall model significantly predicted memory for the non-biased line-up instructions, $\chi^2 = 14.67$, $df = 4$, $p = .005$. Expressive vocabulary was a significant predictor, $\chi^2 = 7.46$, $df = 2$, $p = .02$, but receptive vocabulary was not, $\chi^2 = 0.85$, $df = 2$, $p = .65$. The model accounted for between 30.7% and 36.1% of the variance, with 0% of full memory, 70.6% of partial memory and 78.9% of no memory successfully predicted. In comparison to no memory for the line-up instructions, the odds ratio of a partial memory was 1.42, whilst the odds ratio for a full understanding was 1.48.

For the TD children the overall model did not significantly predict memory for the non-biased line-up instructions, $\chi^2 = 2.08$, $df = 4$, $p = .72$ and receptive and expressive vocabulary were not significant predictors ($\chi^2 = 1.66$, $df = 2$, $p = .43$ and $\chi^2 = 1.16$, $df = 2$, $p = .56$). The model accounted for between 5.1% and 6.4 % of the variance, with 0% of full memory, 12.5% of partial memory and 95.7% of no memory successfully predicted

Table 5.5 Summary of regressions predicting memory for the non-biased identification line-up instructions for the adults with ID and TD children

	Adults with ID							TD Children						
	B (SE)	Wald	*df*	Sig.	Exp *B*	95% confidence interval		*B (SE)*	Wald	*df*	Sig.	Exp *B*	95% confidence interval	
						Lower	Upper						Lower	Upper
Full memory vs. No memory														
Intercept	-15.08 (5.63)	7.16	1	.01	-	-	-	-0.84 (9.69)	0.75	1	.39	-	-	-
PPVT: Receptive Vocabulary	0.3 (0.03)	0.80	1	.37	1.03	0.97	1.09	0.08 (0.09)	0.86	1	.35	1.08	.91	1.29
SB Verbal: Expressive Vocabulary	0.39 (0.22)	3.14	1	.08	1.48	0.96	2.27	-0.18 (0.41)	0.19	1	.66	0.83	.37	1.88
Partial memory vs. No memory														
Intercept	-10.11 (3.57)	8.04	1	.01	-	-	-	-2.16 (2.91)	0.55	1	.46	-	-	-
PPVT: Receptive Vocabulary	0.01 (0.02)	0.23	1	.63	1.01	0.97	1.05	-0.02 (0.03)	0.44	1	.51	0.98	.93	1.03
SB verbal: Expressive Vocabulary	0.35 (0.15)	5.24	1	.02	1.42	1.05	1.91	0.15 (0.17)	0.78	1	.38	1.17	.83	1.63

Note: R^2 = Adults with ID: .31 (Cox & Snell), .36 (Nagelkerke), TD Children: .05 (Cox & Snell), .06 (Nagelkerke)

In summary, for the adults with ID, verbal memory, facial memory and receptive vocabulary were all significant predictors of the amount of total correct information recalled in the detailed witness interview, whilst MA and verbal and facial memory were all significant predictors for the TD children. There was no significant relationship between a measure of confabulation and the number of confabulations produced during the detailed witness interview and neither were measures of MA and facial memory significant predictors of line-up identification accuracy for either group. Expressive vocabulary was not a significant predictor of understanding of the purpose of the identification line-ups for either of the two groups, whilst receptive vocabulary was a significant predictor for the adults with ID only. In relation to memory for the non-biased identification line-up instructions, receptive vocabulary was not a significant predictor for either of the two groups, however, expressive vocabulary was a significant predictor for the adults with ID only.

5.5 Discussion

This preliminary study sought to investigate whether measures relating to MA, memory (verbal and facial), language (receptive and expressive) and confabulation might prove effective predictors of eyewitness recall in adults with ID and MA matched TD children. It further examined the potential for measures relating to MA and facial memory to predict line-up identification accuracy, as well as the predictive usefulness of receptive and expressive vocabulary in both understanding the actual purpose of the line-up and in recall for the non-biased line-up instructions.

Results demonstrated that, for both groups, verbal memory and facial memory were significant positive predictors of the total amount of correct information recalled in a detailed witness interview. However, differences in the significance of other predictors varied according to group. Whilst receptive vocabulary was a significant negative predictor for the adults with ID, it did not predict recall in the TD children. Conversely, MA was a significant positive predictor of recall in the TD children, but not in the adults with ID. These findings provide only partial support for those predicted. In addition, there was no significant relationship between confabulation scores on the GSS2 and the number of confabulations produced in the detailed witness interviews, which was not in line with the tentative predictions.

In relation to the identification line-ups, the results revealed that, for both groups, neither facial memory nor MA were significant predictors of line-up identification accuracy for either of the two films, which again, was not in line with predicted findings. Whilst, for the adults

with ID, receptive vocabulary was a significant predictor of understanding the line-up's purpose, neither of the language measures (receptive nor expressive vocabulary) were significant predictors for the TD children. Furthermore, although expressive vocabulary was a significant predictor of memory for the non-biased line-up instructions in the adults with ID, neither of the language measures were significant predictors in the TD children. The findings in relation to understanding of the line-up's purpose and memory for the non-biased line-up instructions provide only partial support for those tentatively predicted.

The finding that verbal and facial memory were significant predictors of the amount of information recalled in the detailed witness interview for both groups supports the research of Henry et al. (2017) who reported that these two cognitive variables also predicted performance on a brief eyewitness interview in children with and without autism. The finding regarding verbal memory (memory for stories) predicting recall performance in individuals with ID has been reported in other research, for example Henry and Gudjonsson (2003), and it is perhaps not an unsurprising finding given that recall of an eyewitness event is akin to recalling a story. However, the finding in relation to facial memory has only been reported in one other study, that of Henry et al. (2017), although this is likely underpinned by the fact that many other research studies have tended to focus on measures of verbal memory instead of facial. As to why facial memory is a significant predictor of eyewitness recall is not overtly clear. The participants were asked to describe the individuals from the eyewitness films, but the majority of these descriptions were limited to length and colour of hair rather than detailed facial descriptions. Perhaps the facial memory assessment is tapping into a more general aspect of visual memory ability, e.g., being able to remember visual details and spatial location information. This in some ways would make sense, since the ability to recognise a face relies not just on distinguishing the specific characteristics of that face, e.g., nose, mouth, eyebrows etc., but also on being able to determine where on the face these characteristics should sit in relation to the other characteristics (Wyer, Hollins, Pahl & Roper, 2015). Additional research would therefore be beneficial in order to explore this interesting finding in further detail.

In relation to age (in this case MA) predicting eyewitness recall in TD children, this accords well with previous findings in the eyewitness literature regarding age-related differences in eyewitness performance in this group, e.g., Brown and Lamb (2015); Geddie at al. (2000). Substituting CA for MA did not alter the significance of the findings in relation to predicting recall of correct information in the TD children, which appears to suggest that MA in this group

is perhaps a measure of developmental change, evidenced by the fact that the older children tended to recall more total correct information than the younger children.

The fact that none of the language measures (receptive or expressive vocabulary) were significant predictors of recall in the TD children is surprising. Burgwyn-Bailes et al. (2001) found that receptive vocabulary predicted recall in this group (albeit only after a lengthy delay), whilst Kulkofsky (2010) reported that TD children with better receptive language demonstrated better recall skills. However, it is important to note that both of these studies included children much younger than those who took part in the current study. It is therefore possible that, as children's language skills develop and their age increases, receptive vocabulary becomes less significant as a predictor of recall, whilst age becomes more significant. This would account for age rather than receptive vocabulary being a significant predictor in the current study, i.e., the children here were older than those in either of the aforementioned studies. Indeed, Burgwyn-Bailes et al. (2001) reported that although receptive vocabulary was associated with recall in the younger children, it became less useful as a predictor for the older children.

The finding that receptive vocabulary was a significant negative predictor of recall for the adults with ID is interesting, especially as Belva et al. (2012) in their research exploring communication deficits in adults with profound ID, reported that the receptive vocabulary skills of this group were superior to their expressive skills. However, the participants in Belva et al.'s (2012) study had more severe levels of ID than those in the current study, and as previously noted (see section 5.2.1 above), there are likely to be differences in cognitive abilities both within and between various levels of severity of ID. Schalick, Westbrook and Young (2012) point out that it is important to consider the *context* in which the receptive vocabulary skills are being employed. They maintain that whilst some individuals with ID may exhibit adept receptive communication skills in relation to information with which they are familiar (e.g., people and places), this does not mean they understand all forms of communication in all contexts. In the current study where the adults with ID were in an unfamiliar context, i.e., they were being asked to recall information about a novel event by an unfamiliar person, their use of receptive communication skills may not have been optimal. Further research might thus prove helpful in order to understand more about the proficiency of this group's receptive language skills in both familiar and unfamiliar contexts. This is something which could have practical implications for the interviewing of adults with ID.

Gudjonsson and Clare (1995) in their study of the relationship between confabulation and cognitive measures, came to the conclusion that distortions and fabrications, which together make up the confabulation score on the GSS2, each measure different aspects of confabulation. They therefore proposed that these elements should be considered separately rather than in combination. In relation to the current study, this could mean that although when taken as a whole these two elements (distortions and fabrications) did not correlate with the confabulations produced in the detailed witness interview, the individual elements might instead prove to be significant correlates. To ascertain if this were the case, correlations were therefore carried out separately for these individual elements (distortions and fabrications), however, neither of them were significantly correlated with the number of confabulations produced in the detailed witness interview.

It was anticipated that facial memory and MA would, to some extent, predict identification accuracy on the line-ups, but this did not prove to be the case. As such these findings are not in line with those of Anderson et al. (2014) who found that scores on a test of facial recognition predicted line-up identification accuracy. However, there are a number of distinct differences between this study and that of Anderson et al. (2014): the population samples were very different, i.e., Anderson et al.'s (2014) participants were young adults (students) without ID; facial memory was assessed using the Cambridge Face Memory Test (Duchaine & Nakayam, 2006); whilst the identification line-ups consisted of only six people. It is therefore difficult to draw any direct comparison between the findings of the Anderson et al. (2014) study and the current one. It is possible that the task of identifying a perpetrator from an identification line-up is also drawing upon other cognitive abilities, which were not accounted for nor assessed in the current study, for example attention, societal pressures or decision making. Perhaps the issue may also lie with the actual identification task itself, for example a lack of understanding of the nature of the task or issues with the decision-making skills required to make an identification. Certainly, all of these possibilities require further exploration.

It is curious that none of the language measures (receptive or expressive vocabulary) were significant predictors of understanding the line-up's purpose for the TD children and yet receptive vocabulary was a significant predictor for the adults with ID. For the adults with ID, these findings are an accurate reflection of the fact that receptive vocabulary underlies an individual's ability to understand spoken words, so it makes sense that receptive vocabulary would in some way be related to understanding the purpose of the line-up. However, this does not explain why the same findings were not seen in the TD children. On reviewing the

receptive vocabulary scores of the adults with ID it is evident that these were higher than those of the TD children. Whilst the two groups were matched for MA, perhaps the higher scores on the receptive vocabulary test (PPVT) for the adults with ID are evidence that experience confers an advantage on vocabulary and as such, this is reflected in the predictive usefulness of this measure in understanding the purpose of the line-up for this group.

Furthermore, although expressive vocabulary was a significant predictor of memory for the non-biased line-up instructions in the adults with ID, neither of the language measures were significant predictors in the TD children. Again, this finding in relation to the adults with ID is a common sense one, in that being able to accurately recall the line-up instructions verbally reflects expressive vocabulary skills. Yet, expressive vocabulary was not predicting the recall of the line-up instructions for the TD children. Thus perhaps, as with understanding the purpose of the line-up, other factors were influential here. It is possible that recall of the line-up instructions could have been influenced by either a lack of attention, which in turn could have affected encoding, or a failure in memory retrieval. Whatever the explanation, it is clear that this is an area that would benefit from further research.

The current research has a number of strengths and limitations. Not only is it the first study to look at individual predictors of eyewitness performance in adults with ID, but it has also been conducted using, as far as reasonably possible, ecologically valid methods, whilst including a comparative control group (MA matched TD children). In addition, the findings have confirmed those from previous research in relation to children with ID (Henry et. al., 2017). Of course, one of the main limitations with the research reported here, is the nature of the eyewitness event, which depicted a very mild disability hate crime. The experience of witnessing a real crime is likely to be much more distressing, potentially leading to emotional and psychological distress. It is also noted that criticism has been levelled at the use of the GSS2 with adults with ID (Beail, 2002). One of the key arguments is that this group are at a distinct disadvantage in relation to the recall of the narrative element of the GSS2, due to deficits in memory. It is further asserted that the GSS2 is a test of semantic memory rather than episodic or autobiographical event memory, which is the type of memory that would be used in an investigative interview. Undoubtedly, these are all very valid concerns. However, only the confabulation scores from the GSS2 were used in this preliminary investigation of their predictive usefulness, which is far removed from a much more detailed assessment of interrogative suggestibility for actual use in a forensic or legal context.

As mentioned in previous chapters, and as highlighted at various points above, it is possible that other factors, which were not accounted for in the current study, were exerting an influence on the variables measured. Including other cognitive measures, such as a test of attention or an assessment of individual differences in susceptibility to social pressure, might have helped explain some of the non-significant findings in the current study.

5.6 Conclusion

The findings reported in this preliminary study have demonstrated that, with regards to eyewitness recall, whilst age (MA) is a significant predictor in TD children and receptive vocabulary in adults with ID, verbal and facial memory are useful predictors in both adults with ID and TD children. In a forensic and legal setting obtaining these cognitive measures (which are fairly quick and straightforward to obtain using standardised assessments), perhaps through the assistance of a Registered Intermediary (RI), may prove useful in helping professionals predict eyewitness performance in these two vulnerable groups. It is evident however, that further research is required, not only in relation to identifying exactly which cognitive factors might prove useful as predictors of identification accuracy, but also in revealing other aspects of cognition that hold the potential to predict the performance of eyewitnesses.

Chapter 6

Mock Juror Perceptions of Eyewitness Evidence from Adults with Intellectual Disabilities

6.1 Abstract

Whilst in general there is very little research on juror perceptions of individuals with ID, what research does exist has tended to focus on children with ID. Findings from the handful of studies involving adults with ID appear to suggest that, even though they are perceived to be honest and truthful, they are not perceived to be accurate, credible or competent as eyewitnesses. The current study therefore sought to build upon and expand existing research. Mock jurors were presented with videotaped eyewitness evidence from one of three adult witnesses with ID, which varied according to level of recall (low, medium and high). Mock jurors were either informed that the witness might have an ID or not provided with any information. After viewing the eyewitness evidence, the mock jurors were asked to rate the witnesses using a 10-item credibility questionnaire. Results demonstrated that whilst the adults with ID were perceived to be honest and believable, they were not perceived to be reliable as eyewitnesses. Although providing mock jurors with information about the witness did not have an effect on perceived credibility, credibility ratings increased in line with level of recall (amount of information recalled) for the low and medium recall conditions. This demonstrates that the provision of information about a witness potentially having an ID does not have a negative impact on perceived credibility, although in some instances (in this case when comparing low and medium recall) the level of detail contained in eyewitness evidence can affect credibility ratings. From a practical perspective, criminal justice professionals, with the assistance of Registered Intermediaries, should perhaps consider providing jurors with detailed diagnostic information in cases involving a witness with ID.

6.2 Introduction

Jurors play an extremely important role in the criminal justice system (CJS), being tasked, as ordinary members of the public, with weighing up eyewitness evidence and using rules of law to make an informed decision about a defendant's culpability (Bornstein & Greene, 2011). Jurors' decisions may be influenced by a number of wide-ranging factors, including personal attitudes, consistency of testimony, witness confidence, level of testimony detail, as well as witness characteristics relating to speech, age, cognitive ability and non-verbal cues (Devine, Clayton, Dunford, Seying & Price, 2001).

The factors that jurors take into account when reaching a decision are therefore of particular interest to researchers. However, Section 8 of the Contempt of Court Act 1981 precludes access to real jurors and the jury decision making process in actual court cases. To overcome this issue researchers instead use jury eligible participants, referred to as 'mock jurors', from the general population to help them gain an insight into the factors that influence jurors' perceptions of witness credibility and ultimately juror decisions regarding a perpetrator's guilt.

6.2.1 Stereotypes and Attitudes

As members of the general public, jurors and indeed their decisions, are open to influence from pre-existing stereotypical beliefs and attitudes (Devine et al., 2001). On a general level, jurors may possess preconceived ideas regarding the functioning of memory, the behaviours that accompany lying and how witnesses are expected to conduct themselves, whilst at a more specific level, they may have deep-rooted, often negative beliefs, regarding the abilities of, and the prevalence of criminal behaviour amongst, populations from various socio-economic or ethnic backgrounds (Espinoza, Willis-Esqueda, Toascano & Coons, 2015). Such negative stereotypical beliefs and attitudes extend to individuals with physical and intellectual disabilities (Furnham & Pendred, 1983) and are thus likely to transpose into the jury system. In a study which sought to explore the effect of stereotypical beliefs about individuals with ID on perceptions of their eyewitness evidence, Stobbs and Kebbell (2003) presented mock jurors with written eyewitness evidence from a witness who had been involved in a robbery. Mock jurors were assigned to one of three groups in which information about the witness had been manipulated such that they were either an adult from the general population, an adult with mild ID, or an adult with mild ID with information from an expert witness. Once they had read the transcript the mock jurors were asked to complete a credibility questionnaire, rating aspects of the witness and their evidence such as credibility, accuracy, truthfulness and competency. It was found that, regardless of whether the mock juror had been provided with information from the expert witness, the witness with ID was perceived to be just as honest and truthful as the adult from the general population. However, despite the testimony being identical, the witness with ID was perceived to be less accurate, less credible and less competent compared to the adult from the general population.

Similar findings have also been reported in research involving child witnesses with ID. For example, Brown and Lewis (2013) presented mock jurors with evidence from children, in which information relating to the child's age and cognitive ability was manipulated. The child witness was described as either being TD and the relevant age provided (i.e., 5 or 7 years old) or possessing an ID and an indication of their mental age (MA) specified (i.e., a chronological age

(CA) of 7 years with a MA of 5 years). It was found that the child witness with ID, although perceived to be trustworthy, was not perceived to be very accurate, reliable or competent. However, on a more positive note, the researchers noted that the mock jurors had actually adopted a developmental approach in assessing the child with ID, i.e., they had rated the child based on their MA, meaning there were no differences in ratings of cognitive competence between the child described as a TD 5 year old or a child with ID with a MA of 5 years.

6.2.2 Consistency of Evidence

In a study exploring the effect of inconsistent evidence on juror decisions, Berman et al. (1995) presented mock jurors with video-recorded direct and cross-examination of a 'mock' eyewitness who had been subjected to an armed robbery. The inconsistency of the eyewitness evidence was manipulated, to include contradictions between a previous interview and evidence provided at cross-examination (e.g., whether the perpetrator had a briefcase or a bag). The researchers reported that inconsistent evidence led jurors to perceive the eyewitness as less credible and the defendant as less guilty. The inconsistency of testimony has also been found to affect its perceived accuracy, for example Potter and Brewer (1999) asked police officers, lawyers and mock jurors to rate the extent to which they believed a number of witness behaviours were effective predictors of eyewitness accuracy. They found that inconsistent information was perceived as being one of the most powerful indicators. This is particularly relevant in relation to witnesses with ID, who are often perceived to be more likely to acquiesce and thus change their responses, particularly during repeat interviews or with the use of repeat questions (see Cederborg et al., 2008 as well as Cederborg, Danielsson, La Rooy & Lamb, 2009 for differing findings in this area). However, in spite of Berman et al.'s (1995) findings it is important to note that inconsistent eyewitness testimony is seldom a reliable indicator of inaccuracy (Fisher, Brewer & Mitchell, 2009).

6.2.3 Witness Confidence

Research that has examined the effect of witness confidence on perceptions of credibility has found that the confidence of an eyewitness can have an impact on both believability as well as perceptions of testimony accuracy (Beaudry et al., 2015; Whitley & Greenberg, 1986).

Moreover, it has been proposed that witness confidence may be so influential in perceived credibility that even when a witness's account is inconsistent, the witness is still deemed to be credible if they are perceived to be confident. In a study by Brewer and Burke (2002) the researchers manipulated both the consistency of eyewitness evidence (introducing contradictions between the defense and prosecution cross-examinations) as well as the

witness's confidence (introducing hesitations, e.g., 'um' and 'ah' and altering the language used, e.g., 'very sure' instead of 'reasonably sure' etc.) and asked mock jurors to rate how confident the witness was during the presentation of their evidence. The mock jurors were further requested to indicate the percentage probability of the defendant having committed the alleged crime and provide a verdict (guilty vs. not guilty). It was discovered that regardless of consistent/inconsistent evidence, it was a witness's perceived confidence that had the biggest and most influential impact on mock juror decisions. This, they suggest, could be due to witness confidence mitigating the effects of inconsistent eyewitness evidence, such that inconsistency is less influential when a witness is perceived to be confident in their account.

Lack of perceived confidence is therefore likely to be an issue for adults with ID. This group are likely to feel anxious and lack confidence when coming into contact with authoritative figures, due to both a lack of worldly experience and an imbalance of power resulting from their reliance on others for the provision of care and assistance with everyday tasks (McCormack et al., 2005; O'Callaghan & Murphy, 2007). This lack of confidence may be relayed in the way they present themselves and the behaviours they exhibit when providing evidence.

6.2.4 Level of Testimony Detail

The amount of detail that a witness recalls can also have an impact on perceived credibility of eyewitness evidence and thus juror decisions. Bell and Loftus (1988) found that mock jurors perceived witnesses to be more credible and returned more guilty verdicts when the witness's evidence contained a greater degree of detail. They proposed that this was likely a result of mock jurors reasoning that a witness who recalled more details therefore had a better memory for the eyewitness event. These findings regarding credibility were corroborated in a study by Heath, Grannemann, Sawa and Hodge (1997) who manipulated the amount and type of details contained in eyewitness evidence and asked mock jurors to provide ratings for the witnesses' credibility. They found that perceived credibility ratings increased in line with the number of details recalled, which, as per Bell and Loftus (1988), the researchers believed was due to jurors' associating more detailed eyewitness evidence with an enhanced memory for the event. However, it is important to note that even though a witness may recall more information about an event, there is no guarantee that this information is accurate. Unlike experimental research where it is possible to establish the 'groundtruth', it is usually not possible to do so with a real crime.

As evidence from witnesses with ID may contain less detail, this may cause problems in relation to perceived reliability and accuracy. This is a factor which Henry et al. (2011) noted as having

played a role in their research when mock jurors rated the transcripts of children with ID as less credible than those without, despite jurors not being informed that some of the witnesses had an ID. These findings were provided with further support in a more recent study involving children with autism, where the child whose evidence contained more detail was perceived to be more credible than the child whose evidence was less detailed (Crane et al. 2018).

6.2.5 Witness Characteristics

Individual characteristics of the witness such as speech, age and cognitive ability may also play a key role in perception of credibility and thus juror decisions. A witness whose evidence is littered with hesitations and mumbled speech may unwittingly convey a negative message regarding the accuracy and reliability of their eyewitness evidence. Schmidt and Brigham (1986) found that witnesses of varying ages (5, 10 and 15 years) who adopted a powerful style of speech in their eyewitness evidence, i.e., direct eye contact, few hesitations and clear speech, were perceived by mock jurors to be more truthful and more credible than those who adopted a -powerless style, i.e., poor eye contact and more hesitations such as 'ah' and 'um'. These findings were further supported by Ruva and Bryant (2004) and more recently by Jules and McQuiston (2013) who also found an increase in credibility ratings for those witnesses employing a powerful compared to a powerless style of speech in their eyewitness evidence. As speech production problems are prevalent amongst individuals with ID, this can result in an overall reduction in intelligibility (Coppens-Hofman et al., 2016) as well as perceived confidence, which in turn may have an impact on the perceived credibility of this group as eyewitnesses. Furthermore, recalling information about a witnessed event is likely to place even greater pressure on this group's available cognitive resources, which could result in attempts to reduce this load in order to focus on more important tasks. This may lead to overt behaviours such as gaze aversion and staring into space, all aspects of witness behaviour which are likely to be interpreted by mock jurors as an indication of inaccurate evidence and deceit.

