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Sketching to Remember: Episodic Free Recall Task Support for Child Witnesses and Victims with Autism Spectrum Disorder

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Abstract

Deficits in episodic free-recall memory performance have been reported in children with Autism Spectrum Disorder (ASD), yet best practice dictates that child witness/victim interviews commence with a free-recall account. No ‘tools’ exist to support children with ASD to freely recall episodic information. Here, the efficacy of a novel retrieval technique, Sketch Reinstatement of Context (Sketch-RC), is compared with Mental Reinstatement of Context (MRC) and a no support control. Ninety children (45 with ASD; 45 matched typically developing) viewed a stimulus film, and were interviewed using one of the aforementioned techniques. The Sketch-RC technique was most effective, improving ASD participants’ remembering without a concomitant increase in intrusions. This procedure offers a population-appropriate method for supporting free recall in criminal justice settings.

Keywords: Autism Spectrum Disorder - Cognitive Interview - Drawing - Free recall - Eyewitness

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Introduction

Deficits in episodic memory have long been reported in individuals with Autism Spectrum Disorder (ASD: e.g., Hare, Mellor, & Azmi, 2007; Klein, Chan & Loftus, 1999; Millward, Powell, Messer & Jordan, 2000). These deficits are often characterized by diminished free recall performance, that is, remembering in the absence of any retrieval support (e.g., Bowler, Gaigg, & Gardiner, 2008; Bowler, Mathews & Gardiner, 1997; McCrory, Henry, & Happe, 2007). When individuals with ASD are the victims of crime or witness a crime, current best practice guidance for eliciting episodic information in the UK and in many states across the USA, directs police officers to commence an interview by asking for a free recall account[1] (see MOJ, 2011; also see NIJ, 1999; Schreiber Compo, Hyman Gregory, & Fisher, 2012). Freely recalled information is important because it is believed to be the most accurate form of eyewitness remembering (see Milne & Bull, 1999), and it is used both to guide follow-on cued recall (in the form of questions) and to support any subsequent retrieval techniques that may be used as the interview progresses. Freely recalled information is also highly regarded by criminal justice systems (CJS) because it is 'pure', that is, free from interviewer interference.

In England and Wales, irrespective of crime experience, all child witnesses with ASD are automatically deemed vulnerable under the Youth Justice and Criminal Evidence Act (1999: YJCA). ASD is known to impact upon the ability to provide 'best evidence'[2], and child witnesses must be interviewed in a developmentally appropriate manner by specially trained interviewers (see MOJ, 2011). Accordingly, all child witnesses with ASD are interviewed with reference to Achieving Best Evidence guidance (ABE; MOJ, 2011), the aim

[1] From hereon we use the term witness to include both onlookers and victims of crime.
[2] The term 'best evidence' is based on the common law rule of evidence, *'the best [evidence] that the nature of the case will allow'*, and is used by the UK Ministry of Justice with reference to assisting vulnerable witnesses and victims to access justice by giving tailored support to help them give their best evidence.

being to maximize the quantity and quality of information elicited.

ABE provides extensive practical advice on how to interview child witnesses. However, no practical guidance is offered on how to support episodic free recall in children with ASD, despite the fact that ASD is characterized by specific cognitive impairments, which crucially for the CJS include diminution of episodic memory (e.g., Bowler, Gardiner, & Gaigg, 2007). ABE simply provides information on the behavioural characteristics of ASD, largely because research in the field of eyewitness testimony has not extended to this group of witnesses and so empirically validated retrieval support tools have yet to emerge (see MOJ, 2011). Child witnesses with ASD are the focus of this research, which investigates a new technique for supporting this group of witnesses' free recall when they come into contact with the CJS.

ABE promotes the Cognitive Interview (CI: see Fisher & Geiselman, 1992) for use with vulnerable witnesses[3]. The CI is an empirically and theoretically supported interview procedure, comprising several mnemonics that draw upon the experimental cognition literature concerning memory[4]. One of the primary CI mnemonics is the mental reinstatement of context technique (MRC), which is based on the encoding-specificity principle (Tulving & Thompson, 1973). Encoding specificity provides a general theoretical framework for understanding how contextual information affects memory, and how memory is improved when information available at encoding is also available at retrieval. The MRC procedure comprises a series of individual verbal instructions designed to support a witness to mentally recreate both the psychological and physical environment that existed at the time of the to-be-remembered (TBR) event (see MOJ, 2011; Milne & Bull, 1999). MRC is applied

[3] ABE also promotes other interview techniques, for example the International Evidence-Based Interviewing of Children (NICHD).

[4] It should be noted that two of the CI mnemonics are generally accepted as being unsuitable for vulnerable witnesses, namely the Change Perspective, and Change Temporal Order techniques (see Milne & Bull, 1999 for further information).

immediately prior to the all-important first free recall to facilitate feature overlap between the event and the retrieval environment, supporting witnesses to mentally place themselves back in an experience.

The beneficial effect of mentally reinstating the context is well established in the eyewitness literature. The MRC technique significantly improves episodic remembering, typically reducing errors of omission (increasing the amount of information recalled) without a concomitant increase in errors of commission (the reporting of erroneous information) when used with typically developed adults (e.g., Dando, Wilcock, Milne, & Behnkle, 2011; Dando, Wilcock, & Milne, 2009; Roebers, & McConkey, 2003; Koehnken et al., 1999), some vulnerable witness populations (e.g., older adults: Dando, 2013; Wright & Holliday, 2007; and adults with intellectual disabilities: Kebbell, & Hatton, 1999; Milne, Clare, & Bull, 1999). However, the effects of the MRC when used with typically developing children are somewhat mixed. Some studies have found the procedure beneficial when compared to standard interview conditions that do not include context reinstatement (Dietze & Thomson, 1993; Dietze et al., 2008; Dietze et al., 2010; Hayes & Delamothe, 1997; Hershkowitz, Orbach, Lamb, Sternberg, & Horowitz, 2001; Milne & Bull, 2002), while others have failed to find a positive effect (e.g., Darwinkel, Powell & Sharman, 2014; Dietze, Powell & Thomson, 2010; Milne & Bull, 2002).

To date, the utility of the MRC technique for supporting child witnesses with a diagnosis of ASD to freely recall event information has not been investigated. Recent research has investigated the suitability of the CI procedure (that included the MRC technique) for adult witnesses with ASD, and has also evaluated the efficacy of the MRC in isolation for this group. Compared to a Structured Interview (similarly structured, but excluding the CI mnemonics), the CI did not improve memorial performance. Instead, it increased the reporting of incorrect information, and significantly reduced recall accuracy

(Maras & Bowler, 2010). In isolation, the MRC component was detrimental, reducing both the accuracy and the amount of information recalled (Maras & Bowler, 2012). However, Maras and Bowler did find that physical context (that is returning to the place that where encoding took place) supported episodic free recall performance, bringing about real improvements that resulted in adults with ASD performing no differently to their typically developing adult peers. However, these findings are limited. First, the physical context reinstatement group also received the MRC instructions, and so it is unclear whether the positive findings emanated from the combination of physical context plus the MRC instructions, or from the physical context alone. Second, physical context is problematic for the CJS because returning witnesses to the scene of a crime is often impossible, and is viewed as unethical, particularly for child witnesses. Finally, these findings apply only to adults.

The Task Support Hypothesis (e.g., Bowler, Mathews, & Gardiner, 1997) indicates that individuals with ASD can be helped to perform at more typical levels with appropriate support at retrieval, as was the case in the aforementioned research where adult participants were supported to engage in mental time travel. Although recent eyewitness research concerns adults with ASD, it is reasonable to expect a similar pattern of results for children, which leads us to question the efficacy of MRC for supporting them with the task of freely recalling episodic information.