It is important to note that jurors may not always be provided with information about a witness's diagnosis or disability: for example the witness may not have revealed this information to their lawyer, or they may not want to disclose this information for fear it will have a potentially negative impact (Cooper & Allely, 2017). However, such a disclosure may actually be helpful for jurors when making a judgement regarding a witness's evidence, particularly in instances where the credibility of a witness is called into question. Crane et al. (2018) reported that jurors who were informed that a child witness had autism and provided with additional information about autism, rated the child as more credible compared to jurors who were not provided with such

information. However, other research, for example Peled et al. (2004), has found that informing mock jurors that a witness has ID can have a negative impact on ratings of perceived credibility.

All of the above factors can result in jurors rejecting what might otherwise be tangible evidence, leading to cases involving witnesses with ID being dismissed and preventing this vulnerable group from receiving proper access to justice. It is thus extremely important that we have a much clearer understanding of not only how witnesses with ID are perceived by jurors, but also the factors that might affect perceptions of credibility and judgements of this group's eyewitness evidence. However, there is a paucity of research that specifically focuses on *adults* with ID whilst at the same time utilising a realistic sample of participants as mock jurors (i.e., not undergraduate students) and ecologically valid materials.

The current study aims to address some of the above issues. It will examine mock juror's perceptions of eyewitness evidence from adults with mild to moderate non-specific ID utilising a wider range of jury eligible participants, with evidence presented by means of ecologically valid video-recordings instead of written transcripts (video-recordings are commonly used to present evidence from vulnerable witnesses in England and Wales under the Special Measures set out in the Youth Justice and Criminal Evidence Act, 1999). To ascertain if the amount of detail contained in eyewitness evidence has an impact on perceived accuracy, reliability and overall credibility, mock jurors will be shown a single eyewitness evidence recording (from the interviewing study described in chapter 3) from one of three different adult witnesses with ID, which vary in relation to the amount of detail recalled (low, medium and high). As mock jurors may have stereotypical beliefs regarding the abilities of individuals with ID, provision of information regarding the witness potentially having an ID (the term 'learning disability' will be used in the study as opposed to 'intellectual disability' because it is felt this is a term the mock jurors will be more familiar with), together with a relevant definition, will be manipulated to determine if this has an effect on credibility ratings. The mock jurors will be asked to rate the eyewitness evidence video using a 10-item credibility questionnaire, and credibility ratings will be reviewed to determine if, as per other research, adults with ID are perceived to be honest and believable, but their eyewitness evidence is perceived to be inaccurate and unreliable.

The following hypotheses are proposed:

- The mock jurors will perceive the adults with ID to be honest and believable but not accurate or reliable as eyewitnesses.

- Providing the mock jurors with information advising that the witness *may* have an ID, together with a definition of the term ID, will result in ratings of their eyewitness evidence as less credible.

- Mock jurors' credibility ratings will increase in line with the adult witness's level of recall (the higher the recall, the higher the credibility ratings).

6.3 Method

6.3.1 Participants

A total of 120 participants from the general population took part in the study (60 males and 60 females aged between 18 years and 75 years (M = 48.13 years, SD = 11.10 months)). These adults were recruited from family, friends, acquaintances and former work colleagues of the researcher. Since these participants were required to assume the role of 'mock jurors', it was essential that they met the current eligibility criteria for serving on a jury in the United Kingdom (see Appendix M).

The mock-jurors were quasi-randomly assigned (according to age and gender) to watch one of three video recordings containing eyewitness evidence ('Adult A', 'Adult B' or 'Adult C') and to one of two experimental conditions: 'Uninformed' or 'Informed', see below for further information regarding these conditions. Table 6.1 provides details of mock juror demographics across each of the conditions, in addition to ratings of prior knowledge/experience of ID.

There was no significant difference in mock juror mean ages across the 6 conditions, $F(5,114) = 0.027$, $p = 1.00$, neither was there a significant difference in ratings of knowledge and experience of ID, $F(5,114) = 1.04$ $p = .40$.

Table 6.1 Mock juror demographics (*N* = 120)

Video	Condition	N	Mean age (SD)	Gender (M:F)	Mean (SD) knowledge / experience of ID
Adult A (Low recall)	Uninformed	20	48.00 (12.59)	10:10	4.85 (2.21)
	Informed	20	47.80 (10.25)	10:10	4.85 (2.87)
Adult B (Medium recall)	Uninformed	20	47.70 (10.93)	10:10	5.50 (1.82)
	Informed	20	48.00 (10.74)	10:10	5.85 (1.98)
Adult C (High recall)	Uninformed	20	48.65 (10.99)	10:10	5.65 (2.13)
	Informed	20	48.65 (10.99)	10:10	4.60 (2.33)

Power Analysis

A review of existing mock juror literature revealed that the norm regarding the total sample size is approximately 120, with around 20 participants in each condition.

A post-hoc power analysis was conducted using G*Power (Faul et al., 2007) to examine the statistical power required for a small (w = .10), medium (w = .25), and large (w = .40) effect size with an alpha level of $p < .05$ (Cohen, 1992).

For a MANOVA with 120 participants, examining the effect of the two independent variables (eyewitness' level of recall and information provided to the mock jurors) on the credibility ratings (accuracy, convincingness, witness' confidence (in their account), competency, honesty, believability, completeness of account, level of overall cognitive functioning, capability to testify and overall performance/credibility as a witness), the statistical power required was .99 for detecting a small effect, 1.0 for detecting a medium effect and 1.0 for detecting a large effect. Thus, there was sufficient power to detect medium and large effect sizes.

6.3.2 Design

A between-subjects design was employed for this study. There were two independent variables: the eyewitness' level of recall for the witnessed event (i.e., amount of information recalled) and the information provided to participants regarding the background of the witness (before viewing the eyewitness evidence). The eyewitness' recall for the witnessed event had three levels: low recall ('Adult A'), medium recall ('Adult B') and high recall ('Adult C'). The information provided to participants had two levels: no information provided regarding the eyewitness possibly having an ID (Uninformed) and information provided suggesting the eyewitness *may* have an ID (Informed). The dependent variables consisted of the ratings from the mock juror perception questionnaire (accuracy, convincingness, witness' confidence (in their account), competency, honesty, believability, completeness of account, level of overall cognitive functioning, capability to testify and overall performance/credibility as a witness) all measured using a 10-point Likert scale (1 = not at all, 10 = extremely).

6.3.3 Materials

6.3.3.1 Eyewitness Evidence Videos

Three video-recorded eyewitness evidence recordings (one each from three different participants) from the detailed investigative interviews conducted as part of the study described in Chapter 3 were chosen from the sample of adults with ID. The eyewitness evidence recordings related to Film B. The recordings were chosen according to the eyewitness' level of recall (for the eyewitness event) such that one contained a low level, one a medium level and one a high level of recall (this level of recall was assessed by comparing these participants' recall to the level of recall across the whole group of adults with ID). Evidence relating to Film B was utilised because recall for this film was significantly higher than that for Film A, $t(39) = -4.58$, $p < .001$. The three participants had given permission for their video interviews to be used in further research. Full details relating to each adult's age (MA and CA), gender, IQ, length of eyewitness evidence, amount and accuracy of information recalled are provided in Table 6.2 below.

Table 6.2 Details relating to witness characteristics and eyewitness evidence for the (three) adults with ID

Measure	Adult A (Low Recall)	Adult B (Medium Recall)	Adult C (High Recall)
Chronological Age	28 yrs 1 m	35 yrs 11 m	47 yrs 7 m
Mental Age	5 yrs 8 m	6 yrs 1m	5 yrs 11 m
Gender	Female	Male	Female
SB-5 (ABIQ)	50	50	50
Length of eyewitness evidence	3 mins 6 secs	5 mins 42 secs	6 mins 20 secs
Amount of information recalled*	15	30	42
Accuracy of information recalled**	93%	83%	86%

*Total information recalled: correct, incorrect, source monitoring errors and confabulations
**Percentage accuracy of information recalled: total correct as a % of total information recalled

6.3.3.2 Credibility Questionnaire

The credibility questionnaire, based on that previously used by Crane et al. (2018), consisted of a set of 10 questions which asked the mock jurors to rate aspects of the eyewitness evidence from the adults with ID on a 10-point Likert scale (1 = not at all, 10 = extremely). The credibility aspects the mock jurors were asked to rate were: accuracy, convincingness, witness' confidence (in their account), competency, honesty, believability, completeness of account, level of overall cognitive functioning, capability to testify and overall performance as a witness. The mock jurors were also asked to state whether or not they believed the witness had a learning disability, provide ratings regarding their own level of knowledge/experience of learning disabilities and asked an 'optional' question as to how the witness's credibility might be improved (see Appendix M for a copy of the mock juror credibility questionnaire).

The credibility questionnaire was available as either a paper version (for those mock jurors tested on a face-to-face basis) or an electronic (Qualtrics) version (for those mock jurors tested via Skype). The number of participants who were tested face-to-face was 105, whilst the number tested via Skype was 15.

Pilot Study

A pilot study was carried out to test the efficacy of both the paper and electronic (Qualtrics) versions of the credibility questionnaire.

There were six participants in total: one for each of the experimental conditions. Four participants completed the electronic version of the questionnaire and two completed the paper version. There were three females and three males, aged between 46 years and 61 years (*M* = 52.86, *SD* = 6.20). After being provided with information pertinent to their condition, they each viewed one of the three videos (according to their allocated condition) and were asked to complete the credibility questionnaire.

As the pilot study did not highlight any potential issues with the questions contained in the credibility questionnaire this was the version used in the study. The only minor adjustment made was to include a question in the demographics section of the questionnaire which asked whether the participant had ever served on a real jury, for this reason the pilot data study was not included in the final sample.

6.3.4 Procedure

Participants were tested either individually or in very small groups (maximum of 4) and this took place either face-to-face or via Skype. In advance of this study each participant was asked to ensure that they were eligible for jury service (participants were provided with the jury eligibility criteria as part of the study information) and their eligibility was re-confirmed at the start of the session. Participants were asked to sign a consent form (see Appendix N), provide some demographic information and also asked to indicate whether or not they had ever served on a real jury (See Appendix M).

Prior to viewing the eyewitness evidence videos, the mock jurors were informed that they would be shown a video of an adult eyewitness being interviewed about a 'mock' hate crime they had seen. They were further advised that as part of the interviewing process, a truth and lies exercise had been undertaken to ascertain that the witness demonstrated a clear understanding of the distinction between the two terms. Mock jurors in the 'uninformed' condition were not provided with any information regarding the possibility that the witness *may* have ID nor were they given a definition of ID. The mock jurors in the 'informed' condition were however, advised that the adult witness '*may* have a learning disability' and provided with a definition of *learning disability* (this definition was an abbreviated version of Mencap's definition of a learning disability: *'a learning disability is a reduced intellectual ability and difficulty with everyday activities, which affects someone for their whole life. People with a learning disability are likely to take longer to learn and may need support to develop new skills, understand complex information and in their ability to interact with other people' (*Mencap, 2019).

After watching one of the videos (of Adult A, B or C) the mock jurors were asked to complete the credibility questionnaire described in section 6.2.3.2 above, following which they were debriefed (see Appendix O), invited to ask questions and thanked for their participation.

6.4 Results

Transformations

Prior to running any detailed analyses, statistical checks were undertaken in relation to non-normality and homogeneity of variance. Ratings for accuracy, convincingness, witness' confidence (in their account), appearance of honesty and believability all demonstrated varying levels of negative skew. However, all of these ratings were included in the MANOVAs as this statistical test is robust to non-normality as long as there is a sample size of at least 20 in the smallest cell (Tabachnick & Fidel, 2013).

Multicollinearity

In order to ensure that none of the variables were highly correlated, i.e., there was no multicollinearity, a correlation matrix was produced using all of the dependent variables from the credibility questionnaire. As none of the correlations were over .80 (Field, 2009), all of the variables were included in the MANOVAs.

Data was analysed using two separate MANOVAs: one to examine the effect of age, gender and knowledge / experience of ID on credibility ratings and the other to examine the effect of information provided to the mock jurors (Uninformed vs Informed) together with level of recall (low, medium, high). Significant MANOVAs were followed up with ANOVAs, whilst planned contrasts were conducted to examine the effect of the main independent variables, i.e., information provided to the mock jurors and level of recall, on the perceived credibility ratings. See Table 6.3 below for mean credibility ratings for each adult with ID (across the three recall conditions, i.e., low, medium and high) and for each information condition (informed and uninformed).

A Spearman's Correlation was employed to explore the relationship between serving on a real jury and overall perceived credibility.

Table 6.3 Mean (SD) credibility ratings (on a 10-point Likert scale*) for perceptions of the adults with ID across the two conditions (*Uninformed, Informed)* (n = 120)

Measure	Adult A (low recall)			Adult B (medium recall)			Adult C (high recall)			
	Uninformed (n = 20)	Informed (n = 20)	Total (Uninformed + Informed) (n = 40)	Uninformed (n = 20)	Informed (n = 20)	Total (Uninformed + Informed) (n = 40)	Uninformed (n = 20)	Informed (n = 20)	Total (Uninformed + Informed) (n = 40)	Overall total (n = 120)
Accuracy of account	5.10 (1.65)	6.10 (2.05)	5.60 (1.91)	6.75 (1.21)	6.50 (1.32)	6.62 (1.25)	6.50 (1.57)	6.90 (1.12)	6.70 (1.36)	6.31 (1.60)
Convincingness of witness	5.00 (1.69)	6.20 (2.17)	5.60 (2.01)	7.10 (1.29)	6.45 (2.01)	6.78 (1.70)	6.25 (1.68)	7.15 (1.35)	6.70 (1.57)	6.36 (1.84)
Witness *confidence*	4.40 (1.88)	5.60 (1.98)	5.00 (2.00)	6.85 (1.84)	6.60 (2.14)	6.73 (1.97)	6.10 (1.62)	6.70 (1.46)	6.40 (1.55)	6.04 (1.98)
Competency of witness	4.25 (1.45)	5.80 (1.85)	5.02 (1.82)	6.05 (1.47)	5.90 (1.80)	5.98 (1.63)	5.85 (1.69)	6.55 (1.54)	6.20 (1.64)	5.73 (1.76)
Appearance of *honesty*	7.40 (1.43)	8.65 (1.27)	8.03 (1.48)	9.10 (0.91)	8.15 (1.84)	8.63 (1.51)	8.35 (1.31)	8.40 (1.39)	8.37 (1.33)	8.34 (1.45)
Believability	6.40 (1.64)	6.95 (1.57)	6.68 (1.61)	7.90 (1.12)	7.15 (2.08)	7.53 (1.69)	7.25 (1.80)	7.75 (1.48)	7.50 (1.65)	7.23 (1.68)
Completeness of account	3.50 (1.43)	4.00 (1.92)	3.75 (1.69)	5.55 (1.76)	4.95 (2.16)	5.25 (1.97)	5.50 (1.76)	5.50 (1.19)	5.50 (1.49)	4.83 (1.88)
Overall level of *cognitive functioning*	4.30 (2.06)	4.85 (1.79)	4.58 (1.92)	5.65 (1.63)	5.05 (2.11)	5.35 (1.89)	5.40 (1.85)	6.40 (1.50)	5.73 (1.75)	5.22 (1.90)
Capability to testify	4.85 (1.93)	5.45 (2.04)	5.15 (1.98)	6.53 (1.50)	6.05 (2.54)	6.20 (2.07)	6.05 (2.06)	6.80 (1.36)	6.23 (1.79)	5.86 (2.0)
How good the witness was *overall* (overall *credibility*)	4.65 (1.50)	5.50 (1.61)	5.08 (1.59)	6.45 (1.57)	5.80 (2.22)	6.13 (1.92)	6.35 (1.69)	6.82 (1.03)	6.57 (1.53)	5.93 (1.79)

*1 = Not at all, 10 = Extremely

Chi-square tests were carried out to explore the association between guessing that the witness had an ID and type of information provided, as well as the association between this variable and level of recall.

A Bonferroni correction of $p < .025$ (the usual p value (.05) divided by number of tests used, i.e., two) was applied to the MANOVA and follow-up univariate ANOVA test results.

6.4.1 Effect of Mock Juror Age, Gender and Knowledge/Experience of Intellectual Disability

To explore the effect of age, gender and knowledge/experience of ID on witness credibility ratings, a MANOVA was conducted with age, gender and knowledge/experience of ID entered as the independent variables and credibility ratings entered as the dependent variables.

Using Pillai's trace, the MANOVA indicated no significant effect of age, $V = 7.40$, $F(440, 120) = 0.77$, $p = .96$ or gender $V = 0.72$, $F(10, 3) = 0.77$ $p = .67$, on mock juror credibility ratings.

Again, using Pillai's trace it was also found that mock jurors' knowledge and experience of ID did not have a significant effect on credibility ratings, $V = 3.89$, $F(90, 99) = 0.84$, $p = .80$.

6.4.2 Effect of Serving on a Real Jury

Of the 120 mock jurors only 18 (15%) reported having ever served on a real jury. A Spearman's Correlation revealed that there was no significant relationship between serving on a real jury and overall perceived credibility of the witness $r = .03$, $p = .77$.

6.4.3 Perceived Credibility Across All Three Witnesses

Analysis of the credibility ratings across *all* three witnesses (i.e., all three recall levels: low, medium and high) revealed that the mock jurors perceived the adults with ID to be very honest ($M = 8.34$, $SD = 1.45$) and very believable ($M = 7.23$, $SD = 1.68$). However, the adult witnesses' accounts were not perceived to be very complete ($M = 4.83$, $SD = 1.88$). Competency ratings were also fairly low ($M = 5.73$, $SD = 1.76$), as were ratings regarding the witnesses' overall level of cognitive functioning ($M = 5.22$, $SD = 1.90$). Credibility ratings for accuracy ($M = 6.31$, $SD = 1.60$) and convincingness ($M = 6.36$, $SD = 1.84$) were comparable, as were ratings regarding the witness's capability to testify ($M = 5.86$, $SD = 2.00$) and how good the witness was overall/overall credibility ($M = 5.93$, $SD = 1.79$).

To check that the *overall* total credibility rating ($M = 5.93$, $SD = 1.79$) was an effective measure of the perceived credibility/performance of the adults with ID (as opposed to measuring a

variable which had not been accounted for), a total credibility rating was calculated (*M* = 6.21, *SD* = 1.43) by combining all of the ratings for each dependent variable (apart from overall performance). These two ratings were subsequently entered into a Pearson correlation. This showed that there was a significant positive correlation between the *overall* total credibility rating and the *calculated* total credibility rating, *r* (120) = 0.846, *p* < .001.

6.4.4 Information Provided to Mock Jurors (Informed vs Uninformed) and Level of Recall (Low, Medium, High)

To examine the overall effect on credibility ratings of the type of information provided to mock jurors, i.e., advising that the witness may have an ID and providing a definition of ID (Informed) versus not providing the mock juror with any information (Uninformed), as well as the adults' level of recall (low, medium, high), a MANOVA was conducted with type of information and level of recall entered as the independent variables and credibility ratings entered as the dependent variables.

Using Pillai's trace, it was found that the type of information provided had no effect on mock jurors' credibility ratings, *V* = 0.10, *F*(10, 105) = 1.22, *p* = .29.

Using Pillai's trace, a significant effect for level of recall was found, *V* = 0.33, *F*(20, 212) = 2.10, *p* = .005. A separate follow-up one-way between participants ANOVA revealed a significant effect of level of recall on eight out of the ten credibility ratings: accuracy[7] (*F*(2, 117) = 6.42, *p* = .002, *r* = .32), convincingness[8] (*F*(2, 117) = 5.52, *p* = .005, *r* = .30), witness' confidence (in their account) (*F*(2, 117) = 9.98, *p* < .001, *r* = .37), competency (*F*(2, 117) = 5.41, *p* = .006, *r* = .28), completeness of account (*F*(2, 117) = 12.01, *p* < .001, *r* = .41), cognitive functioning (*F*(2, 117) = 4.00, *p* = .022, *r* = .24), capability to testify (*F*(2, 117) = 3.96, *p* = .022, *r* = .24) and overall performance (*F*(2, 117) = 8.28, *p* < .001, *r* = .35). There was no significant effect of level of recall on ratings of believability (*F*(2, 117) = 3.43, *p* = .04) or honesty (*F*(2, 117) = 1.74, *p* = .18).

When examining overall perceived credibility of each witness (total ratings *excluding* overall performance) a one-way between participants ANOVA indicated that there was a significant effect of level of recall on this credibility characteristic, *F*(2, 117) = 8.65, *p* < .001, *r* = .36, representing a medium effect size. The adult with low recall was perceived as less credible overall than the adults with medium and high recall.

[7] The assumption of homogeneity of variance was not met for this data
[8] The assumption of homogeneity of variance was not met for this data

There was no significant interaction between the type of information provided to the mock jurors (Informed vs. Uninformed) and level of recall (low, medium, high), $V = 0.22$, $F(20, 212) = 1.32$, $p = .17$.

Planned contrasts were conducted to examine whether credibility ratings increased in line with level of recall. These revealed a significant linear trend, i.e., an increase in ratings, for low versus medium recall for all ten of the credibility characteristics[9]: accuracy[10] ($t(67.46) = -2.84$, $p = .003$, $r = .33$), convincingness[11] ($t(75.94) = -2.82$, $p = .003$, $r = .31$), witness' confidence (in their account) ($t(117) = -4.16$, $p < .001$, $r = .17$), competency ($t(117) = 2.51$, $p = .007$, $r = .23$), honesty ($t(117) = -1.86$, $p = .033$, $r = .17$), believability ($t(117) = -2.31$, $p = .012$, $r = .21$), completeness of account ($t(117) = 3.88$, $p < .001$, $r = .34$), level of cognitive functioning ($t(117) = -1.87$, $p = .032$, $r = .17$), capability to testify ($t(117) = -2.41$, $p = .009$, $r = .67$), and overall performance ($t(117) = -2.78$, $p = .003$, $r = .25$).

There was no comparative significant linear trend in increased credibility ratings for medium versus high recall for any of the credibility characteristics.

6.4.5 Guessing the Witness had an Intellectual Disability

Out of a total of 120 mock jurors, 95% (114) stated that they believed the witness had an ID, which included 57 from the 'Informed' condition and 57 from the 'Uninformed' condition. The number of participants (out of a possible 40 for each recall condition: low, medium and high) who guessed that the witness had an ID was 36 for the adult with low recall, and 39 for the other two recall conditions, i.e., medium and high.

Chi-square tests revealed no significant association between either guessing that the witness had an ID and the type of information provided to mock jurors (Informed vs Uninformed), Fisher's Exact test $p = .66$, or guessing that the witness had an ID and level of recall (low, medium and high), Fisher's Exact test $p = .36$.

[9] As the hypothesis tested was one-tailed and the planned contrasts only provide *p* values for a two-tailed hypothesis, all *p* values were divided by 2 to provide one-tailed significance values (Field, 2009).

[10] The assumption of homogeneity of variance was not met for this data, thus the alternative values (for equal variances not assumed) have been used in the reporting of the contrasts and calculation of effect sizes.

[11] The assumption of homogeneity of variance was not met for this data, thus the alternative values (for equal variances not assumed) have been used in the reporting of the contrasts and calculation of effect sizes.