The MRC technique demands significant language and concurrent processing abilities, which individuals with ASD find difficult (e.g., Gabig, 2008; Joseph McGrath, & Tager-Flusberg, 2005). MRC also directs witnesses to place themselves back in an experience, an ability believed to be significantly impaired in individuals with ASD (Bowler, et al., 2008; Jordan & Powell, 1995). Equally, the MRC technique assumes that event memories are necessarily bound to memories of the physical and emotional context at encoding. However, individuals with ASD appear not to bind elements of an experience in memory in the same manner as typically developing individuals (e.g. Bowler & Gaigg, 2008), and so the type of mental context reinstatement encouraged by MRC is unlikely to enhance free recall performance. A further reason to question the efficacy of MRC is that it is developmentally demanding. Child witnesses have to receive (understand), and then implement (apply) a series of subjective instructions, which require significant language processing capacity and unimpaired attention and concentration abilities (see Dando, 2013; Dietze, & Thomson, 1993). MRC typically takes in excess of 10 minutes to implement, and so for both typically developing children and children with ASD is at best cognitively demanding, although some researchers have reported that it can improve remembering (see Dietze, & Thomson, 1993, although also see Hershkowitz et al., 2001).

Developing effective tools to support episodic free-recall performance in child witnesses with ASD is challenging, as evidenced by a dearth of literature in this domain. The research reported here goes some way toward filling this gap by investigating the efficacy of the MRC for child witnesses with ASD, and comparing it to a new ‘Sketch reinstatement of context’ technique described below[5]. In the case of MRC, despite being one of the techniques advocated as suitable for vulnerable witnesses (MOJ, 2011), this is the first empirical evaluation of the technique for this group of witnesses. We compare both support techniques to a no support control, and investigate the performance of children with ASD compared to a typically developing, intellectually matched group.

The Sketch reinstatement of context technique (Sketch-RC) was initially devised as a replacement for the MRC technique for use by less inexperienced frontline police interviewers (who typically receive minimal interview training), to limit interviewer contamination and reduce the time taken to conduct volume crime witness interviews.

[5] Sketching is offered in the MOJ Achieving Best Evidence as being a technique that might assist vulnerable witness to reinstate the context of a to-be-remembered event. However, it is our understanding that no empirical evaluation has been conducted, to date.

Empirical evaluations of Sketch-RC, using the mock witness paradigm under conditions of incidental and intentional encoding have consistently indicated the efficacy of the technique for adult populations (e.g., Dando, 2013; Dando, Wilcock & Milne 2009; Dando, Wilcock, Milne, & Henry, 2009; Dando, Wilcock, Behnkle, & Milne, 2011). Participants interviewed using the Sketch-RC typically performed equal to, or better than, those interviewed using MRC for the amount of correct information elicited, with no increase in the reporting of erroneous items (erroneous information is discrepant from that which occurred in the stimulus). The technique has yet to be evaluated for child witnesses with ASD. However, there is much to suggest that it may be appropriate for supporting them to freely recall information.

One benefit may arise from encouraging witnesses to access their own contextual retrieval cues through sketching rather than relying on retrieval cues provided by the interviewer. Every witness's experience is individual and subjective, but for children with ASD the retrieval cues uniquely associated with the encoded event are likely to differ markedly to those of typically developing witnesses (initially used to develop MRC) due to the unique manner in which individuals with ASD apparently bind event memories. Accordingly, it is likely that the standard 'one size fits all' MRC cues taught to interviewers will be at best ineffective, and at worst detrimental, as was the case for adults with ASD (Maras & Bowler, 2010), because incompatible retrieval cues are known to impair episodic retrieval performance (e.g., Schacter, Norman, & Koutstaal, 1998). If the Sketch-RC technique does support children with ASD to access personal context cues in a developmentally and intellectually appropriate manner, one would expect to see reduced errors and increased correct remembering in the Sketch-RC condition.