6.5 Discussion

Two key aims of this study were to explore mock jurors' perceptions of adults with ID to determine if they are perceived to be accurate, credible and reliable as witnesses, as well as establishing whether providing information about the witness potentially having an ID, together with a relevant definition, would also have an effect on mock juror credibility ratings. A further aim of the study was to examine if the amount of detail contained in eyewitness evidence has an impact on mock juror credibility ratings. As predicted, mock jurors perceived the adults with ID to be very honest and believable. However, ratings for accuracy and completeness were not particularly high, suggesting that the mock jurors did not perceive the adults with ID to be reliable as eyewitnesses. Whether or not the mock jurors were provided with information about the adult witness had no effect on credibility ratings, thus providing no support for the hypothesis that informing the mock jurors that the witness *may* have an ID would lead to perceptions of the witness as less credible. With regards to the level of recall (amount of detail), as this increased from low to medium so too did mock juror ratings for all of the credibility characteristics. However, there was no comparative increase in ratings for medium versus high recall. As it was predicted that the higher the recall, the higher the credibility ratings, these findings provide only partial support for those predicted.

The high ratings for perceived honesty and believability and low ratings for accuracy provide further support for Stobbs and Kebbell's (2003) study, as they also reported that in spite of the witnesses with ID being perceived as honest and believable, the mock jurors struggled to accept this group's evidence as accurate. In the current study, even when the witness's account did not contain a large amount of detail, i.e., in the low recall condition, the witness was still perceived to be very honest.

The fact that the provision of information did not have a negative effect on credibility ratings is a finding which is in contrast to Peled et al. (2004). However, one important difference between this and the Peled et al. (2004) study is that the current research used video-recorded eyewitness evidence as opposed to written transcripts, so perhaps the mode of presentation had an effect on perceived credibility. It is possible that being able to actually see the witness had a beneficial effect on perceived credibility, as it is a much more personal experience compared to reading a written transcript.

As to why credibility ratings increased when comparing low to medium recall and not for medium to high recall it is possible that differences in perceived consistency and the witness's perceived lack of self-confidence in what they were saying were more pronounced when

comparing the adults in the low and medium recall conditions. In reviewing the video-taped eyewitness evidence for adult A it is clear that this witness was much less consistent in their responses to the questions asked by the interviewer and changed their responses on a number of occasions. Perhaps this led to them being perceived as much less accurate and thus less credible than the other two witnesses. This would fit well with previous findings regarding the negative effect of inconsistent testimony on perceived credibility (Berman et al., 1995), as well as the impact of witness confidence on believability and accuracy (Beaudry et al., 2015; Whitley & Greenberg, 1986). It is, however, interesting to note that even though the witness may have been perceived as less accurate, in reality their eyewitness evidence was actually more accurate than that of either adult B or C.

Whilst a prediction was not made as to whether a mock juror's knowledge/experience of ID would affect witness credibility ratings, in some respects it would have been expected that this variable (dependent upon whether the existing knowledge/experience was negative or positive) would have influenced credibility ratings, but this was not the case. These findings contradict those reported by Crane et al. (2018) who found a significant positive relationship, albeit only for one of the two child witnesses with autism (who displayed more non-stereotypical autistic behaviours), between ratings of overall credibility and knowledge/experience of autism. The results in the current study might be explained by the fact that the number of mock jurors who rated themselves as being very knowledgeable/experienced in relation to ID (based on a rating of 8 and above) was only 17%. Moreover, this is perhaps quite a difficult quantity to assess, particularly as it relates to self-perception and is thus open to substantial interpretation.

It was evident that the mock jurors were highly aware that the adults had ID, as the majority of them guessed this was the case and moreover, the numbers who speculated that this was true was the same in both the informed and uninformed conditions. It is possible that the adults with ID were emitting subtle non-verbal cues which led the mock jurors to make this assumption. If the effects of stereotypical biases regarding this group were thus operating in an equivalent manner across the conditions, this in turn could explain the equivalent ID guessing rates.

When examining ID guessing rates across the witnesses, the number of mock jurors who guessed that the witness had an ID was slightly lower for the witness with the lowest recall (adult A) compared to the adults with medium and high recall. Perhaps the way in which adult A presented themselves was in some way different to the other two witnesses. Indeed, the fact that just as many people believed adults B (medium recall) and C (high recall) to have an ID might

help explain why ratings for many of the credibility characteristics for these two witnesses were fairly similar.

Each witness had a distinctive style of speech (varying levels of speech production problems), which at times affected clarity. Whilst this did not affect comprehension of the information recalled, the style of speech may have relayed subtle information regarding the witness's cognitive abilities, which in turn may have contributed to the high number of mock jurors perceiving the adults to have an ID. This fact is important given that Schmidt and Brigham (1986) found that style of speech used in eyewitness evidence had an impact on perceived truthfulness and thus credibility. Further research would be needed with additional adult witnesses with ID before conclusions about the credibility of this vulnerable group could be drawn.

In reviewing the strengths and limitations of the current study it is important to note that much of the previous research in this area has relied on the use of written transcripts (e.g. Peled et al., 2004; Stobbs & Kebbell, 2003), whereas the current study employed video-taped eyewitness evidence, which is more ecologically valid as this is the way in which evidence is likely to be presented to jurors in a real trial. Furthermore, another strength of this study is the use of a more representative sample of jury eligible participants across all ages, as opposed to the use of undergraduate students, which has been a common occurrence in previous mock juror research (e.g., Peled et al., 2004).

Of note is the fact that there was a gender difference between the adult witnesses, i.e., adults A and C were female and adult B was male. This may raise concerns about the effect of these gender differences on the perceived credibility ratings of the individual witnesses. However, as other research has found that witness gender has no effect on perceptions of witness credibility (Maeder, Pozzulo & Dempsey, 2012), this factor was not deemed to be influential in the current study.

In addition, it is also accepted that the current research merely used one witness (adult with ID) in each condition and thus it is possible that some characteristics or qualities pertinent to a particular witness (other than gender) had more of an influence on their perceived credibility than the amount of information recalled. Whilst this may raise concerns around adequate stimulus sampling (Wells & Windshitl, 1999), it is however, important to note that the researcher attempted to minimise the impact of potential individual differences between the adults with ID (whose eyewitness evidence was utilised in the study), by matching them as closely as possible both on MA and IQ. Moreover, it should also be pointed out that a considerable amount

of the literature in this area merely includes one witness in a given condition (e.g., Bottoms, Nysse-Carris, Harris & Tyda, 2003; Brown & Lewis, 2013; Peled et al., 2004).

The current study did not include an assessment of existing attitudes to adults with ID, so it is difficult to ascertain which mock jurors may have held negative stereotypes of this group and the effect this may have had on perceived credibility. Such an assessment has been utilised in other research involving witnesses with ID, for example Bottoms et al. (2003), and has demonstrated how those mock jurors who have a more positive attitude to this group perceive them to be more credible. This is something that could be investigated further in future research.

The information that was provided to the mock jurors regarding the adults with ID, i.e., advising that the witness may have an ID together with a definition, was merely generic and not specific to each witness. Providing information about a witness's diagnosis and any potential cognitive deficits, as well as an explanation as to how this might affect their eyewitness testimony, could prove extremely useful to jurors. Such information could be provided through ecologically valid means, for example through the assistance of a Registered Intermediary.

6.6 Conclusion

The study described here has demonstrated that mock jurors do perceive adult witnesses with ID to be honest and believable. However, one of the key issues is that they do not perceive this group to be accurate and reliable, which consequently leads to doubt concerning their credibility. It has also shown that providing mock jurors with information regarding the possibility that a witness may have an ID, does not have a negative impact on credibility ratings. Furthermore, an increase in the amount of detail contained in eyewitness evidence may not always lead to a corresponding increase in credibility ratings: there may be other factors, such as witness behaviours, which influence perceived credibility.

It is therefore evident that more needs to be done to ensure that eyewitness evidence from adults with ID is given the due regard and consideration by jurors that would be afforded any other witness. As jurors, like any member of the general population, are likely to enter a courtroom with certain stereotypes and prejudices it is essential that future research also includes both an investigation of these juror characteristics, as well as procedures to lessen their impact on perceptions of adults with ID and thus juror decision making.

Chapter 7

General Discussion

7.1 Introduction

Adults with ID are at an increased risk of coming into contact with the CJS, through either being victims or witnesses of abuse (Reiter et al., 2007; Sullivan & Knutson, 2000) and yet very little is currently known about their skills as eyewitnesses. The cognitive deficits that this group are reported to experience, for example in relation to attention (Sterr, 2004), memory (Nolan et al., 1985; Swanson & Siegel, 2001) and language (e.g., Abbeduto & Hesketh, 1997; Hatton, 1998; Murfett et al., 2008) are highly likely to have an impact on various aspects of eyewitness performance. Moreover, both professionals within the CJS (Brennan & Brennan, 1994; Nathanson & Platt, 2005) as well as members of the general public (e.g., Stobbs & Kebbell, 2003) hold stereotypical beliefs regarding the abilities of adults with ID, which could affect the perceived credibility and reliability of eyewitness evidence from this group. The key aims of the research presented in chapter 3 were to examine the ability of this group to recall information about two separate but similar eyewitness events, whilst also incorporating, for the first time (as far as the researcher is aware) the use of repeat interviews. In chapter 4, a study was presented that sought to ascertain whether adults with ID could accurately identify perpetrators from ecologically valid video identification line-ups. An investigation of individual differences in cognitive abilities and their potential usefulness as predictors of eyewitness performance formed the basis of the exploratory research presented in chapter 5. The perceived credibility of (ecologically valid) video-taped eyewitness evidence from adults with ID was explored in the mock juror study described in chapter 6, which also examined the effect of level of detail recalled, and provision of witness information, on credibility ratings. The present chapter will provide a synthesis of the findings from across these four experimental chapters, together with an evaluation of their contribution to existing literature and theory. In addition, it will also examine the practical implications of the current findings in relation to the criminal justice system and highlight possible directions for future research.

7.2 Summary of Key Findings

The results of the research presented in chapter 3 demonstrated that when asked to recall information about two separate but similar eyewitness events in a brief statement taking interview, adults with ID were able to recall just as much information as MA matched TD children. Moreover, not only were accuracy rates higher for the adults with ID, but this group also recalled less incorrect and confabulated information and demonstrated fewer source monitoring errors (SMEs) than the TD children. When the groups were interviewed using a

detailed witness interview protocol following a delay of one week, the adults with ID recalled just as much correct and incorrect information as the TD children and as with the brief statement taking interview, the accuracy of the information recalled was higher for the adults with ID. Also, in line with the brief statement taking interview, it was found that, in contrast to the TD children, the adults with ID recalled less confabulated information and made fewer SMEs. In a repeat detailed witness interview, which took place following a further delay of one week, the amount of correct and incorrect information recalled by both groups was shown to be comparative. Although accuracy levels were similar, as with the two previous interviews, the adults with ID recalled less confabulated information and fewer source monitoring errors than the TD children. In relation to the actual *effect* of the repeat detailed witness interview on information recalled, across both groups more correct information was recalled in the first detailed witness interview than in the repeat interview. Whilst the repeat interview led to a decrease in SMEs for adults with ID, an increase was seen in TD children and there was a slight increase in confabulations for both groups. The number of changed responses (when comparing the information from the first and repeat detailed witness interviews) overall was low, however, the TD children were more likely than the adults with ID to change their responses in the repeat detailed witness interview.

Unlike other research in this area, the study described in chapter 4, employed ecologically valid video identification line-ups to explore identification accuracy in adults with ID. Using both PP and PA identification line-ups it was found that, in comparison to the TD children the adults with ID made more false identifications and fewer correct identifications on the PP line-ups and were less likely to make correct rejections on the PA line-ups, i.e., they still made a choice when the perpetrator was not in the line-up. Both groups appeared to struggle with remembering the non-biased line-up instructions which were presented to them in advance of viewing the video identification line-ups. However, the adults with ID demonstrated a better understanding of the line-up's purpose than the TD children.

Individual differences in a number of cognitive measures hold the potential for being useful as predictors of eyewitness performance in adults with ID, as was evident from the novel study reported in chapter 5. Both verbal memory (memory for stories) and facial memory (memory for faces) were found to be positive predictors of recall of correct information in both adults with ID and TD children, whilst the very accessible measure of age, i.e., MA, was found to be a positive predictor of recall in TD children, but not in adults with ID. Alternatively, receptive vocabulary was found to be a negative predictor of correctly recalled information in adults with ID, but was not a predictor (negative or positive) in TD children. Rather surprisingly, facial

memory was not predictive of line-up identification accuracy for either group. Although expressive vocabulary was a positive predictor of memory for the non-biased line-up instructions (advising that the perpetrator may or may not be present in the line-up) in the adults with ID and receptive vocabulary was a positive predictor of understanding the purpose of the line-up, none of the language measures predicted either of these two aspects in TD children.

Mock jurors perceived adults with ID to be honest and believable but not particularly reliable as eyewitnesses, as was evident from the research presented in chapter 6. When jurors were provided with information advising that the witness *may* have a learning disability (and provided with a definition of learning disability), this did not have an effect on perceived credibility ratings. The amount of information (low, medium or high) that the three adults with ID recalled had an effect on how they were perceived by the mock jurors. When comparing the individual credibility ratings (accuracy, convincingness, witness confidence, competency, honesty, believability, completeness of account, level of cognitive functioning, capability to testify and overall performance) for each of the three adults, these increased in line with level of recall for the low and medium recall conditions only, i.e., there was no comparative increase between the witnesses with medium and high recall.

7.3 Contribution to Existing Literature

The research presented in this thesis has demonstrated that adults with ID *can* provide quantifiable amounts of accurate information about two separate witnessed events. Moreover, it has also been established that when examining the ability of adults with ID to discriminate between two similar events, as might be the case in instances of repeat abuse, adults with ID do not confuse the event details, i.e., they are no more prone to committing SMEs than TD children. Furthermore, when matched for MA the recall abilities of adults with ID are comparative (and in some instances superior) to those of TD children, thus extending the findings of other research in this area, which has mainly focused on children with ID (e.g., Henry & Gudjonsson, 1999, 2003; Michel et al., 2000).

Concerns regarding the negative impact of repeat interviews on recall in this group appear to be unfounded. The adults with ID produced very few changed responses during the repeat detailed witness interview and moreover, there was very little impact on the amount and accuracy of information recalled. These findings, while being consistent with those regarding the use of repeat interviews in children with ID (Cederborg et al., 2008), have additionally demonstrated that using repeat interviews with adults with ID results in the recall of new

information, which is of investigative relevance, without a detrimental impact on confabulations and contradictions.

When reviewing the next part of the investigation process, the identification of perpetrators, the findings from chapter 4 revealed that this was a task that adults with ID found particularly challenging. Unlike previous research which has relied on photographic line-ups, this study used ecologically valid PACE Code D compliant video-identification line-ups and found that not only did this group often fail to make correct identifications on a PP line-up, but they also made a choice (i.e., a false identification) on a PA line-up. The findings regarding the performance of this group were, overall, in line with those of Ternes and Yuille (2008), who also used a sequential mode of presentation with adults with ID (albeit their participants were shown the line-ups once only and not twice as in the current research).

The adults with ID both struggled to recall the non-biased line-up instructions they were provided with in advance of viewing the line-ups and did not truly understand the purpose of the line-up identification task itself, both issues which were also highlighted in the research of Ericson and Isaacs (2003) and Wilcock and Henry (2017). Casual observations of the adults with ID during the identification line-ups appeared to indicate that the process was extremely taxing, cognitively, for this group. A number of the adults looked away from the line-ups and had to be prompted to continue focusing on the screen, possibly indicating that the length of time it took to administer the line-ups was far too long. These observations fit well with research regarding the existence of deficits in everyday attention in this group (Sterr, 2004).

As far as the researcher is aware, the study described in chapter 5 is the first of its kind to examine the value that individual differences in cognitive measures might hold in relation to predicting eyewitness performance in adults with ID. Whilst generally there is very little research that has explored the relationship between these two areas, the findings that verbal memory (memory for stories) and facial memory (memory for faces) predicted recall in a detailed witness interview provide support for Henry et al. (2017), who also reported that these cognitive measures predicted recall of correct information in children with and without autism. Notwithstanding this, the research in chapter 5 has extended Henry et al.'s (2017) findings to a population which differs both in age and aetiology.

The mock juror research presented in chapter 6 both adds to, and expands on, the limited available research on the perceived credibility and reliability of eyewitness evidence from adults with ID. It provides support for the findings of Stobbs and Kebbell (2003) as the

research in this thesis also found that this group, whilst perceived as honest and believable, are not perceived to be accurate or reliable as eyewitnesses. It further expands this research as it used much more ecologically valid methods of presenting eyewitness evidence, i.e., video-taped evidence as opposed to written transcripts, and employed a much more representative and realistic sample of jury eligible participants compared to a number of other studies (e.g., Brown & Lewis, 2013; Peled et al., 2004). It also sought to explore how the amount of information contained in eyewitness evidence might affect perceived credibility, something which has often only been referred to anecdotally in other mock juror studies, rather than being investigated in a direct manner. The effect of providing information about a witness having an ID on credibility ratings has previously only been examined in children with ID, thus, once again, this research has contributed to the eyewitness literature by extending the knowledge to another population.

7.4 Contribution to Theory

One of the main contributions that the studies described in this thesis have made to the theory underpinning research in individuals with ID, is in relation to the debate concerning the cognitive development of this group. This debate is probably most pertinent to cognitive development in children with ID, however, it is of relevance to the current research, due to the use of a MA matching process. There are two main theories of cognitive development in individuals with ID, usually referred to as the 'difference' and 'developmental' approaches. For difference theorists, cognitive development in children with ID is qualitatively different to that of TD children, whereas for developmental theorists, children with ID proceed through the same stages of development as TD children, although at a much slower pace (Mundy & Kasari, 1990). The opposing views of these two perspectives leads them to advocate very different approaches to the use of comparison groups in research involving individuals with ID. For difference theorists CA comparisons are more appropriate, whereas for those who favour the developmental approach, MA comparisons are more effective.

In the research presented in chapters 3 and 4, where the adults with ID were matched for MA with TD children, the amount of information recalled about two eyewitness events was comparative across the two groups. However, overall the identification accuracy of the adults with ID was deficient compared to the TD children. Whilst the findings from chapter 3 appear to support the developmental approach to cognitive development in individuals with ID, chapter 4's findings do not. Perhaps the reason for this lies in the fact that these two tasks may be quite different in nature. Traditional laboratory-based memory research, utilising tests of intentional memory, report findings indicating deficits in the performance of individuals

with ID compared to TD peers (e.g., Baumeister, Runcie & Gardepe, 1984; Winters & Attlee, 1974). However, research that has included tests of incidental memory (e.g., Burack & Zigler, 1990) has found no differences in performance when comparing individuals with ID to TD peers, thus leading researchers to suggest that the performance of individuals with ID may be optimal on tasks involving everyday memory. Witnessing a crime in real-life is highly likely to be a test of true incidental memory, especially if it is not particularly clear initially that what has been witnessed is actually a crime. Laboratory based research on eyewitness memory may, to varying extents, tap into intentional rather than incidental memory. Participants are much more likely to be paying attention because they are in an unfamiliar or novel situation, even if, as was the case in the current research, participants are not informed that they will be later questioned about the films. Perhaps in the current instance recalling information about the two eyewitness films was underpinned more by incidental encoding whilst identifying the perpetrators from the line-ups may have been underpinned more by intentional encoding. This could, amongst a number of other factors, provide a partial explanation for the deficient performance of the adults with ID on the identification task.

It is also possible that there are significant qualitative differences in the recall and identification tasks, which place demands on different cognitive abilities. Most notably the cognitive abilities associated with (verbal) recall are distinct from those associated with (facial) recognition (Eysenck & Keane, 2010). This may also explain why, in the study presented in chapter 5, the cognitive factors which were significant predictors of recall in the interviews were not significant predictors of line-up identification accuracy.

Furthermore, the findings from the interviewing research presented in chapter 3 contribute to existing theory regarding the occurrence of reminiscence. Reminiscence is deemed to occur when repeated recall attempts lead to the recall of new, previously undisclosed information (Howe, 1991). There are a number of theories as to why reminiscence occurs with repeated recall. For example, the stimulus sampling theory suggests that reminiscence occurs because different pieces of information are picked out from our memories during different recall attempts (Estes, 1955). Thus, as the number of recall attempts increase, so too do the number of items extracted from memory (Smith & Vela, 1991). Alternatively, the recall time hypothesis, as proposed by Roediger and Thorpe (1978) maintains that the amount of time assigned to the task of recalling information about an event builds up with each recall attempt, such that recall on a subsequent occasion is afforded more time than the first recall attempt, i.e., the total amount of time has been amassed.

Regardless of the theory underlying the reminiscence effect, it was evident from the current research that for both the adults with ID and TD children the repeat detailed witness interview facilitated the recall of new details, i.e., it prompted reminiscence across both groups. This suggests that during the first detailed witness interview the groups were not actually recalling all the event details stored in memory, so the repeat interview had a beneficial effect in that it prompted the participants to recall more. Evidence of a reminiscence effect in repeat interviews has previously been reported in research involving children with ID (Cederborg et al., 2008; Henry & Gudjonsson, 2003), but has now been extended to adults with ID. As already highlighted in chapter 3, the recall of any new details could potentially provide fresh leads in an investigation process, demonstrating the benefits of conducting repeat interviews with both adults with ID and TD children.

The research presented in chapter 3 may also contribute to existing theories regarding source monitoring, particularly the source monitoring framework proposed by Johnson et al. (1993). According to this framework, an individual's memory of an event is associated with several characteristics that may be specific to that event, for example, information which may be emotional (e.g., feelings), perceptual (e.g., sounds or taste) or spatial (e.g., location of an object or person) etc. All of these characteristics, or pieces of information, are underpinned by specific cognitive processes. When asked to recall information about an event, these characteristics act as sources of evidence for that memory. As such this process, and thus the actual memory, can be affected by SMEs, i.e., problems in being able to determine the source or origin of the memory. SMEs can occur for a number of reasons, for example due to existing schemas, similarity of memories, cognitive deficits or misinformation (Johnson, 1997). Although it is important to point out that levels of SMEs overall were low, where these did occur it is possible that this was a due to a combination of these factors, in other words, a result of cognitive deficits plus similarity of the events plus existing schemas. Indeed, it was evident during the interviews that participants were relying on existing schemas to fill in any gaps in memory, particularly in relation to film A, which was first aid based, as several participants referred to the male perpetrator as a 'Dr' or wearing a 'Dr's coat'.

7.5 Implications for the Criminal Justice System

The findings from the research presented in this thesis hold a number of important practical implications for the Criminal Justice System (CJS). First and foremost, they provide evidence that should allay the concerns of criminal justice professionals regarding the reliability of adults with ID as eyewitnesses. As has been highlighted in chapter 3, adults with ID are capable of recalling substantial amounts of accurate information about an eyewitness event,

without confabulation. In instances where events might be similar, for example with repeated abuse, the findings also reveal that this group is not only able to differentiate between two separate events, but are also able to recall forensically relevant information about these events, without confusing the sources of information. Concerns are often raised with regards to the use of repeat interviews, usually centring around a combination of factors, such as the consolidation of inaccurate information from previous interviews and an increase in source monitoring errors resulting from the delay between each interview (Brown et al., 2015). However, such concerns appear unwarranted. The adults with ID not only produced very few contradictory responses in the repeat detailed witness interview, but they were also less likely to change their responses in comparison to the TD children. Moreover, of particular relevance to the investigation process was the discovery that the repeat interviews led to the recall of new details (reminiscence), which in real life might facilitate new lines of enquiry and help provide a more comprehensive account of the witnessed event (La Rooy et al., 2010).

The finding regarding performance akin to MA level, i.e., the comparative recall abilities of the adults with ID and MA matched TD children, could have practical implications for the CJS. It demonstrates just how important it is that professionals within the CJS take into account the MA of witnesses when interviewing them during the investigation process (or questioning them in court), such that they should ensure that the language and questions used are appropriate for the MA and not CA of a witness with ID. Information regarding the MA of the witness could be provided by a Registered Intermediary (RI), a trained individual whose role is to 'enable complete, coherent and accurate communication to take place between the witness and the police or court' (Ministry of Justice, 2019, p. 7). As a RI is usually involved in preparing reports and carrying out assessments of how best to support a vulnerable witness (Cooper & Mattison, 2017), an assessment of MA could be included in this process. Furthermore, part of the RIs role is to provide advice to criminal justice professionals, such as police officers, barristers and judges, on the most effective means of communication with a vulnerable witness, which includes recommendations regarding the types of questions that should be asked and the vocabulary that should be employed. It would therefore be interesting to carry out research that explores the impact this actually has on the accuracy and completeness of eyewitness evidence from adults with ID.

The fact that line-up identification accuracy was so impoverished in the adults with ID, and that they struggled to recall the non-biased line-up instructions whilst displaying a pronounced lack of understanding of the line-up's purpose, are likely to be of immense concern to many criminal justice professionals. The implications of these findings, coupled with those from

previous research in this area (e.g., Ericson & Isaacs, 2003; Wilcock & Henry, 2017), suggest that adults with ID may require considerable support when asked to identify a perpetrator from a line-up and that this support needs to be tailored to the individual requirements of the witness. These findings also suggest that identifying a perpetrator, by means of the standard line-up identification process as specified in PACE Code D, is challenging for this group. A number of options could be explored here, for example the use of a RI to provide additional support, or the inclusion of a practice line-up, both strategies which have been found to be effective in TD children (Parker & Ryan, 1993; Wilcock et al., 2018).

In relation to certain cognitive measures being effective predictors of eyewitness performance, whether in relation to recall in a witness interview or identification accuracy on line-ups, the preliminary findings from chapter 5 hold the potential for being very helpful to criminal justice professionals. Although much more research is necessary to identify other predictive relationships, being able to utilise easily accessible information such as MA, or obtaining measures on easy-to-administer standardised tests, could prove extremely valuable to criminal justice professionals when making informed assessments about the reliability of eyewitness evidence. Once again, this information could be obtained through the assistance of a RI.

In spite of mock jurors perceiving adults with ID to be honest and believable, they do not perceive their eyewitness evidence to be accurate and reliable and yet, as the findings from chapter 3 have revealed, this group can and do recall just as much information, with comparative (and sometimes even higher) levels of accuracy, as MA matched TD children. The practical implications of these findings for the judicial process are far-reaching, as they suggest that jurors may be dismissing credible evidence from adults with ID based on existing negative stereotypical views regarding this group's cognitive abilities and credibility as eyewitnesses. This signals the need for jurors to be provided with detailed information about a witness who has ID so that they can make informed decisions regarding the reliability of their eyewitness evidence. As one of the responsibilities of the RI is to conduct a detailed assessment of a vulnerable witness's communication needs, the information which forms part of this assessment could be utilised to brief the jurors about a witness's cognitive abilities.

7.6 Limitations

Like much of the eyewitness literature, the events used as 'mock' crimes contained no violent or aggressive content, thus the participants would not have experienced any emotional distress. This is a salient point given that adults with ID are particularly vulnerable to crimes involving abuse (Reiter et al., 2007; Mansell et al., 1999; Westcott & Jones, 1999) which will be

extremely distressing and psychologically harmful. This lack of ecological validity with regards to the 'mock' crime event is unavoidable in research utilising an eyewitness paradigm, where ethical limitations preclude the use of events which may serve to replicate the psychological and emotional impact associated with being involved in a real crime.

Another limitation is that the current research did not include a measure of basic numeracy skills. This might have been useful in relation to the adults with ID, particularly with regards to identifying any individuals who may have benefitted from additional support on the identification line-ups. Some individuals with ID may not be very adept in this area and this may be especially true for those with more moderate ID, who may not only struggle with counting skills generally, but also in relation to the ordering of numbers, i.e., identifying a number before or after a given number (Bashash, Outhred & Bochner, 2003). Annexe A of PACE Code D (2017) advises that *'the eye-witness shall be asked to say whether the individual they saw in person on a specified earlier occasion has been shown and, if so, to identify them by number of the image'*, a task which may be problematic for some witnesses with ID who possess deficient numeracy skills. In the identification study presented in chapter 4 the researcher did realise that this may be an issue for some of the adults with ID. If the participant appeared to be struggling to make a choice, the researcher presented the participant with a simultaneous matrix of the (still) images from the line-ups, which proved useful as it helped the participant to make a decision. Allowing participants to view a simultaneous matrix of still images after viewing the line-up twice through sequentially is a method which has been employed in other research and has been found to be effective in increasing correct identifications on PP line-ups.

It is also accepted that restricting the sample to adults with mild and moderate ID, excludes a large majority of individuals, i.e., those with more severe levels of ID, from taking part in this research. The rationale behind this decision is explained in chapter 2, although one of the main reasons for adopting this approach was the fact that this group are not homogenous. As already pointed out in chapter 5, ID is effectively an 'umbrella term', used to describe a group of individuals who have a wide-range of cognitive abilities. If individuals from across the whole spectrum had been included in the research, regardless of diagnoses or cognitive ability, this would potentially not only have made the statistical analysis extremely difficult, i.e., the data would likely have been very badly skewed with extreme lows and highs, but it would also have made the drawing of conclusions rather difficult.

All of the research undertaken for this thesis was carried out by one individual (the researcher), which may raise concerns in relation to researcher bias. However, all of the procedures were standardised in an attempt to overcome potential bias issues. Furthermore, the investigative interviews were not conducted by a police officer, which again may be identified as a potential limitation due to concerns regarding a lack of ecological validity. Again, attempts were made to overcome this issue by ensuring that the interviews utilised were based on current police practice.

7.7 Directions for Future Research

Pertinent to several of the chapters in this thesis, i.e., chapters 3, 4 and 5, is the suggestion that future research include a test of everyday attention. The ability to attend to information is not only a critical cognitive skill essential for everyday life (Eysenck & Keane, 2010), but it also plays a fundamental role in eyewitness memory, underpinning both the encoding of information as well as its subsequent recall. Despite the common-sense assumption that attention will be related to eyewitness performance, the inclusion of such measures in the eyewitness literature has often been overlooked. This is all the more important in the current instance due to the deficits in attention this group may experience (Sterr, 2004). Certainly, it was evident during the identification line-ups that several of the adults with ID were struggling to maintain attention, resulting in the researcher having to remind them to look at the screen. Not only would the addition of a measure of attention be useful in determining any possible relationship between attention and eyewitness recall or line-up identification performance, but it would also be useful in determining whether this cognitive ability also has the potential to be a useful predictor of eyewitness performance in adults with ID.

Of relevance to a number of chapters in this thesis, especially chapters 3 and 4, is the inclusion of a CA matched group. One of the intentions at the outset of the research described in this thesis, was the inclusion of a sample of adults without ID, i.e., a CA matched group. However, due to a number of methodological issues (see chapter 2 for a discussion of these issues) and their resultant impact on timescales, the decision was taken not to recruit this sample. Nevertheless, the addition of a CA matched group might be something worth considering in future research. In view of the findings that the TD children produced more SMEs than the adults with ID, and the fact that improvements in source monitoring abilities appear to be developmental (Sprondel et al., 2001), it would be interesting to compare the source monitoring abilities of adults with ID with a CA matched group. Such a comparison might provide an insight into whether monitoring the source of information is influenced more by cognitive processes or societal influences (e.g., knowledge and experience). If, for example,

societal influences were more influential, the two groups might be expected to be comparative in their source monitoring abilities. However, if cognitive processes were more influential, it might be expected that the source monitoring abilities of the adults with ID would be deficient compared to their CA counterparts.

It is evident that, in general, the area of interviewing adults with ID for investigative purposes is extremely under-researched. As it is not just individuals with mild and moderate ID who are at an increased risk of coming into contact with the CJS, it would be useful to widen the remit of further research to include individuals with more severe and profound levels of ID. Whilst this approach would undoubtedly prove very challenging on a number of levels, e.g., obtaining informed consent, overcoming communication difficulties, sourcing standardised assessments suitable for varying abilities etc., it would ensure that such individuals are not excluded from research and that we have knowledge on how best to support these most vulnerable of individuals in order that they too can achieve access to justice.

It would also be beneficial to increase the delays between the witnessed event and interviews, perhaps to several weeks or months, as this would enable an examination of the impact that increased delays might have on the recall of the adults with ID. This would be particularly useful in relation to instances of historical abuse, where a considerable amount of time might have elapsed between the abuse and actual disclosure (and thus interview). Research on the length of time between the event itself and disclosure in actual cases of abuse has revealed substantial variation. For example, in a 15-year longitudinal study of allegations of abuse in Ireland, McCormack et al. (2005) discovered that only around half of the allegations were disclosed within a month of the alleged instance taking place. Furthermore, Goodman et al. (1992) found that out of 218 TD child sexual assault victims, 15% took over 6 months to disclose the abuse. It would thus be useful to carry out further research to explore the effect that delayed interviewing might have on the amount and accuracy of information recalled in adults with ID.

In addition, it would be extremely prudent to investigate the use of RIs when interviewing adults with ID, something that has not yet been explored. Whilst the use of RIs is becoming more common place within the CJS, field reviews of their effectiveness are limited. However, it has been reported that the use of RIs has been paramount in the ability of vulnerable individuals to play an active role in the CJS (Henderson, 2015). Research that has explored the effectiveness of having RIs present during interviews with children with ID has found them to

be extremely beneficial, facilitating an increase in the amount and accuracy of information recalled (Henry et. al., 2017).

As identification accuracy rates were so low in the adults with ID it is evident that this is an area in dire need of further research. In the first instance, research should focus on identifying the factors that explain what makes this task so challenging for adults with ID. Once these are ascertained, suggestions as to how to assist this group in being able to accurately identify perpetrators from identification line-ups can be offered and subsequently investigated through further research. Some possible strategies that would be worthwhile investigating include practice line-ups, visual prompts, the addition of a simultaneous matrix and support from a RI.

The inclusion of a practice line-up would provide the adults with ID with an opportunity to have a run through of the identification procedure before the main identification line-up, thus potentially helping them to better understand the demands of the task. In a meta-analysis which included research studies employing practice line-ups, Pozzulo and Lindsay (1998) reported that practice line-ups lead to an increase in correct identification rates in TD children. It may therefore be worthwhile exploring the use of such line-ups in adults with ID, perhaps with a slight delay of a day or so between the practice line-up and actual line-ups to counter the increased demand on attentional resources.

The use of visual aids might also prove beneficial in helping both groups (the adults with ID and TD children) better understand the identification task. Bailey, Willner and Dymond (2011) found that visual aids had a positive effect on the decision-making abilities of adults with ID, allowing them to weigh up information in order to make a choice. The use of a simple visual or pictorial aid might therefore prove helpful in undertaking the identification task and this is something that could be explored in further research.

With reference to poor memory for the line-up instructions in the adults with ID (advising that the perpetrator may or may not be present), as well as potential social pressure associated with providing a 'don't know' response, it might be fruitful to investigate the use of a visual prompt. This could take the form of a 'mystery man', i.e., an image of a silhouetted figure with a question mark over the top, that participants could use to indicate that they do not recognise/see the perpetrator in the line-up. Havard and Memon (2013) used such a 'mystery man' in a study aimed at reducing false identifications in (TD) children on target absent video identification line-ups. They found that including the 'mystery man' reduced the number of

false identifications on a PA line-up from 75% to 40% and moreover, there was no reduction in accuracy on the PP line-ups. In the current research none of the adults with ID made a correction rejection on the PA line-ups, so this appears to be a particular issue for this group which requires further exploration.

It may also be advantageous to carry out a study exploring the use of a simultaneous matrix, i.e., presenting all of the images simultaneously in a static photo matrix, to ascertain if this helps to improve identification accuracy rates in adults with ID. As this group are prone to both working memory (Swanson & Siegel, 2001) and attention deficits (Sterr, 2004), having to watch the identification line-ups twice through before making a decision may be especially problematic for some individuals with ID. To assist them with their line-up decision, they could be shown the sequential line-up twice and then be presented with the simultaneous matrix. Whilst such an adaptation would still ensure that the line-ups were PACE Code D compliant, it would undoubtedly help to lessen the cognitive demands associated with making a choice on an identification line-up. On the recommendation of a RI, Wilcock et al. (2018) presented TD children with a simultaneous matrix after they had viewed a sequential line-up once, and found that this procedure led to an improvement in identification accuracy rates on both PP and PA line-ups.

Exploring the efficacy of RI assistance during the line-up identification process would also prove valuable. Although there is currently no research that has examined the potential usefulness of RI support during the identification procedure in adults with ID, Wilcock et. al. (2018) reported that RI assistance (including adaptations to the line-up process and provision of a variety of response options) increased identification accuracy for TD children on both PP and PA line-ups.

It is clear from the findings of the research carried out in chapter 5 that being able to predict eyewitness performance from individual differences on a number of cognitive measures holds a lot of potential with regards to being helpful to criminal justice professionals. It is likely that there are a wide range of cognitive factors and thus variables underpinning the ability of eyewitnesses to both recall information about, as well as subsequently identify perpetrators from, a witnessed event. Perhaps further studies could examine factors such as personality traits or metamemory and their links to recall or identification accuracy. For example, there is some evidence, albeit not very strong, to suggest a positive relationship between the personality trait of openness and correct responses on a recognition task (Curley, MacLean & Murray, 2017). Thus, identifying these cognitive variables and assessing their potential

usefulness as predictors of different aspects of eyewitness performance, could prove helpful to those working in the CJS, particularly if the predictors are accessible, quick and easy to use.

The findings of the mock juror study described in chapter 6 have highlighted the requirement for more research in this area to help ensure that evidence from adults with ID is not dismissed due to misperceptions of unreliability and inaccuracy. With this in mind, it might be helpful to try and disentangle the factors that play a role in how jurors perceive and thus make decisions about the eyewitness evidence of adults with ID. Identifying such factors and understanding more about how they might impact on perceptions of credibility, particularly where the effect is negative, would in turn help inform suggestions as to how to temper their influence. One such factor which may play a role in the perceived credibility of eyewitness evidence from this group, is a mock juror's existing attitudes. It might therefore be useful to include an assessment of existing attitudes to individuals from this group in future research in order to provide some clarity on the role this factor might play in perceived credibility. Rather interestingly, research that has examined the impact of mock juror attitudes on perceptions of a young sexual abuse victim with ID, found that jurors with more liberal attitudes to individuals with ID (i.e., who perceived this group to be similar to themselves in relation to personal objectives and possession of the same rights and freedoms) were more likely to find the defendant guilty. In addition, these mock jurors also viewed the victim to be very believable and credible, i.e., unlikely to have invented the sexual abuse (Bottoms et al., 2003).

It may also be highly beneficial to explore the usefulness of providing tailored diagnostic information to jurors about a witness with ID, with particular reference to the effect this has on perceived credibility of their eyewitness evidence. The diagnostic information could, once again, be provided by a RI as a result of their routine assessment of a witness.

7.8 Conclusion

Adults with ID are often perceived to be inaccurate and unreliable as eyewitnesses, by both those within and outside of the CJS, thereby preventing this vulnerable group from receiving fair and proper access to justice. This may partially be attributable to the fact that adults with ID are a group frequently on the periphery of society, thus the general population remain ignorant of their skills and abilities through a lack of social cohesiveness. Moreover, the limited research in this area means there is very little information to inform the views and opinions of the general population, leading to a heavy reliance on stereotypes. As a result, the commonly held negative stereotypical views and attitudes regarding this group are perpetuated, consequently making research in this area all the more crucial. What is important however, is that researchers do

not reject the idea of conducting studies with individuals with ID solely because of the unique and challenging methodological issues associated with such research.

In conclusion, it is hoped that the research presented in this thesis has not only gone some way towards contributing to the limited existing studies regarding the eyewitness skills of adults with ID, but has also helped to highlight gaps that still exist and thus identify areas requiring further research.

References

Abbeduto, L., & Hesketh, L. J. (1997). Pragmatic development in individuals with mental retardation: Learning to use language in social interactions. *Mental Retardation & Developmental Disabilities Research Reviews, 3*(4), 323-333. doi:10.1002/(SICI)1098-2779(1997)3:4%3C323::AID-MRDD7%3E3.0.CO;2-O

Agnew, S. E., & Powell, M. B. (2004). The effect of intellectual disability on children's recall of an event across different question types. *Law and Human Behavior, 28*(3), 273. doi:10.1023/B:LAHU.0000029139.38127.61

Allexander, J. M., & Schwanenflugel, P. J. (1994). Strategy regulation: The role of intelligence, metacognitive attributions, and knowledge base. *Developmental Psychology, 30*(5), 709-723. doi:10.1037/0012-1649.30.5.709

American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders (5th ed.)*. Washington, DC: APA.

Andersen, S. M., Carlson, C. A., Carlson, M. A., & Gronlund, S. D. (2014). Individual differences predict eyewitness identification performance. *Personality and Individual Differences, 60*, 36-40. doi:10.1016/j.paid.2013.12.011

Bailey, R., Willner, P., & Dymond, S. (2011). A visual aid to decision-making for people with intellectual disabilities. *Research in Developmental Disabilities, 32*(1), 37-46. doi:10.1016/j.ridd.2010.08.008

Bashash, L., Outhred, L., & Bochner, S. (2003). Counting skills and number concepts of students with moderate intellectual disabilities. *International Journal of Disability, Development and Education, 50*(3), 325-345. doi:10.1080/1034912032000120480

Baumeister, A. A., Runcie, D., & Gardepe, J. (1984). Processing of information in iconic memory: Differences between nonretarded and retarded subjects. *Journal of Abnormal Psychology, 93*(4), 433-447. doi:10.1037/0021-843X.93.4.433

Bayliss, D. M., & Jarrold, C. (2015). How quickly they forget: The relationship between forgetting and working memory performance. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 41*(1), 163-177. doi:10.1037/a0037429

Beail, N. (2002). Interrogative Suggestibility, Memory and Intellectual Disability. *Journal of Applied Research in Intellectual Disabilities, 15*(2), 129-137. doi:10.1046/j.1468-3148.2002.00108.x

Beaudry, J. L., Lindsay, R. C. L., Leach, A. M., Mansour, J. K., Bertrand, M. I., & Kalmet, N. (2015). The effect of evidence type, identification accuracy, line-up presentation, and line-up administration on observers' perceptions of eyewitnesses. *Legal and Criminological Psychology, 20*(2), 343-364. doi:10.1111/lcrp.12030

Behrman, B., & Davey, S. (2001). Eyewitness Identification in Actual Criminal Cases: An Archival Analysis. *Law and Human Behavior, 25*(5), 475-491. doi:10.1023/A:1012840831846

Behrmann, M., & Avidan, G. (2005). Congenital prosopagnosia: face-blind from birth. *Trends in Cognitive Sciences, 9*(4), 180-187. doi:10.1016/j.tics.2005.02.011

Bell, B. E., & Loftus, E. F. (1988). Degree of Detail of Eyewitness Testimony and Mock Juror Judgments. *Journal of Applied Social Psychology, 18*(14), 1171-1192. doi:10.1111/j.1559-1816.1988.tb01200.x

Bellugi, U., Lai, Z., & Wang, P. (1997). Language, communication, and neural systems in Williams syndrome. *Mental Retardation and Developmental Disabilities Research Reviews, 3*(4), 334-342. doi:10.1002/(sici)1098-2779(1997)3:4<334:aid-mrdd8>3.0.co;2-n

Belva, B. C., Matson, J. L., Sipes, M., & Bamburg, J. W. (2012). An Examination of Specific Communication Deficits in Adults with Profound Intellectual Disabilities. *Research in Developmental Disabilities: A Multidisciplinary Journal, 33*(2), 525-529. doi: 10.1016/j.ridd.2011.10.019

Benton, A. L., Hamsher, K. deS., Varney, N. R., & Spreen, O. (1983). *Contributions to Neuropsychological Assessment: A Clinical Manual*. New York: Oxford University Press

Berman, G. L., Narby, D. J., & Cutler, B. L. (1995). Effects of inconsistent eyewitness statements on mock-jurors' evaluations of the eyewitness, perceptions of defendant culpability and verdicts. *Law and Human Behavior, 19*(1), 79-88. doi:10.1007/BF01499074

Bettenay, C., Ridley, A. M., Henry, L. A., & Crane, L. (2014). Cross-examination: The Testimony of Children With and Without Intellectual Disabilities. *Applied Cognitive Psychology, 28*(2), 204-214. doi:10.1002/acp.2979

Bindemann, M., Brown, C., Koyas, T., & Russ, A. (2012). Individual differences in face identification postdict eyewitness accuracy. *Journal of Applied Research in Memory and Cognition, 1*(2), 96-103. doi:10.1016/j.jarmac.2012.02.001

Bjorklund, D. F., Schneider, W., Cassel, W. S., & Ashley, E. (1994). Training and extension of a memory strategy: Evidence for utilization deficiencies in the acquisition of an organizational strategy in high- and low-IQ children. *Child Development, 65*(3), 951-965. doi:10.2307/1131430

Bornstein, B. H., & Greene, E. (2011). Jury Decision Making: Implications For and From Psychology. *Current Directions in Psychological Science, 20*(1), 63-67. doi:10.1177/0963721410397282

Bornstein, M. H., & Putnick, D. L. (2012). Stability of language in childhood: A multiage, multidomain, multimeasure, and multisource study. *Developmental Psychology, 48*(2), 477-491. doi:10.1037/a0025889

Bottoms, B. L., & Goodman, G. S. (1994). Perceptions of Children's Credibility in Sexual Assault Cases. *Journal of Applied Social Psychology, 24*(8), 702-732. doi:10.1111/j.1559-1816.1994.tb00608.x

Bottoms, B. L., Nysse-Carris, K. L., Harris, T., & Tyda, K. (2003). Jurors' perceptions of adolescent sexual assault victims who have intellectual disabilities. *Law and Human Behavior, 27*(2), 205-227. doi:10.1023/A:1022551314668

Bower, G. (1967). A multicomponent theory of memory trace. In K. W. Spence and J. T. Spence (Eds), *The Psychology of Learning and Motivation, vol. 1,* New York: Academic Press.

Brainerd, C. J., & Reyna, V. F. (1996). Mere memory testing creates false memories in children. *Developmental Psychology, 32*(3), 467-478. doi:10.1037/0012-1649.32.3.467

Brainerd, C. J., & Reyna, V. F. (2012). Reliability of Children's Testimony in the Era of Developmental Reversals. *Developmental Review, 32*(3), 224-267. doi:10.1016/j.dr.2012.06.008

Brainerd, C. J., Reyna, V. F., Howe, M. L., & Kingma, J. (1990). The Development of Forgetting and Reminiscence. *Monographs of the Society for Research in Child Development, 55*(3/4), 1-93. doi:10.1111/1540-5834.ep11892174

Bramão, I., Karlsson, A., & Johansson, M. (2017). Mental reinstatement of encoding context improves episodic remembering. *Cortex, 94* (Supplement C), 15-26. doi:10.1016/j.cortex.2017.06.007

Brennan, M., & Brennan, R. (1994). *Cleartalk: Police Responding to Intellectual Disability*. NSW: Charles Sturt University, School of Education.