Additional benefits may also arise from the fact that the Sketch-RC technique does not demand that witnesses mentally place themselves back in an experience, which is difficult for individuals with ASD. Rather, the technique encourages mental time travel by supporting an effortful search for salient contextual cues, which the witness can immediately externalize, but which remain available in the form of visual record. Hence, the witness controls the type of cues accessed. Moreover, intellectually and developmentally vulnerable witnesses (the primary topic of this research) are not being asked to process relational information in order to access episodic memory stores (which is precisely what the MRC technique dictates). In contrast to item-specific memory processes (which are intact), relational memory processes are known to be impaired in individuals with ASD, particularly when environmental support for retrieval is not provided (Gaigg, Gardiner & Bowler, 2008). The Sketch-RC encourages item-specific memory recall by asking individuals to 'draw what comes to mind', thus resulting in elements of the episode being broken down and recalled as separate items, rather than encouraging retrieval based upon relational processing. Therefore, the demands of the task are reduced, which is likely to support goal-directed remembering (de Jong, 2010), while simultaneously providing retrieval support in line with the Task Support Hypothesis (Bowler et al., 1997).

The Sketch-RC technique has been found to significantly increase the number of correct person details reported in adult populations, without a concomitant increase in erroneous recall (Dando, 2013; Dando et al., 2011). The locus of this effect is unclear, but may emanate from the fact that sketching focuses witnesses on personally salient contextual cues that are event-specific, from the very beginning of retrieval. The MRC, on the other hand, relies solely on retrieval cues provided by the interviewer, which are not only environment-centric, but are centered on the time leading up to the event, rather than the event itself (e.g., travel to the to-be-remembered event; the event environment; the witness's feelings; the witness's senses etc.). Providing cues in this manner does not allow rememberers to think about the event itself until after event retrieval has commenced.

Moreover, because the MRC instructional cues are environment and context centric, they may lead witnesses to recall cue related information at first retrieval, to the detriment of person/perpetrator detail (person cues do not feature in the MRC instruction). Individuals with Autism are known to have diminished social and person processing abilities (American Psychiatric Association, 2000), but because people are typically involved in a crime event, they are likely to be salient to those with ASD, even though this may be to a lesser degree than with typically developing populations. Indeed, Maras and Bowler (2010; 2012) report diminished ASD recall for person and action details with the CI. Hence, it is sensible to expect that the Sketch-RC would also improve recall of person details for ASD populations.

Based on the eyewitness memory literature, and theoretical and applied literature pertaining to the pattern of episodic memory deficits typically displayed by children and adults with a diagnosis of ASD, we offer the following three hypotheses;

1. Children with ASD who are supported at retrieval by the Sketch-RC technique will show improved free recall performance compared to their ASD peers in both the MRC and no-support control conditions;
2. As a function of interview condition, children with ASD will show free-recall performance comparable to that of a matched typically developing group when interviewed using the Sketch-RC method. However, children with ASD will display impoverished recall compared to a matched group of typically developing peers when interviewed using MRC and no support control;
3. The Sketch-RC technique will improve the recall of person information.

Method

Design

A between-subjects design was employed with one independent variable, Interview, on three levels, i) Sketch Reinstatement of Context (Sketch-RC), ii) Mental Reinstatement of Context (MRC), and iii) Control. The dependent variable was episodic memory performance as measured by the amount of verbal information recalled, and whether that information was correct, erroneous, or confabulated, and also, percentage accuracy. The *type* of information recalled was also coded as action, person or surroundings.

We used a similar type of approach to coding the drawings produced by the children in the Sketch-RC conditions to allow us to investigate types of items drawn across the two groups and the relationship between the items drawn and the information recalled. However, the items drawn were not coded as being correct, erroneous, or confabulated. Drawings are not information copied from the world onto paper, but abstractions of what has been experienced, and drawing was used to cue a free account using the instruction to ‘draw what reminds you about what happened’. As such, items that cue participant’s recall of the to-be-remembered event are by their very nature all correct. This is the first time that the drawings resulting from the Sketch-RC technique have been coded. Hence, this aspect of the research is exploratory, and so no hypotheses were formulated.