Brewer, N., & Burke, A. (2002). Effects of Testimonial Inconsistencies and Eyewitness Confidence on Mock-Juror Judgments. *Law and Human Behavior, 26*(3), 353. doi:10.1023/A:1015380522722

Brigham, J. C., Van Verst, M., & Bothwell, R. K. (1986). Accuracy of Children's Eyewitness Identifications in a Field Setting. *Basic and Applied Social Psychology, 7*(4), 295-306. doi:10.1207/s15324834basp0704_4

British Institute of Learning Disabilities (2011). *Information about learning disabilities.* Available at: http://www.bild.org.uk/resources/faqs/#What-are-the-possible-causes-of-a-persons-learning-disability

Brock, J., & Jarrold, C. (2005). Serial order reconstruction in Down syndrome: evidence for a selective deficit in verbal short-term memory. *Journal of Child Psychology and Psychiatry & Allied Disciplines., 46*(3), 304-316. doi:10.1111/j.1469-7610.2004.00352.x

Brown, C., & Geiselman, E. R. (1990). Eyewitness testimony of mentally retarded: Effect of the cognitive interview. *Journal of Police and Criminal Psychology, 6*(2), 14-22. doi: 10.1007/BF02806593

Brown, D., & Lewis, C. (2013). Competence is in the Eye of the Beholder: Perceptions of intellectually disabled child witnesses. *International Journal of Disability, Development and Education, 60*(1), 3-17. doi:10.1080/1034912X.2013.757132

Brown, D., & Pipe, M. (2003). Individual differences in children's event memory reports and the narrative elaboration technique. *Journal of Applied Psychology, 88*(2), 195-206. doi:10.1037/0021-9010.88.2.195

Brown, D. A., & Lamb, M. E. (2015). Can Children Be Useful Witnesses? It Depends How They Are Questioned. *Child Development Perspectives, 9*(4), 250-255. doi:10.1111/cdep.12142

Brown, D. A., Lamb, M. E., Lewis, C., Pipe, M., Orbach, Y., & Wolfman, M. (2013). The NICHD Investigative Interview Protocol: An analogue study. *Journal of Experimental Psychology: Applied, 19*(4), 367-382. doi:10.1037/a0035143

Brown, D. A., & Lewis, C. N. (2013). Competence is in the Eye of the Beholder: Perceptions of intellectually disabled child witnesses. *International Journal of Disability, Development and Education, 60*(1), 3-17. doi:10.1080/1034912X.2013.757132

Brown, D. A., Lewis, C. N., & Lamb, M. E. (2015). Preserving the past: an early interview improves delayed event memory in children with intellectual disabilities. *Child Development, 86*(4), 1031-1047. doi: 10.1111/cdev.12364

Brown, D. A., Lewis, C. N., Lamb, M. E., & Stephens, E. (2012). The influences of delay and severity of intellectual disability on event memory in children. *Journal of Consulting and Clinical Psychology, 80*(5), 829-841. doi:10.1037/a0029388

Brown, E., Deffenbacher, K., & Sturgill, W. (1977). Memory for faces and the circumstances of encounter. *Journal of Applied Psychology, 62*(3), 311-318. doi:10.1037/0021-9010.62.3.311

Brown, H., Stein, J. and Turk, V. (1995). The sexual abuse of adults with learning disabilities: report of a second two-year incidence survey. *Mental Handicap Research,* (8), 3-24. doi:10.1111/j.1468-3148.1995.tb00139.x

Bruck, M., & Ceci, S. J. (1999). The suggestibility of children's memory. *Annual Review of Psychology, 50*(1), 419-439. doi:10.1146/annurev.psych.50.1.419

Bruck, M., Ceci, S. J., & Hembrooke, H. (2002). The nature of children's true and false narratives. *Developmental Review, 22*(3), 520-554. doi:10.1016/ S0273-2297(02)00006-0

Bull, R. (1995). Interviewing witnesses with communicative disability. In R. Bull & D. Carson (Eds.), *Handbook of psychology in legal contexts.* (pp. 247–260). Chichester: John Wiley & Sons.

Bull, R. (2013). Research on Trying to Improve the Quality of Information Elicited from Vulnerable Witnesses. *International Journal of Disability, Development and Education, 60*(1), 53-57. doi:10.1080/1034912X.2013.757142

Burack, J. A., Russo, N., Flores, H., Iarocci, G., & Zigler, E. (2012). The more you know the less you know, but that's OK: Developments in the developmental approach to intellectual disability. In J. A. Burack, R. M. Hodapp, G. Iarocci, & E. Zigler (Eds.), *The Oxford handbook of intellectual disability and development.* (pp. 3-10). New York, NY: Oxford University Press.

Burack, J. A., & Zigler, E. (1990). Intentional and incidental memory in organically mentally retarded, familial retarded, and nonretarded individuals. *American Journal of Mental Retardation, 94*(5), 532-540.

Burgwyn-Bailes, E., Baker-Ward, L., Gordon, B. N., & Orstein, P. A. (2001). Children's memory for emergency medical treatment after one year: the impact of individual difference variables on recall and suggestibility. *Applied Cognitive Psychology, 15*(7), S25-s48. doi.org/10.1002/acp.833

Cambridge, P., Beadle-Brown, J., Milne, A., Mansell, J., & Whelton, B. (2006). *Exploring the incidence, risk factors, nature and monitoring of adult protection alerts*. University of Kent: Tizard

Cambridge, P., Mansell, J., Beadle-Brown, J., Milne, A., & Whelton, B. (2011). A study of adult protection referrals in two local authorities: an overview of findings for managers and practitioners. *Journal of Adult Protection, 13*(5), 238-250. doi: 10.1108 /14668201111178157

Cardone, D., & Dent, H. (1996). Memory and interrogative suggestibility: The effects of modality of information presentation and retrieval conditions upon the suggestibility scores of people with learning disabilities. *Legal and Criminological Psychology, 1* (Part 2), 165-177. doi:10.1111/j.2044-8333.1996.tb00316.x

Carey, S., Diamond, R., & Woods, B. (1980). Development of face recognition-a maturational component? *Developmental Psychology, 16*(4), 257-269. doi:/10.1037/0012-1649.16.4.257

Carney, D. P. J., Brown, J. H., & Henry, L. A. (2013). Executive function in Williams and Down syndromes. *Research in Developmental Disabilities, 34*(1), 46-55. doi: 10.1016/j.ridd.2012.07.013

Ceci, S. J., & Bruck, M. (1993). Suggestibility of the child witness: a historical review and synthesis. *Psychological Bulletin, 113*, 403-439. doi:10.1037/0033-2909.113.3.403

Ceci, S. J., Huffman, M. L. C., Smith, E., & Loftus, E. F. (1994). Repeatedly Thinking about a Non-event: Source Misattributions among Preschoolers. *Consciousness and Cognition, 3*(3-4), 388-407. doi.org/10.1006/ccog.1994.1022

Ceci, S. J., Ross, D. F., & Toglia, M. P. (1987). Suggestibility of children's memory: psycholegal implications. *Journal of Experimental Psychology: General, 116*, 38-49. doi.org/10.1037/0096-3445.116.1.38

Cederborg, A. C., Danielsson, H., La Rooy, D. & Lamb, M. (2009). Repetition of contaminating question types when children and youths with intellectual disabilities are interviewed. *Journal of Intellectual Disability Research, 53*(5), 440-449. doi: 10.1111/j.1365-2788.2009.01160.x

Cederborg, A. C., La Rooy, D., & Lamb, M. E. (2008). Repeated Interviews with Children Who have Intellectual Disabilities. *Journal of Applied Research in Intellectual Disabilities, 21*(2), 103-113. doi:10.1111/j.1468-3148.2007.00372.x

Cederborg, A. C., & Lamb, M. (2008). Interviewing alleged victims with intellectual disabilities. *Journal of Intellectual Disability Research, 52*(1), 49-58. doi:10.1111/j.1365-2788.2007.00976.x

Chae, Y., & J. Ceci, S. (2005). Individual differences in children's recall and suggestibility: The effect of intelligence, temperament, and self-perceptions. *Applied Cognitive Psychology, 19*, 383-407. doi:10.1002/acp.1094

Chapman, R. S. (1997). Language development in children and adolescents with Down syndrome. *Mental Retardation and Developmental Disabilities Research Reviews, 3*(4), 307-312. doi:10.1002/(SICI)1098-2779(1997)3:4<307::AID-MRDD5>3.0.CO;2-K

Clare, I. C., & Gudjonsson, G. H. (1993). Interrogative suggestibility, confabulation, and acquiescence in people with mild learning disabilities (mental handicap): Implications for reliability during police interrogations. *British Journal of Clinical Psychology, 32*(3), 295-301. doi:10.1111/j.2044-8260.1993.tb01059.x

Clark, S. E. (2005). A re-examination of the effects of biased lineup instructions in eyewitness identification. *Law and Human Behavior, 29*(5), 575-604. doi:10.1007/s10979-005-7121-1

Clarke, J., Prescott, K., & Milne, R. (2013). How effective is the cognitive interview when used with adults with intellectual disabilities specifically with conversation recall? *Journal of Applied Research in Intellectual Disabilities, 26*(6), 546-556. doi:10.1111/jar.12049

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1), 155-159. doi:10.1037/0033-2909.112.1.155

College of Policing (2017). Investigate Interviewing. Available at: https://www.app.college.police.uk/app-content/investigations/investigative-interviewing/#peace-framework

Collins, D., & Henry, L. (2016). Eyewitness recall and suggestibility in individuals with Down syndrome. *Journal of Intellectual Disability Research, 60*(12), 1227-1231. doi:10.1111/jir.12310

Coolican, H. (2009). *Research Methods and Statistics in Psychology*. London: Hodder Education.

Cooper, P., & Allely, C. (2017). You can't judge a book by its cover: Evolving professional responsibilities, liabilities and 'judgecraft' when a party has Asperger's Syndrome. *Northern Ireland Legal Quarterly, 68*(1), 35–58.

Cooper, P., & Mattison, M. (2017). Intermediaries, vulnerable people and the quality of evidence: An international comparison of three versions of the English intermediary model. *The International Journal of Evidence & Proof, 21*(4), 351-370. doi:10.1177/1365712717725534

Coppens-Hofman, M. C., Terband, H., Snik, A. F. M., & Maassen, B. A. M. (2016). Speech Characteristics and Intelligibility in Adults with Mild and Moderate Intellectual Disabilities. *Folia Phoniatrica et Logopaedica, 68*(4), 175-182. doi:10.1159/000450548

Costanzo, F., Varuzza, C., Menghini, D., Addona, F., Gianesini, T., & Vicari, S. (2013). Executive functions in intellectual disabilities: A comparison between Williams syndrome and Down syndrome. *Research in Developmental Disabilities, 34*(5), 1770-1780. doi:10.1016/j.ridd.2013.01.024

Coxon, P., & Valentine, T. (1997). The effects of the age of eyewitnesses on the accuracy and suggestibility of their testimony. *Applied Cognitive Psychology, 11*(5), 415-430.doi: 10.1002/(SICI)1099-0720(199710)11:5<415::AID-ACP469>3.0.CO;2-A

Crane, L., Wilcock, R., Maras, K. L., Chui, W., Marti-Sanchez, C., & Henry, L. A. (2018). Mock juror perceptions of child witnesses on the autism spectrum: The impact of providing diagnostic labels and information about autism. *Journal of Autism and Developmental Disorders*. (Elec Pub), 1 – 11. doi:10.1007/s10803-018-3700-0

Curley, L. J., MacLean, R., & Murray, J. (2017). The Relationship between the Big 5 Personality Traits and Eyewitness Recognition. *Journal of Articles in Support of the Null Hypothesis, 13*(2), 57-72.

Cutler, B. L., Penrod, S. D., & Dexter, H. R. (1990). Juror sensitivity to eyewitness identification evidence. *Law and Human Behavior, 14*(2), 185-191. doi:10.1007/BF01062972

Cutler, B. L., Penrod, S. D., & Stuve, T. E. (1988). Juror decision making in eyewitness identification cases. *Law and Human Behavior, 12*(1), 41-55. doi:10.1007/BF01064273

Dalton, A. J., & McVilly, K. R. (2004). Ethics Guidelines for International, Multicenter Research Involving People with Intellectual Disabilities. *Journal of Policy & Practice in Intellectual Disabilities, 1*(2), 57-70. doi:10.1111/j.1741-1130.2004.04010.x

Dando, C., Wilcock, R., & Milne, R. (2008). The cognitive interview: Inexperienced police officers' perceptions of their witness/victim interviewing practices. *Legal and Criminological Psychology, 13*(1), 59-70. doi:10.1348/135532506X162498

Dando, C. J., Ormerod, T. C., Wilcock, R., & Milne, R. (2011). When help becomes hindrance: Unexpected errors of omission and commission in eyewitness memory resulting from change temporal order at retrieval? *Cognition, 121*(3), 416-421. doi:10.1016/j.cognition.2011.06.015

Darling, S., Martin, D., Hellmann, J. H., & Memon, A. (2009). Some witnesses are better than others. *Personality and Individual Differences, 47*(4), 369-373. doi:10.1016/j.paid.2009.04.010

Davies, G. M., Westcott, H. L., & Horan, N. (2000). The impact of questioning style on the content of investigative interviews with suspected child sexual abuse victims. *Psychology, Crime & Law, 6*(2), 81-97. doi:10.1080/10683160008410834

Davis, J. M., McKone, E., Dennett, H., O'Connor, K. B., O'Kearney, R., & Palermo, R. (2011). Individual Differences in the Ability to Recognise Facial Identity Are Associated with Social Anxiety. *PLOS ONE, 6*(12), e28800. doi:10.1371/journal.pone.0028800

Davis, J. P., Valentine, T., Memon, A., & Roberts, A. J. (2015). Identification on the street: a field comparison of police street identifications and video line-ups in England. *Psychology, Crime & Law, 21*(1), 9-27. doi:10.1080/1068316X.2014.915322

Davis, M. R., McMahon, M., & Greenwood, K. M. (2005). The efficacy of mnemonic components of the cognitive interview: towards a shortened variant for time-critical investigations. *Applied Cognitive Psychology, 19*(1), 75-93. doi:10.1002/acp.1048

de Heering, A., Houthuys, S., & Rossion, B. (2007). Holistic face processing is mature at 4 years of age: Evidence from the composite face effect. *Journal of Experimental Child Psychology, 96*(1), 57-70. doi:10.1016/j.jecp.2006.07.001

Deffenbacher, K. A., Bornstein, B. H., McGorty, E. K., & Penrod, S. D. (2008). Forgetting the Once-Seen Face: Estimating the Strength of an Eyewitness's Memory Representation. *Journal of Experimental Psychology. Applied, 14*(2), 139-150. doi:10.1037/1076-898X.14.2.139

Detterman, D. K., & Daniel, M. H. (1989). Correlations of mental tests with each other and with cognitive variables are highest for low IQ groups. *Intelligence, 13*(4), 349-359. doi:10.1016/S0160-2896(89)80007-8

Devine, D., Clayton, L., Dunford, B., Seying, R., & Pryce, J. (2001). Jury decision making: 45 years of empirical research on deliberating groups. *Psychology, Public Policy, and Law, 7*, 622-727. doi:10.1037/1076-8971.7.3.622

Devlin, L. P. (1976). *Report to the Secretary of State for the Home Department on the Departmental Committee on Evidence of Identification in Criminal Cases.* London: HMSO

Dobson, E., & Rust, J. O. (1994). Memory for objects and faces by the mentally retarded and nonretarded. *The Journal of Psychology: Interdisciplinary and Applied, 128*(3), 315-322. doi:10.1080/00223980.1994.9712735

Doob, A. N., & Kirshenbaum, H. M. (1973). Bias in police lineups - partial remembering. *Journal of Police Science and Administration, 18*, 287 - 293.

Duchaine, B., & Nakayama, K. (2006). The Cambridge Face Memory Test: Results for neurologically intact individuals and an investigation of its validity using inverted face stimuli and prosopagnosic participants. *Neuropsychologia*, *44*(4), 576-585. doi:10.1016/j.neuropsychologia.2005.07.001

Dunlevy, J. R., & Cherryman, J. (2013). Target-Absent Eyewitness Identification Line-Ups: Why Do Children Like to Choose. *Psychiatry, Psychology & Law, 20*(2), 284-293. doi:10.1080/13218719.2012.671584

Dunn, L. M., Dunn, D. M., & Styles, B. (2009). *British Picture Vocabulary Scale (3rd ed.)*. London, UK: GL Assessment.

Dunn, L. M., Dunn, D. M., & Pearson, A. (2007). *PPVT-4: Peabody Picture Vocabulary Test*. Minneapolis, MN: Pearson Assessments.

Dunning, D., & Stern, L. B. (1992). Examining the Generality of Eyewitness Hypermnesia: A Close Look at Time Delay and Question Type. *Applied Cognitive Psychology, 6*(7), 643-657. doi:10.1002/acp.2350060707

Ebbesen, E. B., & Rienick, C. B. (1998). Retention Interval and Eyewitness Memory for Events and Personal Identifying Attributes. *Journal of Applied Psychology, 83*(5), 745-762. doi: 10.1037/0021-9010.83.5.745

Ebbinghaus, H. (2013). Memory: A Contribution to Experimental Psychology. *Annals of Neurosciences, 20*(4), 155-156. doi:10.5214/ans.0972.7531.200408

Emerson, E. & Hatton, C. (2008). *People with Learning Disabilities in England*. Centre for Disability Research. Lancaster University, UK

Enns, J. T., & Akhtar, N. (1989). A developmental study of filtering in visual attention. *Child Development, 60*(5), 1188-1199. doi:10.2307/1130792

Ericson, K., & Issacs, B. (2003). Eyewitness identification accuracy: A comparison of adults with and those without intellectual disability. *Mental Retardation, 41*(3), 161-173. doi: 10.1352/0047-6765(2003)41<161:EIAACO>2.0.CO;2

Espinoza, R. K. E., Willis-Esqueda, C., Toscano, S., & Coons, J. (2015). The Impact of Ethnicity, Immigration Status, and Socioeconomic Status on Juror Decision Making. *Journal of Ethnicity in Criminal Justice, 13*(3), 197-216. doi:10.1080/15377938.2014.984044

Estes, W. K. (1955). Statistical theory of spontaneous recovery and regression. *Psychological Review, 62*(3), 145-154. doi:10.1037/h0048509

Eysenck, M. W., & Keane, M. T. (2010). *Cognitive Psychology: A Student's Handbook*. Hove, East Sussex Psychology Press

Faul, F., Erdfelder, E., Lang, A-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioural, and biomedical sciences. *Behavior Research Methods, 39,* 175 – 191. doi:10.3758/bf03193146

Field, A. P. (2009). *Discovering statistics using SPSS.* London: SAGE Publications.

Fielding, N. G., & Conroy, S. (1992). Interviewing child victims: police and social work investigations of child sexual abuse. *Sociology, 26*(1), 103-124. doi: 10.1177/0038038592026001007

Finkelhor, D., Ormrod, R., Turner, H., & Hamby, S. L. (2005). The Victimization of Children and Youth: A Comprehensive, National Survey. *Child Maltreatment, 10*(1), 5-25. doi:10.1177/1077559504271287

Fischer, B. A. (2006). A Summary of Important Documents in the Field of Research Ethics. *Schizophrenia Bulletin, 32*(1), 69-80. doi:10.1093/schbul/sbj005

Fisher, R. P., Brewer, N., & Mitchell, G. (2009). The relation between consistency and accuracy of eyewitness testimony: Legal versus cognitive explanations. In R. Bull, T. Valentine, & T. Williamson (Eds.), *Handbook of psychology of investigative interviewing: Current developments and future directions* (p. 121–136). Chichester, UK: John Wiley & Sons, Ltd.

Fisher, R. P., & Geiselman, R. E. (1992). *Memory-enhancing Techniques for Investigative Interviewing: The Cognitive Interview*. Springfield, IL: Charles C. Thomas.

Fisher, R. P., Geiselman, R. E., & Amador, M. (1989). Field test of the Cognitive Interview: enhancing the recollection of actual victims and witnesses of crime. *The Journal of Applied Psychology, 74*(5), 722-727. doi:10.1037/0021-9010.74.5.722

Fitzgerald, R. J., & Price, H. L. (2015). Eyewitness Identification Across the Life Span: A Meta-Analysis of Age Differences. *Psychological Bulletin, 114*(6), 1228-1265. doi:10.1037/bul0000013

Fivush, R., Gray, J. T., & Fromhoff, F. A. (1987). Two-year-olds talk about the past. *Cognitive Development, 2*(4), 393-409. doi:10.1016/S0885-2014(87)80015-1

Fivush, R., & Schwarzmueller, A. (1995). Say it once again: effects of repeated questions on children's event recall. *Journal of Traumatic Stress, 8*(4), 555-580. doi:10.1007/BF02102889

Fivush, R. & Schwarzmueller, A. (1998). Children remember childhood: implications for childhood amnesia. *Applied Cognitive Psychology*, *12*, 455-473. doi:10.1002/(SICI)1099-0720(199810)12:5<455::AID-ACP534>3.0.CO;2-H

Flin, R. (1980). Age effects in children's memory for unfamiliar faces. *Developmental Psychology, 16*(4), 373-374. doi:10.1037/0012-1649.16.4.373

Flin, R., Boon, J., Knox, A., & Bull, R. (1992). The effect of a five-month delay on children's and adults' eyewitness memory. *British Journal of Psychology, 83 (Pt 3)*, 323-336. doi:10.1111/j.2044-8295.1992.tb02444.x

Furnham, A., & Pendred, J. (1983). Attitudes towards the mentally and physically disabled. *British Journal of Medical Psychology, 56*(2), 179-187. doi:10.1111/j.2044-8341.1983.tb01545.x

Gabbert, F., Memon, A., & Allan, K. (2003). Memory conformity: can eyewitnesses influence each other's memories for an event? *Applied Cognitive Psychology, 17*(5), 533-543. doi:10.1002/acp.885

Gabbert, F., Memon, A., Allan, K., & Wright, D. B. (2004). Say it to my face: Examining the effects of socially encountered misinformation. *Legal & Criminological Psychology, 9*(2), 215-227. doi:10.1348/1355325041719428

Gathercole, S. E., Pickering, S. J., Ambridge, B., & Wearing, H. (2004). The Structure of Working Memory From 4 to 15 Years of Age. *Developmental Psychology, 40*(2), 177-190. doi:10.1037/0012-1649.40.2.177

Gawrylowicz, J., Gabbert, F., Carson, D., Lindsay, W. R., & Hancock, P. J. B. (2013). Face Recognition and Description Abilities in People with Mild Intellectual Disabilities. *Journal of Applied Research in Intellectual Disabilities, 26*(5), 435-446. doi:10.1111/jar.12028

Geddie, L., Fradin, S., & Beer, J. (2000). Child characteristics which impact accuracy of recall and suggestibility in preschoolers: is age the best predictor? *Child Abuse & Neglect, 24*(2), 223-235. doi:10.1016/S0145-2134(99)00133-7

Geiselman, E., Fisher, R. P., Firstenberg, I., Hutton, L. A., Sullivan, S. J., Avetissian, I. V., & Prosk, A. L. (1984). Enhancement of Eyewitness Memory - An Empirical Evaluation of the Cognitive Interview. *Journal of Police Science & Administration, 12*(1), 74-80. doi:10.1.1.615.6444

Geiselman, R. E., & Callot, R. (1990). Reverse versus Forward Recall of Script-based Texts. *Applied Cognitive Psychology, 4*(2), 141-144. doi:10.1002/acp.2350040206

Geiselman, R. E., Fisher, R. P., MacKinnon, D. P., & Holland, H. L. (1986). Enhancement of Eyewitness Memory with the Cognitive Interview. *The American Journal of Psychology, 99*(3), 385-401. doi:10.2307/1422492

Gentle, M., Milne, R., Powell, M., & Sharman, S. (2013). Does the Cognitive Interview Promote the Coherence of Narrative Accounts in Children With and Without an Intellectual Disability? *International Journal of Disability, Development and Education, 60*(1), 30-43. doi:10.1080/1034912X.2013.757138

Godden, D. R., & Baddeley, A. D. (1975). *Context-dependent memory in two natural environments: on land and underwater*: British Journal of Psychology, *66*(3), 325–331. doi: 10.1111/j.2044-8295.1975.tb01468.x.

Goodman, G. S., Golding, J. M., Helgeson, V. S., Haith, M. M., & Michelli, J. (1987). When a child takes the stand: Jurors' perceptions of children's eyewitness testimony. *Law and Human Behavior, 11*(1), 27-40. doi:10.1007/BF01044837

Goodman, G. S., & Reed, R. S. (1986). Age differences in eyewitness testimony. *Law and Human Behavior, 10*(4), 317-332. doi:10.1007/BF01047344

Goodman, G. S., Rudy, L., Bottoms, B. L., & Aman, C. (1990). Children's concerns and memory: Issues of ecological validity in the study of children's eyewitness testimony. Knowing and remembering in young children. In R. Fivush & J. A. Hudson (Eds.), *Emory symposia in cognition, Vol. 3. Knowing and remembering in young children* (p. 249 – 284). Cambridge University Press

Goodman, G. S., Taub, E. P., Jones, D. P. H., England, P., Port, L. K., Rudy, L., & Prado, L. (1992). Testifying in criminal court: emotional effects on child sexual assault victims. *Monographs of the Society for Research in Child Development, 57*(5), 1-159. doi:10.2307/1166127

Gordon, B. N., Jens, K. G., Hollings, R., & Watson, T. E. (1994). Remembering activities performed versus those imagined: Implications for testimony of children with mental retardation. *Journal of Clinical Child Psychology, 23*(3), 239-248. doi:10.1207/s15374424jccp2303_2

Greenhoot, A. F., Ornstein, P. A., Gordon, B. N., & Baker-Ward, L. (1999). Acting out the details of a pediatric check-up: The impact of interview condition and behavioral style on children's memory reports. *Child Development, 70*(2), 363-380. doi:10.1111/1467-8624.00027

Grote-Garcia, S. A. (2011). Schemas. In S. Goldstein & J. A. Naglieri (Eds.), *Encyclopedia of Child Behavior and Development* (pp. 1287-1288). Boston, MA: Springer US.

Gudjonsson, G., & Clare, I. (1995). The relationship between confabulation and intellectual ability, memory, interrogative suggestibility and acquiescence. *Personality and Individual Differences, 19*, 333-338. doi:10.1016/0191-8869(95)00070-M

Gudjonsson, G. H. (1988). The relationship of intelligence and memory to interrogative suggestibility: The importance of range effects. *British Journal of Clinical Psychology, 27*(2), 185-187. doi:10.1111/j.2044-8260.1988.tb00772.x

Gudjonsson, G. H. (1997). *The Gudjonsson Suggestibility Scales Manual*. Hove, East Sussex: Psychology Press.

Gudjonsson, G. H., & Henry, L. (2003). Child and adult witnesses with intellectual disability: The importance of suggestibility. *Legal and Criminological Psychology, 8*(2), 241-252. doi:10.1348/135532503322363013

Hatton, C. (1998). Pragmatic language skills in people with intellectual disabilities: A review. *Journal of Intellectual and Developmental Disability, 23*(1), 79-100. doi:10.1080/13668259800033601

Havard, C., & Memon, A. (2013). The Mystery Man Can Help Reduce False Identification for Child Witnesses: Evidence from Video Line-ups. *Applied Cognitive Psychology, 27*(1), 50-59. doi:10.1002/acp.2870

Havard, C., Memon, A., Clifford, B., & Gabbert, F. (2010). A comparison of video and static photo lineups with child and adolescent witnesses. *Applied Cognitive Psychology, 24*(9), 1209-1221. doi:10.1002/acp.1645

Havard, C., Memon, A., Laybourn, P., & Cunningham, C. (2012). Own-age bias in video lineups: a comparison between children and adults. *Psychology, Crime & Law, 18*(10), 929-944. doi:10.1080/1068316X.2011.598156

Hayne, H., & Jack, F. (2011). Childhood amnesia. *Wiley Interdisciplinary Reviews: Cognitive Science, 2*(2), 136-145. doi:10.1002/wcs.107

Heal, L. W., & Sigelman, C. K. (1995). Response biases in interviews of individuals with limited mental ability. *Journal of Intellectual Disability Research, 39*(4), 331-340. doi: 10.1111/j.1365-2788.1995.tb00525.x

Heath, W. P., Grannemann, B. D., Sawa, S. E., & Hodge, K. M. (1997). Effects of detail in eyewitness testimony on decisions by mock jurors. *Journal of Offender Rehabilitation, 25*(3/4), 51. doi:10.1300/J076v25n03_04

Henderson, E. (2015). 'A very valuable tool': Judges, advocates and intermediaries discuss the intermediary system in England and Wales. *The International Journal of Evidence & Proof, 19*(3), 154-171. doi:10.1177/1365712715580535

Henry, L., Ridley, A., Perry, J., & Crane, L. (2011). Perceived credibility and eyewitness testimony of children with intellectual disabilities. *Journal of Intellectual Disability Research, 55*(4), 385-391. doi:10.1111/j.1365-2788.2011.01383.x

Henry, L., & Wilcock, R. (2013). Witnesses with Intellectual Disabilities. *International Journal of Disability, Development & Education, 60*(1), 1-2. doi:10.1080/1034912X.2013.757126

Henry, L. A. (2001). How does the severity of a learning disability affect working memory performance? *Memory, 9*(4-6), 233-247. doi:10.1080/09658210042000085

Henry, L. A., Bettenay, C., & Carney, D. P. J. (2011). Children with Intellectual Disabilities and Developmental Disorders. In M. E. Lamb, D J. La Rooy, L. C. Malloy and C Katz (Eds.) *Children's Testimony* (pp. 251-283). Chichester, UK: John Wiley & Sons, Ltd.

Henry, L. A., Crane, L., Nash, G., Hobson, Z., Kirke-Smith, M., & Wilcock, R. (2017). Verbal, Visual, and Intermediary Support for Child Witnesses with Autism During Investigative Interviews. *Journal of Autism and Developmental Disorders, 47*(8), 2348-2362. doi:10.1007/s10803-017-3142-0

Henry, L. A., & Gudjonsson, G. H. (2003). Eyewitness memory, suggestibility, and repeated recall sessions in children with mild and moderate intellectual disabilities. *Law and Human Behavior, 27*(5), 481. doi:10.1023/A:1025434022699

Henry, L. A., & Gudjonsson, G. H. (2007). Individual and developmental differences in eyewitness recall and suggestibility in children with intellectual disabilities. *Applied Cognitive Psychology, 21*(3), 361-381. doi:10.1002/acp.1280

Henry, L. A., & Gudjonsson, G. H. (1999). Eyewitness memory and suggestibility in children with mental retardation. *American Journal on Mental Retardation, 104*(6), 491-508. doi: 10.1352/0895-8017(1999)104<0491:EMASIC>2.0.CO;2

Hershkowitz, I., & Terner, A. (2007). The Effects of repeated interviewing on children's forensic statements of sexual abuse. *Applied Cognitive Psychology, 21*(9), 1131-1143. doi:10.1002/acp.1319

Hobson, Z. J., & Wilcock, R. (2011). Eyewitness Identification of Multiple Perpetrators. *International Journal of Police Science & Management, 13*(4), 286-296. doi:10.1350/ijps.2011.13.4.253

Hodapp, R. M., Griffin, M. M., Burke, M. M., & Fisher, M. H. (2011). Intellectual Disabilities. In R. J. Sternberg & S. B. Kaufman (Eds.), *The Cambridge handbook of intelligence* (pp. 193-209). Cambridge: Cambridge University Press.

Horner-Johnson, W., & Bailey, D. (2013). Assessing Understanding and Obtaining Consent From Adults With Intellectual Disabilities for a Health Promotion Study. *Journal of Policy & Practice in Intellectual Disabilities, 10*(3), 260-265. doi:10.1111/jppi.12048

Horowitz, S. W. (2009). Direct mixed and open questions in child interviewing: An analog study. *Legal & Criminological Psychology, 14*(1), 135-147. doi:10.1348/135532508X298441

Hosch, H. (1994). Individual differences in personality and eyewitness identification. In D. F. Ross, J. D. Read, & M. P. Toglia (Eds.), *Adult Eyewitness Testimony: Current Trends and Developments* (pp. 328-347). Cambridge: Cambridge University Press.

Howe, M. L. (1991). Misleading Children's Story Recall: Forgetting and Reminiscence of the Facts. *Developmental Psychology, 27*(5), 746-763.

Howitt, D. (2009). *Introduction to forensic and criminal psychology*. Harlow: Pearson Education

Huizinga, M., Dolan, C. V., & van der Molen, M. W. (2006). Age-related change in executive function: Developmental trends and a latent variable analysis. *Neuropsychologia, 44*(11), 2017-2036. doi:10.1016/j.neuropsychologia.2006.01.010

Humphries, J. E., Holliday, R. E., & Flowe, H. D. (2012). Faces in Motion: Age-Related Changes in Eyewitness Identification Performance in Simultaneous, Sequential, and Elimination Video Lineups. *Applied Cognitive Psychology, 26*(1), 149-158. doi:10.1002/acp.1808

Iacono, T., & Carling-Jenkins, R. (2012). The human rights context for ethical requirements for involving people with intellectual disability in medical research. *Journal of Intellectual Disability Research, 56*(11), 1122-1132. doi:10.1111/j.1365-2788.2012.01617.x

Iacono, T., & Murray, B. (2003). Issues of Informed Consent in Conducting Medical Research Involving People with Intellectual Disability. *Journal of Applied Research in Intellectual Disabilities, 16*(1), 41-51. doi:10.1046/j.1468-3148.2003.00141.x

Innocence Project (2017). [Online]. Available at http://www.innocenceproject.org/

Jack, F., Leov, J., & Zajac, R. (2014). Age-related Differences in the Free-recall Accounts of Child, Adolescent, and Adult Witnesses. *Applied Cognitive Psychology, 28*(1), 30-38. doi:10.1002/acp.2951

Janicki, M. P., & Dalton, A. J. (1993). Alzheimer disease in a select population of older adults with mental retardation. *The Irish Journal of Psychology, 14*(1), 38-47. doi:10.1080/03033910.1993.10557913

Janicki, M. P., & Dalton, A. J. (2000). Prevalence of Dementia and Impact on Intellectual Disability Services. *Mental Retardation, 38*(3), 276-288. doi:10.1352/0047-6765(2000)038<0276:PODAIO>2.0.CO;2

Jarrold, C., Baddeley, A. D., & Phillips, C. (2007). Long-Term Memory for Verbal and Visual Information in Down Syndrome and Williams Syndrome: Performance on the Doors and People Test. *Cortex, 43*(2), 233-247. doi:10.1016/S0010-9452(08)70478-7

Johnson M. K. (1997). Source monitoring and memory distortion. *Philosophical Transactions of the Royal Society of London. Series B, Biological sciences*, *352*(1362), 1733–1745. doi:10.1098/rstb.1997.0156

Johnson , M. K., Hayes , S.M. , D'Esposito , M. , & Raye , C.L. (2000). Confabulation. In J. G. L. S. C. Boller (Ed.), *Handbook of Neuropsychology.* Vol. 2, pp. 383 – 407. Amsterdam: Elsevier.

Johnson, M. K., Hashtroudi, S., & Lindsay, D. S. (1993). Source monitoring. *Psychological Bulletin, 114*(1), 3-28. doi:10.1037/0033-2909.114.1.3

Johnston, R. A., & Ellis, H. D. (1995). Age Effects in the Processing of Typical and Distinctive Faces. *The Quarterly Journal of Experimental Psychology Section A, 48*(2), 447-465. doi:10.1080/14640749508401399

Jules, S. J., & McQuiston, D. E. (2013). Speech style and occupational status affect assessments of eyewitness testimony. *Journal of Applied Social Psychology, 43*(4), 741-748. doi:10.1111/jasp.12002

Karageorge, A., & Zajac, R. (2011). Exploring the effects of age and delay on children's person identifications: Verbal descriptions, lineup performance, and the influence of wildcards. *British Journal of Psychology, 102*(2), 161-183. doi:10.1348/000712610X507902

Keast, A., Brewer, N., & Wells, G. L. (2007). Children's metacognitive judgments in an eyewitness identification task. *Journal of Experimental Child Psychology, 97*(4), 286-314. doi:10.1016/j.jecp.2007.01.007

Kebbell, M. R., & Davies, G. M. (2006). *Practical psychology for forensic investigations and prosecutions* (Vol. 31). Chichester, UK: John Wiley & Sons, Ltd.

Kebbell, M. R., & Milne, R. (1998). Police officers' perceptions of eyewitness performance in forensic investigations. *The Journal of Social Psychology, 138*(3), 323-330. doi:10.1080/00224549809600384

Kebbell, M. R., Milne, R., & Wagstaff, G. F. (1999). The cognitive interview: A survey of its forensic effectiveness. *Psychology, Crime & Law, 5*(1-2), 101-115. doi:10.1080/10683169908414996

Kirchhoff, B. A. (2009). Individual differences in episodic memory: the role of self-initiated encoding strategies. *The Neuroscientist: A Review Journal Bringing Neurobiology, Neurology And Psychiatry, 15*(2), 166-179. doi:10.1177/1073858408329507

Köhnken, G. (1995). Interviewing Adults. In Carson, D., & Bull, R. (Ed.), *Handbook of Psychology in Legal Contexts* (pp. 215 - 233). Chichester: John Wiley & Sons Ltd.

Köhnken, G., Milne, R., Memon, A., & Bull, R. (1999). The cognitive interview: A meta-analysis. *Psychology, Crime & Law, 5*(1-2), 3-27. doi:10.1080/10683169908414991

Kulkofsky, S. (2010). The effects of verbal labels and vocabulary skill on memory and suggestibility. *Journal of Applied Developmental Psychology, 31*(6), 460-466. doi:10.1016/j.appdev.2010.09.002

La Rooy, D., Katz, C., Malloy, L. C., & Lamb, M. E. (2010). Do we need to rethink guidance on repeated interviews? *Psychology, Public Policy, and Law, 16*(4), 373-392. doi:10.1037/a0019909

La Rooy, D., Lamb, M., & Pipe, M. (2009). Repeated interviewing: A critical evaluation of the risks and potential benefits. In K. Kuehnle & M. Connell (Eds.), *The evaluation of child sexual abuse allegations: A comprehensive guide to assessment and testimony* (pp. 327-361). New Jersey: Wiley.

La Rooy, D., Pipe, M., & Murray, J. E. (2005). Reminiscence and hypermnesia in children's eyewitness memory. *Journal of Experimental Child Psychology, 90*(3), 235-254. doi:10.1016/j.jecp.2004.11.002

Lamb, M. E., Orbach, Y., Hershkowitz, I., Horowitz, D., & Abbott, C. B. (2007). Does the type of prompt affect the accuracy of information provided by alleged victims of abuse in forensic interviews? *Applied Cognitive Psychology, 21*(9), 1117-1130. doi:10.1002/acp.1318

Lamb, M. E., Sternberg, K. J., & Esplin, P. W. (2000). Effects of Age and Delay on the Amount of Information Provided by Alleged Sex Abuse Victims in Investigative Interviews. *Child Development, 71*(6), 1586-1596. doi:10.1111/1467-8624.00250

Laws, G., & Bishop, D. V. M. (2004). Verbal deficits in Down's syndrome and specific language impairment: a comparison. *International Journal of Language & Communication Disorders, 39*(4), 423-451. doi:10.1080/13682820410001681207

Learning Disability Today (2015). Extent of sexual abuse of adults with learning disabilities revealed. Available at: https://www.learningdisabilitytoday.co.uk/extent-of-sexual-abuse-of-adults-with-learning-disabilities-revealed

Lin, L. P., Yen, C. F., Kuo, F. Y., Wu, J. L., & Lin, J. D. (2009). Sexual assault of people with disabilities: Results of a 2002-2007 national report in Taiwan. *Research in Developmental Disabilities, 30*(5), 969-975. doi:10.1016/j.ridd.2009.02.001

Lindsay, D. S., Johnson, M. K., & Kwon, P. (1991). Developmental changes in memory source monitoring. *Journal of Experimental Child Psychology, 52*(3), 297-318. doi:10.1016/0022-0965(91)90065-Z

Loftus, E. F., & Palmer, J. C. (1974). Reconstruction of automobile destruction: An example of the interaction between language and memory. *Journal of Verbal Learning and Learning Behavior, 13*, 585 -589.

Lorsbach, T. C., & Ewing, R. H. (1995). Source Monitoring in Children with Learning Disabilities. *International Journal of Disability, Development and Education, 42*(3), 241-257. doi:10.1080/0156655950420306

Lowenstein, J. A., Blank, H., & Sauer, J. D. (2010). Uniforms affect the accuracy of children's eyewitness identification decisions. *Journal of Investigative Psychology & Offender Profiling, 7*(1), 59-73. doi:10.1002/jip.104

Maeder, E. M., Pozzulo, J. D., & Dempsey, J. (2012). Judging the witness: Do gender and occupation type matter for juror decision making? *American Journal of Forensic Psychology, 30*(3), 45-58.

Malpass, R. S., & Devine, P. G. (1981). Eyewitness Identification: Lineup Instructions and the Absence of the Offender. *Journal of Applied Psychology, 66*(4), 482-489. doi: 10.1037/0021-9010.66.4.482

Malpass, R. S., & Lindsay, R. C. L. (1999). Measuring line-up fairness. *Applied Cognitive Psychology, 13*(Spec Issue), S1-S7. doi:10.1002/(SICI)1099-0720(199911)13:1+<S1::AID-ACP678>3.0.CO;2-9

Mansell, S., Sobsey, D., & Calder, P. (1992). Sexual abuse treatment for persons with developmental disabilities. *Professional Psychology: Research and Practice, 23*(5), 404-409. doi:10.1037/0735-7028.23.5.404

McCarthy, M. & Thompson., D. (1997). A prevalence study of sexual abuse of adults with intellectual disabilities referred for sex education. *Journal of Applied Research in Intellectual Disabilities, 10*(2), 105-124. doi:10.1111/j.1468-3148.1997.tb00012.x

McCormack, B., Kavanagh, D., Caffrey, S., & Power, A. (2005). Investigating Sexual Abuse: Findings of a 15-Year Longitudinal Study. *Journal of Applied Research in Intellectual Disabilities, 18*(3), 217-227. doi:10.1111/j.1468-3148.2005.00236.x

McDonnell, A., Breen, E., Deveau, R., Goulding, E., & Smyth, J. (2014). How nurses and carers can avoid the slippery slope to abuse. *Learning Disability Practice, 17*(5), 36-39. doi:10.7748/ldp.17.5.36.e1516

McLean, M. (1995). Quality investigation? Police interviewing of witnesses. *Medicine, Science, and the Law, 35*, 116-122. doi:10.1177/002580249503500205

Megreya, A. M., & Burton, A. M. (2006). Recognising Faces Seen Alone or with Others: When Two Heads Are Worse than One. *Applied Cognitive Psychology, 20*(7), 957-972. doi:10.1002/acp.1243

Mehrani, M. B., & Peterson, C. (2018). Responses to interview questions: A cross-linguistic study of acquiescence tendency. *Infant and Child Development, 27*(2), e2063. doi:10.1002/icd.2063

Memon, A. (1998). Recovered memories: Psychological issues and legal questions. In A. Memon, A. Vrij & R. Bull. (Eds.), *Psychology and Law: Truthfulness, Accuracy and Credibility* (pp. 147-169). Chichester, London: McGraw-Hill.

Memon, A. (1998). Telling it all: The cognitive interview. In A. Memon, A. Vrij & R. Bull. (Eds.), *Psychology and Law: Truthfulness, Accuracy and Credibility* (pp. 170-187). Chichester, London: McGraw-Hill.

Memon, A., Bartlett, J., Rose, R., & Gray, C. (2003). The Aging Eyewitness: Effects of Age on Face, Delay, and Source-Memory Ability. *The Journals of Gerontology: Series B, 58*(6), 338-345. doi:10.1093/geronb/58.6.P338

Memon, A., Meissner, C. A., & Fraser, J. (2010). The Cognitive Interview: A meta-analytic review and study space analysis of the past 25 years. *Psychology, Public Policy, and Law, 16*(4), 340-372. doi:10.1037/a0020518

Memon, A., & Wright, D. (1999). The search for John Doe 2: Eyewitness testimony in the Oklahoma bombing. *Psychologist*, *12*, 292-295.

Mencap. (2001). *Behind closed doors: Preventing sexual abuse against adults with a learning disability*. London: Mencap

Mencap. (2013). *Make it Clear: A guide to making easy read information*. London: Mencap

Mencap. (2017). *Your guide to communicating with people with a learning disability*. London: Mencap

Mencap. (2019). *What is a learning disability?* London

Mental Capacity Act 2005: Code of Practice. (2007). London: TSO. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/497253/Mental-capacity-act-code-of-practice.pdf

Mervis, C. B., & Klein-Tasman, B. P. (2004). Methodological Issues in Group-Matching Designs: α Levels for Control Variable Comparisons and Measurement Characteristics of Control and Target Variables. *Journal of Autism and Developmental Disorders, 34*(1), 7-17. doi:10.1023/B:JADD.0000018069.69562.b8

Michel, M. K., Gordon, B. N., Ornstein, P. A., & Simpson, M. A. (2000). The abilities of children with mental retardation to remember personal experiences: Implications for testimony. *Journal of Clinical Child Psychology, 29*(3), 453-463. doi: 10.1207/S15374424JCCP2903_16

Miller, A. L., Gross, M. P., & Unsworth, N. (2019). Individual differences in working memory capacity and long-term memory: The influence of intensity of attention to items at encoding as measured by pupil dilation. *Journal of Memory and Language, 104*, 25-42. doi:10.1016/j.jml.2018.09.005

Milne, R., and Bull, R. (1999). *Investigative interviewing: Psychology and practice*. Chichester: Wiley.