Participants

Ninety children participated in the research (55 males and 35 females), 45 children with an ASD diagnosis, and 45 typically developing children (control). The children with ASD were recruited from four specialist schools in England. School records indicated that all had been given a formal diagnosis by an appropriately qualified clinician according to the assessment measures of the Autism Diagnostic Observation Schedule (ADOS), which confirmed that participants met DSM-IV-TR criteria for ASD. Children without a formal diagnosis of ASD were excluded from the final data set. The typically developing children were recruited from two mainstream primary and secondary schools in England.

This research compared the cognitive performance of individuals with ASD to a typically developing control group. The clinical status difference between the two groups indicates heterogeneous levels of cognitive functioning that are likely to influence the cognitive performance under study. To limit the confounding effects of this heterogeneity, the verbal mental age (VMA) and nonverbal mental age (NVMA) of the ASD group were measured using the British Picture Vocabulary Scale III (BPVS-III; Dun, Dun, Whetton & Burley, 1997), and Raven's Coloured Progressive Matrices (RCPM; Raven, Court, & Raven, 1999). We used BPVS-III scores to match (within five points of raw score) ASD participants to typically developing participants, and the RCPM scores as a covariate, which takes account of the ordinal differences in intelligence without risk of misclassification across groups. The RCPM score was not used to match groups because it does not measure intelligence in individuals with ASD in the same way as it does in typically developing comparison groups, running the risk of overestimating the general intelligence of ASD individuals (see Mottron, 2004; Mottron & Burack, 2001). Participants' mean chronological age, BPVS scores, and RCPM scores as a function of group, across retrieval conditions are displayed in Table 1 (below).

	Chronological Age (years and months)		BPVS-III		RCPM	
Condition/Group	*M*	*SD*	*M*	*SD*	*M*	*SD*
Sketch (total)	12 years 0 months	35.50 months	119.53	22.56	24.47	6.68
MRC (total)	12 years 7 months	36.41 months	120.33	27.63	25.70	8.04
Control (total)	12 years 6 months	43.90 months	118.37	30.05	24.50	7.34
ASD (*n* = 45)	14 years 6 months	18.12 months	119.00	26.92	24.22	8.35
Sketch	14 years 1 month	18.63 months	118.73	22.96	22.67	7.98
MRC	14 years 6 months	18.12 months	120.00	28.39	25.47	9.86
Control	15 years 1 month	16.61 months	118.27	30.72	24.53	7.35
TD (*n* = 45)	10 years 2 months	34.95 months	119.82	26.64	25.56	6.12
Sketch	9 years 11 months	30.47 months	120.33	22.94	26.27	4.68
MRC	10 years 8 months	34.95 months	120.67	27.83	25.93	6.03
Control	9 years 11 months	40.49 months	118.47	30.44	24.47	7.59

Table 1.

Age, BPVS-III and RCPM mean raw scores for ASD and comparison typically developing group (TD) across interview conditions (N = 90).

Manipulation Analysis

Analysis of the BPVS and Ravens scores across participant groups, interview conditions, and as a function of interview X Group revealed no significant main effects, or interactions, all *F*s < .765, all *p*s > .397. As expected a significant main effect of age emerged between the participant groups. ASD children were older than the matched typically developing group, $F(1, 84) = 80.476$, $p = < .001$. However, there were no significant main effects of age for interview condition, or interview X group interactions, *F*s < .608, all *p*s > .547.

Retrieval Conditions

Each of the retrieval conditions was structured according to the current UK investigative interview model and Achieving Best Evidence advice (MOJ, 2011). Interviews comprised the same phases in the same order, as follows: (i) greet, (ii) rapport, (iii) explain, (iv) free recall, and (v) closure. Interviews differed only in the *free recall* phase, where the experimental manipulation took place, and so it is the free recall procedure across conditions that are described below (full interview protocols are available from the first author – also see MOJ, 2011 for information on greet, rapport, and closure phases of the interviews).