Milne, R., and Bull, R. (2006). Interviewing Victims of Crime, Including Children and People with Intellectual Disabilities. In M. R. Kebbell & G. M. Davies (Eds.) *Practical Psychology for Forensic Investigations and Prosecutions* (pp. 7 - 23). Chichester: Wiley

Milne, R., Clare, I. C. H., & Bull, R. (1999). Using the cognitive interview with adults with mild learning disabilities. *Psychology, Crime & Law, 5*(1-2), 81-99. doi:10.1080/10683169908414995

Milne, R., Sharman, S. J., Powell, M. B., & Mead, S. (2013). Assessing the Effectiveness of the Cognitive Interview for Children with Severe Intellectual Disabilities. *International Journal of Disability, Development & Education, 60*(1), 18-29. doi:10.1080/1034912X.2013.757137

Ministry of Justice. (2011) *Achieving best evidence in criminal proceedings: Guidance on interviewing victims and witnesses and guidance on using special measures*. Retrieved from: https://www.cps.gov.uk/sites/default/files/documents/legal_guidance/best_evidence in_criminal_proceedings.pdf

Ministry of Justice. (2019). *Registered Intermediary Procedural Guidance*. London. Retrieved from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/831537/moj-registered-intermediary-procedural-guidance.pdf

Mondloch, C. J., Le Grand, R., & Maurer, D. (2002). Configural Face Processing Develops more Slowly than Featural Face Processing. *Perception, 31*(5), 553-566. doi/10.1068/p3339

Morgan, C. A., Hazlett, G., Baranoski, M., Doran, A., Southwick, S., & Loftus, E. (2007). Accuracy of Eyewitness Identification is significantly associated with performance on a standardized test of face recognition. *International Journal of Law and Psychiatry, 30*(3), 213-223. doi:10.1016/j.ijlp.2007.03.005

Mundy, P. & Kasari, C. (1990). The similar-structure hypothesis and differential rate of development in mental retardation. In R. M. Hodapp, J. A. Burack and E. Zigler (Eds), *Issues in the developmental approach to mental retardation* (pp. 71 - 89). Cambridge: Cambridge University Press,

Murfett, R., Powell, M. B., & Snow, P. C. (2008). The effect of intellectual disability on the adherence of child witnesses to a "story grammar" framework. *Journal of Intellectual & Developmental Disability, 33*(1), 2-11. doi:10.1080/13668250701829811

Narby, D. J., Cutler, B. L. and Penrod, S. D. (1996). The effects of witness, target, and situational factors on eyewitness identifications. In S. L. Sporer, R. S. Malpass and G. Koehnken (Eds) *Psychological Issues in Eyewitness Identification* (pp. 23 - 52). Mawah, NJ: Lawrence Erlbaum Associates

Nathanson, R., & Platt, M. D. (2005). Attorneys' perceptions of child witnesses with mental retardation. *The Journal of Psychiatry & Law, 33*(1), 5-42. doi: 10.1177/009318530503300102

Nolan, J. D., Cottle, D., & Walker, M. (1985). Conceptual Organization and Memory in Nonretarded, Mildly Retarded, and Moderately Retarded Adults. *Journal of Psychology, 119*(3), 261-264. doi:10.1080/00223980.1985.10542896

O'Callaghan, A. C., & Murphy, G. H. (2007). Sexual relationships in adults with intellectual disabilities: understanding the law. *Journal of Intellectual Disability Research, 51*(3), 197-206. doi:10.1111/j.1365-2788.2006.00857.x

Odinot, G., Memon, A., La Rooy, D., & Millen, A. (2013). Are Two Interviews Better Than One? Eyewitness Memory across Repeated Cognitive Interviews. *PLOS ONE, 8*(10), e76305. doi:10.1371/journal.pone.0076305

Odinot, G., & Wolters, G. (2006). Repeated recall, retention interval and the accuracy–confidence relation in eyewitness memory. *Applied Cognitive Psychology, 20*(7), 973-985. doi:10.1002/acp.1263

Parker, J. F., & Ryan, V. (1993). An attempt to reduce guessing behavior in children's and adults' eyewitness identifications. *Law and Human Behavior, 17*(1), 11-26. doi: 10.1007/BF01044534

Paterson, H. M., & Kemp, R. I. (2006). Comparing methods of encountering post-event information: the power of co-witness suggestion. *Applied Cognitive Psychology, 20*(8), 1083-1099. doi:10.1002/acp.1261

Peled, M., Iarocci, G., & Connolly, D. (2004). Eyewitness testimony and perceived credibility of youth with mild intellectual disability. *Journal of Intellectual Disability Research, 48*(7), 699-703. doi:10.1111/j.1365-2788.2003.00559.x

Perlman, N. B., Ericson, K. I., Esses, V. M., & Isaacs, B. J. (1994). The developmentally handicapped witness: Competency as a function of question format. *Law and Human Behavior, 18*(2), 171-187. doi:10.1007/BF01499014

Peterson, C., & Grant, M. (2001). Forced-Choice: Are Forensic Interviewers Asking the Right Questions? *Canadian Journal of Behavioural Science, 33*(2), 118-127. doi:10.1037/h0087134

Pipe, M., Sutherland, R., Webster, N., Jones, C., & La Rooy, D. (2004). Do early interviews affect children's long-term event recall? *Applied Cognitive Psychology, 18*(7), 823-839. doi:10.1002/acp.1053

Pipe, M., Thierry, K. L., & Lamb, M. E. (2007). The development of event memory: Implications for child witness testimony. In M. P. Toglia, J. D. Read, D. F. Ross, & R. C. L. Lindsay (Eds.) *The handbook of eyewitness psychology, Vol I: Memory for events.* (pp. 453-478). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.

Plotnikoff, J. & Woolfson, R. (2009). *Measuring up?: evaluating implementation of Government commitments to young witnesses in criminal proceedings.* NSPCC.

Police and Criminal Evidence Act 1984 (PACE) codes of practice. (2017). London: Home Office. Available at: https://www.gov.uk/guidance/police-and-criminal-evidence-act-1984-pace-codes-of-practice

Poole, D. A., & White, L. T. (1993). Two years later: Effect of question repetition and retention interval on the eyewitness testimony of children and adults. *Developmental Psychology, 29*(5), 844-853. doi:10.1037/0012-1649.29.5.844

Potter, R., & Brewer, N. (1999). Perceptions of witness behaviour–accuracy relationships held by police, lawyers and mock-jurors. *Psychiatry, Psychology and Law, 6*(1), 97-103. doi:10.1080/13218719909524952

Pozzulo, J. D., & Balfour, J. (2006). Children's and adults' eyewitness identification accuracy when a culprit changes his appearance: Comparing simultaneous and elimination lineup procedures. *Legal & Criminological Psychology, 11*(1), 25-34. doi:10.1348/135532505X52626

Pozzulo, J. D., Dempsey, J. L., Bruer, K., & Sheahan, C. (2011). The Culprit in Target-Absent Lineups: Understanding Young Children's False Positive Responding. *Journal of Police and Criminal Psychology, 27*, 55-62. doi:10.1007/s11896-011-9089-8

Pozzulo, J. D., & Dempsey, J. (2006). Biased Lineup Instructions: Examining the Effect of Pressure on Children's and Adults' Eyewitness Identification Accuracy. *Journal of Applied Social Psychology, 36*(6), 1381-1394. doi:10.1111/j.0021-9029.2006.00064.x

Pozzulo, J. D., & Dempsey, J. L. (2009). Witness Factors and Their Influence on Jurors' Perceptions and Verdicts. *Criminal Justice and Behavior, 36*(9), 923-934. doi:10.1177/0093854809338450

Pozzulo, J. D., & Lindsay, R. C. L. (1998). Identification accuracy of children versus adults: A meta-analysis. *Law and Human Behavior, 22*(5), 549-570. doi:10.1023/A:1025739514042

Quas, J. A., Malloy, L. C., Melinder, A., Goodman, G. S., D'Mello, M., & Schaaf, J. (2007). Developmental differences in the effects of repeated interviews and interviewer bias on young children's event memory and false reports. *Developmental Psychology, 43*(4), 823-837. doi:10.1037/0012-1649.43.4.823

Reiter, S., Bryen, D. N. & Shachar, I. (2007). Adolescents with intellectual disabilities as victims of abuse. *Journal of Intellectual Disabilities, 11*, 371-388. doi:10.1177/1744629507084602

Reynolds, C., & Bigler, E. D. (2007). *Test of memory and learning (2nd edition)*. Austin, TX: Pro-Ed.

Reynolds, G. D., & Romano, A. C. (2016). The Development of Attention Systems and Working Memory in Infancy. *Frontiers in Systems Neuroscience, 10*, Article 15. doi:10.3389/fnsys.2016.00015

Riggins, T., Blankenship, S. L., Mulligan, E., Rice, K., & Redcay, E. (2015). Developmental Differences in Relations Between Episodic Memory and Hippocampal Subregion Volume During Early Childhood. *Child Development, 86*(6), 1710-1718. doi:10.1111/cdev.12445

Roberts, K. P., & Blades, M. (1999). Children's Memory and Source Monitoring of Real-Life and Televised Events. *Journal of Applied Developmental Psychology, 20*(4), 575-596. doi:10.1016/S0193-3973(99)00030-1

Rocha, E. M., Marche, T. A., & Briere, J. L. (2013). The Effect of Forced-Choice Questions on Children's Suggestibility: A Comparison of Multiple-Choice and Yes/No Questions. *Canadian Journal of Behavioural Science, 45*(1), 1-11. doi:10.1037/a0028507

Roebers, C. M., & Schneider, W. (2001). Individual Differences in Children's Eyewitness Recall: The Influence of Intelligence and Shyness. *Applied Developmental Science, 5*(1), 9-20. doi:10.1207/S1532480XADS0501_2

Roebers, C. M., & Schneider, W. (2001). Memory for an observed event in the presence of prior misinformation: Developmental patterns of free recall and identification accuracy. *British Journal of Developmental Psychology, 19*(4), 507-524. doi:10.1348/026151001166227

Roebers, C. M., & Schneider, W. (2002). Stability and consistency of children's event recall. *Cognitive Development, 17*(1), 1085-1103. doi:10.1016/S0885-2014(02)00075-8

Roediger, H. L., & Thorpe, L. A. (1978). The role of recall time in producing hypermnesia. *Memory & Cognition, 6*(3), 296-305. doi:10.3758/BF03197459

Roid, G. H. (2003). *Stanford Binet intelligence scales (5th edition).* Austin, TX: Pro-Ed.

Rose, R. A., Bull, R., & Vrij, A. (2005). Non-biased lineup instructions do matter – a problem for older witnesses. *Psychology, Crime & Law, 11*(2), 147-159. doi:10.1080/10683160512331316307

Russ, A. J., Sauerland, M., Lee, C. E., & Bindemann, M. (2018). Individual differences in eyewitness accuracy across multiple lineups of faces. *Cognitive Research: Principles and Implications, 3*(1), Article 30. doi:10.1186/s41235-018-0121-8

Russell, R., Duchaine, B., & Nakayama, K. (2009). Super-recognizers: people with extraordinary face recognition ability. *Psychonomic Bulletin & Review, 16*(2), 252-257. doi:10.3758/PBR.16.2.252

Rutter, M. (1994). Comorbidity: Meanings and Mechanisms. *Clinical Psychology: Science and Practice, 1*(1), 100-103. doi:10.1111/j.1468-2850.1994.tb00012.x

Ruva, C. L., & Bryant, J. B. (2004). The Impact of Age, Speech Style, and Question Form on Perceptions of Witness Credibility and Trial Outcome. *Journal of Applied Social Psychology, 34*(9), 1919-1944. doi:10.1111/j.1559-1816.2004.tb02593.x

Salmon, K., & Pipe, M. (2000). Recalling an event one year later: the impact of props, drawing and a prior interview. *Applied Cognitive Psychology, 14*(2), 99-120. doi:10.1002/(SICI)1099-0720(200003/04)14:2<99::AID-ACP639>3.0.CO;2-5

Salmon, K., Roncolato, W., & Gleitzman, M. (2003). Children's reports of emotionally laden events: adapting the interview to the child. *Applied Cognitive Psychology, 17*(1), 65-79. doi:10.1002/acp.845

Schalick, W., Westbrook, C., & Young, B. (2012). Communication with Individuals with Intellectual Disabilities and Psychiatric Disabilities: A Summary of the Literature. *SSRN Electronic Journal*. doi:10.2139/ssrn.2159227

Schmidt, C. W., & Brigham, J. C. (1996). Jurors' perceptions of child victim-witnesses in a simulated sexual abuse trial. *Law and Human Behavior, 20*(6), 581-606. doi:10.1007/BF01499233

Shapiro, P. N., & Penrod, S. (1986). Meta-analysis of facial identification studies. *Psychological Bulletin, 100*(2), 139-156. doi:10.1037/0033-2909.100.2.139

Sharp, H. (2001). Steps towards justice for people with learning disabilities as victims of crime: The important role of the police. *British Journal of Learning Disabilities, 29*(3), 88-92. doi:10.1046/j.1354-4187.2001.00135.x

Shuster, E. (1998). The Nuremberg Code: Hippocratic ethics and human rights. *The Lancet, 351*(9107), 974-977. doi:10.1016/S0140-6736(05)60641-1

Smith, S. M., & Vela, E. (1991). Incubated reminiscence effects. *Memory & Cognition, 19*(2), 168-176. doi:10.3758/bf03197114

Smith, S. M., & Vela, E. (2001). Environmental context-dependent memory: A review and meta-analysis. *Psychonomic Bulletin & Review, 8*(2), 203-220. doi:10.3758/bf03196157

Sprondel, V., Kipp, K. H., & Mecklinger, A. (2011). Developmental Changes in Item and Source Memory: Evidence From an ERP Recognition Memory Study With Children, Adolescents, and Adults. *Child Development, 82*(6), 1638-1953. doi:10.1111/j.1467-8624.2011.01642.x

Steblay, N. (1997). Social Influence in Eyewitness Recall: A Meta-Analytic Review of Lineup Instruction Effects. *Law and Human Behavior, 21*(3), 283-297. doi: 10.1023/A:1024890732059

Steblay, N. M. (1992). A meta-analytic review of the weapon focus effect. *Law and Human Behavior, 16*(4), 413-424. doi:10.1007/BF02352267

Sterr, A. M. (2004). Attention performance in young adults with learning disabilities. *Learning and Individual Differences, 14*(2), 125-133. doi:10.1016/j.lindif.2003.10.001

Stobbs, G., & Kebbell, M. R. (2003). Jurors' Perception of Witnesses with Intellectual Disabilities and the Influence of Expert Evidence. *Journal of Applied Research in Intellectual Disabilities, 16*(2), 107-114. doi:10.1046/j.1468-3148.2003.00151.x

Sullivan, P. M. & Knutson, J. F. (2000). Maltreatment and disabilities: A population-based epidemiological study. *Child Abuse and Neglect, 24*, 1257-1273. doi:10.1016/s0145-2134(00)00190-3

Swanson, H. L., & Siegel, L. (2001). Learning disabilities as a working memory deficit. *Issues in Education, 7*(1), 1-48.

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th Edition). Boston: Pearson Education.

Ternes, M., & Yuille, J. C. (2008). Eyewitness memory and eyewitness identification performance in adults with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities, 21*(6), 519-531. doi:10.1111/j.1468-3148.2008.00425.x

The British Psychological Society. (2014). *Code of Human Research Ethics*. Available at: https://www.bps.org.uk/news-and-policy/bps-code-human-research-ethics-2nd-edition-2014

Thornberry, C., & Olson, K. (2005). The Abuse of Individuals with Developmental Disabilities. *Developmental Disabilities Bulletin, 33*(1-2), 1-19.

Tuckey, M. R., & Brewer, N. (2003). How schemas affect eyewitness memory over repeated retrieval attempts. *Applied Cognitive Psychology, 17*(7), 785-800. doi:10.1002/acp.906

Tulving, E. (2002). Episodic Memory: From Mind to Brain. *Annual Review of Psychology, 53*(1), 1-25. doi:10.1146/annurev.psych.53.100901.135114

Tulving, E., & Thomson, D. M. (1973). Encoding specificity and retrieval processes in episodic memory. *Psychological Review, 80*(5), 352-373. doi:10.1037/h0020071

Unsworth, N. (2019). Individual differences in long-term memory. *Psychological Bulletin, 145*(1), 79-139. doi:10.1037/bul0000176

Vicari, S., Brizzolara, D., Carlesimo, G. A., Pezzini, G., & Volterra, V. (1996). Memory Abilities in Children with Williams Syndrome. *Cortex, 32*(3), 503-514. doi:10.1016/S0010-9452(96)80007-4

Volpini, L., Melis, M., Petralia, S., & Rosenberg, M. D. (2016). Measuring Children's Suggestibility in Forensic Interviews. *Journal of Forensic Sciences, 61*(1), 104-108. doi:10.1111/1556-4029.12987

Vrij, A., Hope, L., & Fisher, R. P. (2014). Eliciting Reliable Information in Investigative Interviews. *Policy Insights from the Behavioral and Brain Sciences, 1*(1), 129-136. doi:10.1177/2372732214548592

Waterhouse, G. F., Ridley, A. M., Bull, R. & Wilcock, R. (in press). A Study Space Analysis for Multiple Interviewing of Child Witnesses. *Child Abuse Review*.

Waterhouse, G. F. (2016). *Investigating the Forensic Interviewing of Children: Multiple Interviews and Social Support*. (Unpublished Doctoral Thesis). London South Bank University.

Waterhouse, G. F., Ridley, A. M., Bull, R., La Rooy, D., & Wilcock, R. (2016). Dynamics of repeated interviews with children. *Applied Cognitive Psychology, 30*(5), 713-721. doi:10.1002/acp.3246

Wechsler, D., & Zhou, X. (2011). *Wechsler abbreviated scale of intelligence (2nd ed.).* Bloomington, MN: Pearson.

Weisz, J. R. (1990). Cultural-familial mental retardation: A developmental perspective on cognitive performance and "helpless" behaviour. In R. M. Hodapp, J. A. Burack, & E. Zigler (Eds.). *Issues in the developmental approach to mental retardation.* (pp. 137-168). New York, NY, US: Cambridge University Press.

Wells, G., Small, M., Penrod, S., Malpass, R., Fulero, S., & Brimacombe, C. (1998). Eyewitness Identification Procedures: Recommendations for Lineups and Photospreads. *Law and Human Behavior, 22*(6), 603-647. doi:10.1023/A:1025750605807

Wells, G. L. (1978). Applied eyewitness-testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology, 36*(12), 1546-1557. doi:10.1037/0022-3514.36.12.1546

Wells, G. L., Memon, A., & Penrod, S. D. (2006). Eyewitness Evidence: Improving Its Probative Value. *Psychological Science in the Public Interest, 7*(2), 45-75. doi:10.1111/j.1529-1006.2006.00027.x

Wells, G., & Windschitl, P. (1999). Stimulus Sampling and Social Psychological Experimentation. *Personality and Social Psychology Bulletin, 25*, 1115-1125. doi:10.1177/01461672992512005

West, R. L., & Stone, K. R. (2013). Age Differences in Eyewitness Memory for a Realistic Event. *The Journals of Gerontology: Series B, 69*(3), 338-347. doi:10.1093/geronb/gbt014

Westcott, H. L., & Jones, D. P. H. (1999). Annotation: The abuse of disabled children. *Journal of Child Psychology & Psychiatry & Allied Disciplines, 40*, 497-506. doi:10.1111/1469-7610.00468

Whitley Jr, B. E., & Greenberg, M. S. (1986). The Role of Eyewitness Confidence in Juror Perceptions of Credibility. *Journal of Applied Social Psychology, 16*(5), 387-409. doi:10.1111/j.1559-1816.1986.tb01148.x

Wilcock, R., Bull, R., & Milne, B. (2008). *Witness identification in criminal cases: psychology and practice*. Oxford: Oxford University Press.

Wilcock, R., & Henry, L. (2013). The Performance of Eyewitnesses with Intellectual Disabilities on Photographic Identification Line-ups. *International Journal of Disability, Development & Education, 60*(1), 44-52. doi:10.1080/1034912X.2013.757141

Wilcock, R. A., Bull, R., & Vrij, A. (2007). Are old witnesses always poorer witnesses? Identification accuracy, context reinstatement, own-age bias. *Psychology, Crime & Law, 13*(3), 305-316. doi:10.1080/10683160600822212

Wilcock, R., & Kneller, W. (2011). A comparison of presentation methods of video identification parades. *Applied Cognitive Psychology*, *25*(6), 835-840. doi:10.1002/acp.1754

Williams, V., Abbott, D., Rodgers, J., Ward, L. and Watson, D. (2007). *Money, Rights and Risks - A scoping review of financial issues for people with learning disabilities in the UK*. Dorking, UK: Friends Provident Foundation.

Wilmer, J. B. (2017). Individual Differences in Face Recognition: A Decade of Discovery. *Current Directions in Psychological Science, 26*(3), 225-230. doi:10.1177/0963721417710693

Wilmer, J. B., Germine, L. T., & Nakayama, K. (2014). Face recognition: a model specific ability. *Frontiers in Human Neuroscience, 8*, 769. doi:10.3389/fnhum.2014.00769

Winters, J. J., & Attlee, L. C. (1974). The von Restorff effect and measures of organization in normals and retardates. *Memory & Cognition, 2*(2), 301-305. doi:10.3758/BF03209000

Wong, C. K., & Read, J. D. (2011). Positive and negative effects of physical context reinstatement on eyewitness recall and identification. *Applied Cognitive Psychology, 25*(1), 2-11. doi:10.1002/acp.1605

World Health Organisation. (2016). *International Statistical Classification of Diseases and Related Health Problems 10th Revision*. Geneva. Retrieved from http://apps.who.int/classifications/icd10/browse/2016/en.

Wright, D. B., Memon, A., Skagerberg, E. M., & Gabbert, F. (2009). When Eyewitnesses Talk. *Current Directions in Psychological Science, 18*(3), 174-178. doi:10.1111/j.1467-8721.2009.01631.x

Wright, D. B., & Schwartz, S. L. (2010). Conformity effects in memory for actions. *Memory & Cognition, 38*(8), 1077-1086. doi:10.3758/mc.38.8.1077

Wyer, N. A., Hollins, T. J., Pahl, S., & Roper, J. (2015). The hows and whys of face memory: level of construal influences the recognition of human faces. *Frontiers in Psychology, 6*: 1524. doi:10.3389/fpsyg.2015.01524

Youth Justice and Criminal Evidence Act. (1999). Available at http://www.legislation.gov.uk/ukpga/1999/23/contents

Ypsilanti, A., Grouios, G., Alevriadou, A., & Tsapkini, K. (2005). Expressive and receptive vocabulary in children with Williams and Down syndromes. *Journal of Intellectual Disability Research, 49*(5), 353-364. doi:10.1111/j.1365-2788.2005.00654.x

Zajac, R., & Karageorge, A. (2009). The wildcard: A simple technique for improving children's target absent lineup performance. *Applied Cognitive Psychology, 23*(3), 358-368. doi: 10.1002/acp.1511

Zhang, H. H., Roberts, K. P., & Teoh, Y. S. (2019). Children's recall and source monitoring of a repeated event using a timeline as an interview aid. *Applied Cognitive Psychology, 33*(2), 176-187. doi:10.1002/acp.3451

Zhu, Q., Song, Y., Hu, S., Li, X., Tian, M., Zhen, Z., & Liu, J. (2010). Heritability of the specific cognitive ability of face perception. *Current Biology, 20*(2), 137-142. doi:10.1016/j.cub.2009.11.067

Appendices

Note: All written information created for the adults with ID was produced in accordance with the advice provided in Mencap's 'Make it Clear' guide to producing easy read information (Mencap, 2013). The font type, size and specific formatting of the documents provided in these Appendices does not reflect that used in the actual research study.

Appendix A

Capacity to Consent Form

(Based on the Two-Stage Test of Capacity as Defined by the Mental Capacity Act 2005 Code of Practice (2007))

The two-stage test of capacity

Stage 1 - Does the individual have an impairment of, or a disturbance in the functioning of, their mind or brain?

Stage 2 - Does the impairment or disturbance mean that the individual is unable to make a specific decision when they need to? Can they:

(a) understand information about the decision to be made?
(b) retain that information in their mind?
(c) use or weigh that information as part of the decision-making process?
(d) communicate their decision?

Assessment of Capacity to Provide Informed Consent to Participate in the Research Study
Name: **Parent/Carer/Guardian's name:** **Date of assessment:** **Outcome of assessment (delete as appropriate):** Individual has capacity to provide informed consent / individual does not have the capacity to provide informed consent
Stage 1 Questions (Does the individual have an impairment of, or a disturbance in the functioning of, their mind or brain?)
Does the individual have an impairment of, or a disturbance in the functioning of, their mind or brain? Yes / No (researcher to delete as appropriate) **How has this been ascertained? Please state (e.g. formal diagnosis, information provided by parent/carer/guardian/gatekeeper)**

Stage 2 Questions (Does the impairment or disturbance mean that the individual is unable to make a specific decision when they need to?)
(a) Understanding information about the decision to be made and (b) retaining that information in mind **Please tell me, in your own words, what the project is about?** **What will you be doing if you take part in this project?**
(c) Using or weighing information as part of the decision-making process **What are the good things about taking part in this project?** **When I say that you have a choice about taking part in this project what does this mean to you?** **When I say that the information you give me will be kept safe what does this mean to you?**
What should you do if you do not want to help me anymore?
(d) Communicating their decision **Would you like to help me with my project?** Yes / No (researcher to delete as appropriate) **Researcher to indicate form of communication below:**

Appendix B

Participant Information Sheet (Adults with ID)

Project title: How good people are at remembering things

I am asking if you would like to help in a special project. Before you decide if you would like to help, you might like to know what the project is about and what you will be asked to do. Please read this information carefully. If you do not understand anything you can contact me or if it is easier you can speak to the person in charge of your group or club who can contact me.

Some information about the project

I am interested in finding out how good people are at remembering things. I also want to find out how good people are at remembering other people's faces.

Why you are being asked to help

You are being asked if you would like to help because you are aged between 18 and 60 years.

What you will be asked to do

For the project I will need to meet with you 2 or 3 times. I will speak to you about the best days and times to come and visit you at your club or group. In our first meeting I will show you 2 films on my computer. They are short films and they will not have anything upsetting in them. You will also be asked to play some picture and word games and I will ask questions about remembering things.

We will also need to meet again after one week. You will be asked to play some more picture and word games. I will also ask you some questions to see how good you are at remembering faces.

I might ask you to meet me again to ask you some more questions about remembering things. Not everybody will have to do this.

Deciding if you would like to help

You can choose if you would like to help with the project. If you do not want to help you do not have to. If you would like to help you will be given this information sheet to keep. I will ask you some easy questions to make sure you understand what the project is about and what I will be asking you to do. I will ask you to sign a form to say that you are happy to help me and that you understand everything I have told you about the project.

I would like to record our meetings on my voice and video recorder to make sure that I do not forget what you have told me. I would also like to use these recordings to show some other people in another project. These people will not be able to tell who you are because I will not use your full name. Showing these other people the recordings of what you tell me is an important part of my project. If you do not want me to show these recordings to other people please tell me.

At the start of each meeting I will check with you to make sure you are still happy to help me. If you decide you do not want to help me any more please tell me. This is not a problem and I will not ask you to explain why.

The good thing about taking part
If you decide you would like to help by taking part in the project the good thing is that you might find it interesting because you will be able to find out how good you are at remembering lots of things including other peoples' faces. I will not ask you to do anything that you cannot do or do not want to do.

Information you give me
All the information you give me will be kept safe. The papers I write on during our meetings will not have your name on them. People will not be able to tell who you are.

The papers will be kept in a safe place and it will be locked so no-one else will be able to see them. I will only keep the papers for 10 years. After this they will be shredded and thrown away in a special bin.

Who I am
My name is Debra Collins and I am a student at the University of Winchester. My teacher, Rachel Wilcock is also helping me with the project.

What I will do with the information you give me
The information you give me will be used in a type of schoolwork. It will be marked by my teachers. I might also tell other people about my project. None of these people will know that you have helped me because your name will not be used.

This project has been checked by my teacher. She has made sure that all the things I ask people to do in the project are OK for the people doing them.

Questions?
If you have any questions about the project you can ask me when we meet or you can ask the leader of your group or club to speak to me. You can also ask to speak to my teacher, Rachel Wilcock. All of our email addresses and telephone numbers can be found at the end of this sheet.

Address and telephone numbers
My email address and telephone number are:

Debra Collins


d.collins.15@unimail.winchester.ac.uk


0[redacted]

My teacher's email address and telephone number are:

Rachel Wilcock


rachel.wilcock@winchester.ac.uk


0[redacted]

Appendix C

Parent/Guardian Information Sheet

Study title - Eyewitness skills of children and adults

Your son/daughter is being invited to take part in a research study. Before you decide whether to give consent for your son/daughter to participate, it is important for you to understand why the research is being done and what it will involve. Please read the following information carefully and feel free to contact me if anything is unclear.

What is the purpose of the study?

When people witness a crime it is likely that they will be required to give an account of the witnessed event and they may even be asked to identify a perpetrator from a line-up. The aim of this study is to examine how much adults and children can remember about a witnessed event and how accurate they are at identifying a perpetrator from a video identification line-up.

Does my son/daughter have to take part?

It is up to you to decide whether or not your son/daughter takes part. If you do decide that your son/daughter can participate you will be given this information sheet to keep and asked to sign a consent form.

It is important to note that the interviewing sessions will be *audio* and *video recorded*. This allows for the transcribing and coding of information however, I am also asking for permission to allow the videos of your son/daughter to be used in a separate 'mock juror' study, which involves showing adults of jury eligible age a random sample of the video-taped evidence from participants to gauge their opinions of its' accuracy and reliability. The mock juror study is an essential part of the research however, if you would prefer for your son/daughter's video not to be used for this purpose please indicate this on the Consent Form. The mock jurors will not be able to identify your son/daughter from the video as their full name will not be disclosed and any identifying logos (e.g. school/club badges on uniforms) will be distorted.

What does the study involve?

The study will consist of up to 3 sessions split over a period of 3 weeks. The researcher will arrange to visit your son/daughter at their school/club/centre. In the first session your son/daughter will be asked to confirm they are happy to participate by signing a simply worded consent form. They will be shown 2 short films, containing no violent or aggressive material, followed by two tests (one provides a measure of memory and the other an estimate of their verbal/non-verbal cognitive abilities). They will then be asked some questions about the films (*please can I ask that you do not tell your son/daughter that they will be questioned about the films as this would not happen in a real-life investigation*). In the second session, a week later, your son/daughter will undertake a test of verbal ability, followed by an interview about their memory. Your son/daughter *may* be selected to undertake a third session (involving a repeat interview), which will take place two weeks after viewing the films.

What are the possible benefits and disadvantages of taking part?

By taking part in this study your son/daughter will be making an invaluable contribution to a piece of psychological research. The study's results could help inform professionals within the Criminal Justice System about eyewitness memory in adults and children, as well as aid the development of effective strategies to improve the witness skills of these groups. Taking part in the study will not involve risks over and above those experienced in day-to-day life.

Will my son/daughter's taking part in this study be kept confidential?
All information which is collected about your son/daughter during the research will be kept strictly confidential. Your son/daughter will be assigned a number and therefore will not be identifiable from their data. All information matching their number to their identity will be stored in a separate, password-secured file which can only be accessed by myself and my Director of Studies, Dr Rachel Wilcock. Electronic data files and paperwork will be stored (in a locked file) for a minimum of 10 years after the study has been completed, before being destroyed.

Who is organising the research and what happens to the results?
The research is being organised by Debra Collins (who is DBS checked), a PhD Student at The University of Winchester. It is being supervised by Dr Rachel Wilcock (Director of Studies), Dr Wendy Kneller and Dr Genevieve Waterhouse, also of The University of Winchester. The results will be used in an assessed PhD. They may also be submitted for publication in an academic journal and may be presented at conferences. No individual data will be presented or reported.

Who has reviewed the study?
This study has been reviewed by The University of Winchester Research Ethics Committee.

Contacts for further information
If you would like further information about this study, you can either contact me (Debra Collins), or my Director of Studies (Dr Rachel Wilcock):

Debra Collins
Email: d.collins.15@unimail.winchester.ac.uk
Telephone: 0[redacted]

Rachel Wilcock
Email: rachel.wilcock@winchester.ac.uk
Telephone: 0[redacted]

Appendix D

Adult Consent Form

Project title: How good people are at remembering things

Please draw a circle around yes or no

Are you happy to take part in the project?	Yes	No
Do you understand what you are being asked to do?	Yes	No
Do you understand that it is OK to stop at any time?	Yes	No
Are you happy to have the meetings recorded on a voice recorder?	Yes	No
Are you happy to have the meetings recorded on a video recorder?	Yes	No
Are you happy for the recordings to be used in another project?	Yes	No
Do you understand that all of the information you give me will be kept safe and that other people will not be able to tell who you are?	Yes	No

To show that you are happy to take part in the project please write your name on the line below:

Your name: _____

Date of Birth: _____ / _____ / _____

Researcher's name: _____

Researcher's signature: _____

Date: _____ / _____ / _____

Appendix E

Parent/Guardian Consent Form

Study title: Eyewitness skills of children and adults

By signing below, I agree that:

- I have read the attached information sheet and retained a copy for my records.
- I understand the nature and purpose of the research that my son/daughter will be required to undertake.
- I am aware that my son/daughter has the right to withdraw from the research at any time, without giving a reason for withdrawing.
- I understand that the data my son/daughter provides will be treated confidentially and, if presented (*e.g.* in a journal paper or at an academic conference), personal details which would allow my son/daughter to be identified will be removed.
- I have been given contact details for the researcher, their Supervisor and the Chair of the University's Ethics Research Committee so that I can discuss the research in further detail if required.
- I give consent for my son/daughter to participate in the research.
- I give consent for the sessions to be audio recorded.
- I give consent for the sessions to be video recorded*
- I give consent for the video recordings to be used in a later mock juror study*

* If you would prefer for your son/daughter's sessions *not* to be video recorded or used in a later mock juror study, please indicate by deleting the relevant statements.

Parent/Guardian's name (Please print): _____

Parent/Guardian's signature: _____

Son/daughter's name: _____

Son/daughter's date of birth: _____

Researcher's name: _____

Researcher's signature: _____

Date: _____ / _____ / _____

Appendix F

Adult Debriefing Sheet

Project title: How good people are at remembering things

Thank you for helping me with my project. You did really well and were a very big help.

What the project was about
I wanted to find out how much you could remember about the two films I showed you because I am interested in finding out how much information people can remember about something they have seen.

When I have finished my project I hope to be able to help people remember more.

Questions
Are there any questions you would like to ask me about the project? If you cannot think of any questions now but then you think of some when you go away, you can always ask the person in charge of your group or club who can contact me.

Appendix G

Witness Interview Protocols

Brief Statement Taking Interview

"Tell me what you remember about the films you just saw?"

A number of follow up questions to be asked depending upon what was said in response to the above question. Possible follow up questions are:

Who was there?

What did they do?

What did they look like?

When did it happen?

Where did it happen?

How did it happen?

Detailed Witness Interview

Greet (Phase 1)

Greet participant and thank him/her for coming.

Ask participant if they are happy to go ahead with the research and to give their consent for the interview to be recorded

Rapport (Phase 2)

Ask interviewee some questions about themselves and offer information about myself …when it is clear that they are fairly relaxed move to phase 3

Truth or lie exercise (Phase 3)

"I'm going to tell you something now - can you listen very carefully and tell me whether what I say is true or a lie?"

One of the following examples is then used:

"That is a television (when it is a computer)".

Explain the purpose of the interview (Phase 4)

"What I would like to do now is to ask you about the FIRST/SECOND FILM you saw a few days ago, the one that was INSIDE/OUTSIDE. I want you to listen carefully and tell me the truth. Are you happy to do that?"

"Remember that I have not seen the film so I do not know what happened"

Free recall (Phase 5 – Recall attempt 1)

"Tell me in as much detail as you can, everything you remember about the first/second film, the one that was inside/outside. Remember, that it is important that you never guess or make anything up. If you can't remember or don't know please just say so."

When participant has finished pause for 10 seconds before commencing the questioning phase.

Questioning (Phase 6 – Recall attempt 2)

"Based on the things you have just told me I would like to ask you some questions"

Closure (Phase 7)

"OK, is there anything else you wish to add or change"

"Now what I would like to do now is to ask you about the FIRST/SECOND FILM you saw a few days ago, the one that was INSIDE/OUTSIDE. I want you to listen carefully and tell me the truth. Are you happy to do that?"

"Remember that I have not seen the film so I do not know what happened"

Free recall (Phase 5 – Recall attempt 1)

"Tell me in as much detail as you can, everything you remember about the first/second film, the one that was inside/outside. Remember, that it is important that you never guess or make anything up. If you can't remember or don't know please just say so."

When participant has finished pause for 10 seconds before commencing the questioning phase.

Questioning (Phase 6 – Recall attempt 2)

"Based on the things you have just told me I would like to ask you some questions"

Closure (Phase 7)

"Just before we finish is there anything else you wish to add or change"

"Do you have any questions?"

"Thank you …you have done really well.

Appendix H

Child Information Sheet

Project title: How good people are at remembering things

Why you are being asked to help?
I am asking if you would like to help with a special project. I am interested in finding out how good people are at remembering things as well as how good they are at remembering other people's faces. You are being asked if you would like to help because you are aged between 6 and 12 years. These are the ages of the children I need for my project.

Do you have to help?
You can choose if you would like to help with the project. If you would like to help you will be given this information sheet to keep. You will be asked to sign a form to make sure you understand what you are being asked to do.

I would like to record our meetings on my voice and video recorder to make sure that I do not forget what you have told me. I would also like to use these recordings to show to some other people for another project I am doing. At the start of each meeting I will check with you to make sure you are still happy to help me. If you decide you do not want to help me anymore that is not a problem and I will not ask you to tell me why.

What will you be asked to do?
I will need to meet with you 3 or 4 times. In the first meeting I will show you 2 films on my computer. They are not very long films and they will not have anything upsetting or horrible in them. You will also be asked to play some picture and word games and I will ask questions about remembering things.

We will then need to meet again after one week. You will be asked to play some more picture and word games. I will also ask you some questions to see how good you are at remembering faces. I might ask you to meet me again to ask you some more questions about remembering things. Not everybody will have to do this.

After some time I will ask to meet with you one more time. In this meeting we will talk to another person using my computer. Again, they will ask you questions about remembering things.

What happens to the information you give me?

All the information you give me will be kept safe. The papers I write on during our meetings will not have your name on them. People will not be able to tell who you are. The papers will be kept in a safe place and it will be locked so no-one else will be able to see them.

The project has been checked by my teacher and a special group of people to make sure that everyone who helps me will be able to do everything I am asking them to do.

What if you have further questions?
If you have any questions about the project you can ask me when we meet or you can ask your parents/guardian to contact me. You can also speak to my teacher, Rachel Wilcock.

My email address and telephone number are:

Debra Collins
Email: d.collins.15@unimail.winchester.ac.uk
Telephone: 0[redacted]

My teacher's email address and telephone number are:

Rachel Wilcock
Email: rachel.wilcock@winchester.ac.uk
Telephone: 0[redacted]

Appendix I

Child Consent Form

Project title: How good people are at remembering things

Please draw a circle around yes or no

Are you happy to take part in the project?	Yes	No
Do you understand what you are being asked to do?	Yes	No
Do you understand that it is OK to stop at any time?	Yes	No
Are you happy to have the meetings recorded on a voice recorder?	Yes	No
Are you happy to have the meetings recorded on a video recorder?	Yes	No
Are you happy for the recordings to be used in another project?	Yes	No
Do you understand that all of the information you give me will be kept safe and that other people will not be able to tell who you are?	Yes	No

To show that you are happy to take part in the project please write your name on the line below:

Your name: _____

Researcher's name: _____

Researcher's signature: _____

Date: _____ / _____ / _____

Appendix J

Child Debriefing Sheet

Project title: How good people are at remembering things

Thank you for helping me with my project. You did really well and were a very big help.

What the project was about
I wanted to find out how much you could remember about the two films I showed you because I am interested in finding out how much information people can remember about something they have seen.

When I have finished my project I hope to be able to help people remember more.

Questions
Are there any questions you would like to ask me about the project? If you cannot think of any questions now but then you think of some when you go away, you can always ask your parent/guardian to contact me.

Appendix K

Film A - Identification Line-up Matrix

Film A – Perpetrator

Film A - Innocent suspect for perpetrator absent line-up

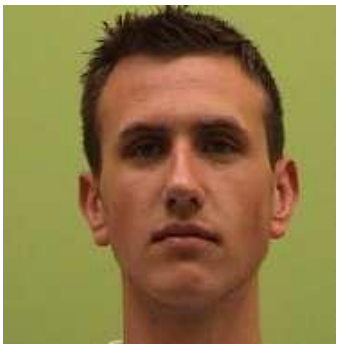
Film B Identification Line-up Matrix



Film B – Perpetrator






Film A - Innocent suspect for perpetrator absent line-up

Appendix L

Bivariate correlations between the cognitive measures for the adults with ID and TD children

	Adults with ID (*N* = 40)					TD Children (*N* = 40)				
	SB MA	SB Verbal: Expressive Vocabulary	PPVT: Receptive Vocabulary	TOMAL: Memory for Stories	TOMAL: Memory for Faces	SB MA	SB Verbal: Expressive Vocabulary	PPVT: Receptive Vocabulary	TOMAL: Memory for Stories	TOMAL: Memory for Faces
SB MA	1	.74**	.43**	.60**	.67**	1	.79**	.78**	.63**	.62**
SB Verbal: Expressive Vocabulary	.74**	1	.57**	.60**	.52**	.79**	1	.69**	.65**	.32*
PPVT: Receptive Vocabulary	.43**	.57**	1	.52**	.33*	.78**	.69**	1	.52**	.47**
TOMAL: Memory for Stories	.60**	.60**	.52**	1	.55**	.63**	.65**	.52**	1	.39*
TOMAL: Memory for Faces	.67**	.52**	.33*	.55**	1	.62**	.32*	.47**	.39*	1

*Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

Appendix M

Note: There were two versions of the mock juror credibility questionnaire: one in which no information about the witness was provided and another (as per the questionnaire below) in which the mock juror was advised that the adult witness *may* have an ID and a definition of ID provided

Credibility Questionnaire

Participant No (UPI): _____
(from the Consent Form)

PART A

Study Title: Mock Juror Perceptions of Adult Eyewitnesses

To take part in this research study, you must be eligible for jury service in the UK. To be eligible for jury service, you must meet the criteria listed in the box below.

Eligibility for jury service:
You could be selected to serve on a jury in the UK if you:

- Are aged between 18 and 75 years old;
- Are registered on your local government's electoral register;
- Have lived in the UK, the Channel Isles or the Isle of Man for the last five years since you were 13 years old.

You are disqualified from jury service if:

- You lack the mental capacity to do so. Mental capacity is the ability to make a decision for yourself. People who cannot do this are said to 'lack capacity' under the Mental Capacity Act 2005. This must be due to an impairment of or disturbance in the functioning of the mind or brain which may be due to illness, injury, learning disability, or mental health problems.
- To have capacity a person must be able to:
    - Understand the information that is relevant to the decision they want to make.
    - Retain the information long enough to be able to make the decision.
    - Weigh up the information available to make the decision.
    - Communicate the decision by any means.

You are disqualified from jury service if you are currently on bail in criminal proceedings. You are also disqualified if:

- you have ever been sentenced to imprisonment for five years or more
- If you have been imprisoned at all in the last 10 years

Do you meet the criteria for serving on a jury (please circle)?

Yes *No

***If you have answered 'No' to the above question, please advise the researcher as you will be unable to participate in the study**

Some questions about yourself …

How old are you? (please specify in the space provided)

_____ years old

What is your gender?

- ☐ Male
- ☐ Female
- ☐ Prefer not to say
- ☐ Other (please specify): _____

What is your ethnicity? (please tick the relevant box)

- ☐ White British
- ☐ White Irish
- ☐ Any other White background

- ☐ Asian or Asian British
- ☐ Asian Indian
- ☐ Asian Pakistani
- ☐ Asian Bangladeshi
- ☐ Any other Asian background

- ☐ Black or Black British
- ☐ Black Carribean
- ☐ Black African
- ☐ Any other Black background

- ☐ Mixed White and Black Carribean
- ☐ Mixed White and Black African
- ☐ Mixed White and Asian
- ☐ Any other Mixed background

- ☐ Chinese
- ☐ Any other Ethnic group

Have you ever served on a real jury? (please circle)

Yes No

PLEASE STOP AT THIS POINT AND AWAIT FURTHER INSTRUCTIONS FROM THE RESEARCHER

PART B

PLEASE READ THE FOLLOWING INFORMATION CAREFULLY

You will now be shown a video of an adult witness being interviewed about a 'mock' hate crime they have seen (the witness has actually seen and been interviewed about two separate 'mock' hate crime events, but you will only be shown one interview about one of the events).

As part of the interviewing process, a *truth* and *lies* exercise was undertaken and it was ascertained that the witness demonstrated a clear appreciation of the distinction between these two terms.

The adult witness you are about to see in the video ***may*** have a *learning disability*.

Definition of 'learning disability':
A learning disability is a reduced intellectual ability and difficulty with everyday activities, which affects someone for their whole life.

People with a learning disability are likely to take longer to learn. They may also need support to develop new skills, understand complex information and in their ability to interact with other people.

PLEASE STOP AT THIS POINT AND AWAIT FURTHER INSTRUCTIONS FROM THE RESEARCHER

PART C

<u>After</u> watching the video please answer the following questions regarding the witness:

1) Please circle the number that you feel best represents your perception of how **accurate** the witness's account was

Not at all accurate									Extremely accurate
1	2	3	4	5	6	7	8	9	10

2) Please circle the number that you feel best represents how **convincing** the witness was in their account

Not at all convincing									Extremely convincing
1	2	3	4	5	6	7	8	9	10

3) Please circle the number that you feel best represents how **confident** the witness appeared **in what they said** in their account

Not at all confident									Extremely confident
1	2	3	4	5	6	7	8	9	10

4) Please circle the number that you feel best represents how **competent** the witness appeared in their account

Not at all competent									Extremely competent
1	2	3	4	5	6	7	8	9	10

5) Please circle the number that you feel best represents how **honest** the witness appeared

Not at all honest									Extremely honest
1	2	3	4	5	6	7	8	9	10

6) Please circle the number that you feel best represents how **believable** the witness appeared

Not at all believable									Extremely believable
1	2	3	4	5	6	7	8	9	10

7) Please circle the number that you feel best represents how **complete** the witness's account appeared

Not at all complete									Very complete
1	2	3	4	5	6	7	8	9	10

8) Please circle the number that you feel best represents the witness's overall **level of cognitive functioning** (i.e., their ability to think, reason and remember)

Very poor cognitive functioning									Excellent cognitive functioning
1	2	3	4	5	6	7	8	9	10

9) Please circle the number that you feel best represents the witness's **capability to testify**

Very poor capability to testify									Excellent capability to testify
1	2	3	4	5	6	7	8	9	10

10) Please circle the number that you feel best represents how good this individual was as a witness **OVERALL**

Not at all credible									Extremely credible
1	2	3	4	5	6	7	8	9	10

11) Based on the video-taped evidence from this witness, do you think they have a **learning disability** (please circle)?

Yes No

12) Please circle the number that you feel best represents how much **knowledge** and **experience** you have of learning disabilities

No knowledge /experience									Very knowledgeable/ experienced
1	2	3	4	5	6	7	8	9	10

OPTIONAL: If you wish, please let the researcher know how you think the witness's **credibility** might be improved (please describe briefly and PLEASE WRITE CLEARLY):

_____

_____

_____

_____

_____

_____

_____

_____

_____

THANK YOU FOR TAKING PART IN THIS RESEARCH STUDY

Appendix N

Consent Form

Study title: Mock Juror's Perceptions of Adult Eyewitnesses

By signing below, I agree that:

- I have read the attached Information Sheet and retained a copy for my records
- I understand the nature and purpose of the research that I am required to undertake
- I am aware that my participation is voluntary and that I have the right to withdraw from the research (within two weeks of participating– see the Information Sheet for further details)
- I understand that the data I provide will be treated confidentially and, if presented (*e.g.* in a journal paper, at an academic conference or during teaching), no individual data will be reported
- I have been given contact details for the researcher, their Director of Studies (Supervisor) and the Chair of the University's Ethics Research Committee so that I can discuss the research in further detail if required.

<u>To be completed by the Participant</u>

Participant's name (Please print): _____

Participant's signature: _____

Participant's date of birth: _____ / _____ / _____

*Participant's Unique Personal Identifier (*see below*): _____

*(*The **Unique Personal Identifier** should be created by using the first letter of your mother's first name, the third letter of your surname, the month of your birth (in numbers) and your house number – if you do not have a house number use '00')*

<u>To be completed by the Researcher</u>

Researcher's name: _____

Researcher's signature: _____

Date: _____ / _____ / _____

Appendix O

Debriefing Sheet

Study title - Mock Jurors' Perceptions of Adult Eyewitnesses

Thank you for taking part in the study.

Aim of the study

The main aim of the study is to find out more about how mock jurors perceive eyewitness evidence from adult eyewitnesses with learning disabilities. Of particular interest is the perceived credibility and accuracy of eyewitness evidence from this group. Conducting this research will not only help to increase our understanding of jurors' perceptions of this group as eyewitnesses, but also shed light on how such perceptions might ultimately affect juror decision making.

Any questions?

Are there any questions you would like to ask me about the study? If you cannot think of any questions now but think of some at a later date, please feel free to contact me.