Sketch reinstatement of context (Sketch-RC). The free recall component in this condition began with participants being supplied with drawing materials (pencils, pens, erasers, and paper etc.) and then being given drawing instructions (verbatim):

"What I would like you to do is draw about the video that you watched earlier. I would like you to draw as much as you can. It can be absolutely anything that you want, and anything that might help you to remember what happened. Also, if you can, I would like you to tell me what you're drawing, as you draw it."

Participants were allowed unlimited time to complete their drawing, and were able to use as many pieces of paper as they wished. Following the completion of each drawing/s the researcher waited silently for 10 seconds (to allow participants to add to/change their drawings), then when the participants had signaled that they had finished they were given the free recall retrieval instructions:

"I haven't seen the video that you watched, so I would like you to tell me everything that happened in it. Tell me everything that you remember. It is very important that you do not guess – only tell me what you really remember. It is okay to say when you don't know, or can't remember."

Mental Reinstatement of Context (MRC). The free recall component in this condition began with the interviewer introducing the MRC to the participants (verbatim):

"In a moment, I am going to ask you to tell me what you remember about the video that you watched earlier, but before you start, I would like us to have some thinking time. As I talk to you I would like you to think about each of the things I say, as I say them. Closing your eyes or looking at the wall may help you to think"

Following this introduction, MRC was then conducted (see appendix A for full protocol). The instructions given during the MRC aimed to encourage the participant to mentally reinstate both the environmental and personal context surrounding the to-be-recalled event. The instructions were delivered slowly and in between each instruction, the interviewer paused for 5 seconds, allowing time for the participant to visualise/reinstate the context as instructed. Upon completion, the same free recall instructions as in the Sketch-RC condition (verbatim).

Control. Participants were simply given the free recall instructions (verbatim) as in the Sketch-RC and MRC conditions.

For all three conditions, participants were allowed unlimited time to explain what they could remember, and while they were doing so the researcher exhibited active listening, but did not interrupt the child. When the child stopped speaking, the researcher waited 10 seconds before asking the participant if he/she could remember anything else about the video, or wanted to add anything.

Procedure

Participants were all tested individually on school premises. The first author, a trained investigative interviewer with extensive experience of conducting interviewing vulnerable interviewees, conducted all interviews for this research, thus limiting the effects of interviewer variability. Written consent was provided by each participant's parent/guardian, and from every head teacher at participating schools prior to the researcher's arrival. Verbal consent (which was audio recorded) was also gained from each child immediately prior to participating in the research.

Upon arrival, the researcher initially engaged each child in conversation about neutral events unrelated to the research. During this time, the experimenter introduced herself, asked questions about, for example, the paintings displayed on the classroom walls, and conversed about school-related matters such as when break times were, what the school dinners were like, etc.

Participants were introduced to the research study and were informed that the researcher was trying to learn how to help people to remember things. An explanation was given as follows: "for example, if you have seen something, and you want to tell somebody what you saw, I am interested in understanding how to help you to do that." Participants were naïve to the aims and hypotheses of the study, but given the developmental and cognitive vulnerability of participants it was deemed important to provide enough information to allow them to give informed (verbal) consent. It was also explained to each child their participation was not a school test, that he/she did not have to take part, and that they could stop at any time and go back to their friends/classroom whenever they wished.

Each participant first viewed a stimulus film on a portable tablet computer in a different room to where the retrieval would later take place (to avoid spontaneous environmental context reinstatement). Developed by Centrex (Central Police Training and Development Authority), the film portrayed a non-violent criminal offence (a shop theft). The film opens showing a road with numerous cars passing by, and local shops in the distance. The camera pans to show two people walking down the road and going into one of the shops. Approximately 20 seconds later, the same two people are seen running out of the shop, chased by a man (implied to be the shopkeeper). The video then ends (after 58 seconds duration).

Participants moved to a second room and completed two distractor tasks with the researcher: BVPS-III and RCPM, which took approximately one hour. Participants were randomly allocated to one of the three retrieval conditions and were individually interviewed according to condition (using the appropriate interview protocol, verbatim). Interviews were audio recorded for later transcription and scoring.

Interview coding

The audio-recorded interviews were transcribed and coded according to a scoring template technique (e.g., see Memon, Holley, Bull and Kohnken, 1996). A comprehensive catalogue of information was assembled, totaling 145 items. Items recalled were only scored once. Each individual item recalled by participants was regarded to be either (i) correct (accurate recall); (ii) erroneous (inaccurate recall, e.g., describing a person's hair colour as blonde instead of brown); or (iii) a confabulation (reporting a piece of information that was not present within the film). Each item recalled was categorised as either person, action and surroundings information. Person-specific information included descriptive terms associated with persons in the video (e.g., girl; boy; brown hair; jeans; trainers etc.). Action-specific information concerned any actions carried out by persons in the video (e.g., walking; running; driving; laughing etc.), and surrounding-specific information concerned environmental details (e.g., trees; road; shop; post-box etc.). Percentage accuracy was determined by dividing the total number of correct items recalled by the total overall number of items recalled (i.e., correct + erroneous + confabulated).

Twenty interviews (10 ASD; 10 TD) were randomly selected for recoding by an independent coder who was blind to the aims and hypotheses of the research, but familiar with the template method of scoring used here. Cohen's Kappa coefficients for agreement between raters for the overall amount of correct, erroneous, and confabulated recall were .729, .711 and .824, respectively, all at $p < .001$, indicating a good level of agreement between raters.

Sketch Coding

Typically developing and ASD participants in the Sketch-RC condition each produced a sketch (30 in total), which was coded and analyzed (separately from verbal recall) as follows. Guided by the drawings produced and by the way in which recall performance was analysed, each of the individual items drawn was categorized as being person, action, surrounding, or other. The 'other' category was used for abstract items/elements of the children's drawings (e.g., shapes, doodles, squiggles etc.). The number of items drawn in each of the categories was then summed. Items were only counted once and were not scored as correct, erroneous or confabulations, because the items drawn were representational and not information directly copied, but abstractions of what had been experienced. The quality and accuracy of the drawings was not considered. For example, if a participant had drawn two people, irrespective of the quality of the drawings the drawer was awarded a score of two in the person category. Likewise, if the participant had drawn a road, a roundabout, and three shops, he/she was awarded a score of five in the surrounding category. Action information was defined as any drawn item/shape that indicated movement or action. For example, if a participant had drawn an arrow indicating the direction in which a person was moving, or had drawn a person running, he/she was awarded one mark for each action information item (the arrow, and running).

Results

Means and standard deviations for retrieval condition (Sketch-RC; MRC; Control), group (ASD; Typically developing), and group X condition performance for correct, erroneous and confabulated recall, are displayed in Table 2. The experimental hypotheses were investigated using a series of ANCOVAs, followed by post hoc tests where appropriate. We analyzed overall recall performance and type of information recalled by children with ASD as a function of the three interview conditions, followed by group performance (ASD; Typically Developing) across the three interview conditions. After controlling for Raven's Coloured Progressive Matrices scores the following results emerged.

Overall Recall Performance

There were significant main effects of retrieval condition for the number of errors, and percentage accuracy, F (2, 83) = 4.437, p = .015, η^2 = .10, and F (2, 83) = 7.375, p = .001, η^2 = .15, respectively. Consistent with hypothesis 1, participants in the Sketch-RC recalled fewer errors, 95% CI [-0.11, 0.99], than those in the MRC, 95% CI [1.38, 2.14], p = .013. There was no significant difference for the number of errors between Sketch-RC and Control, 95% CI [0.63, 1.72], p = .189, or between the MRC and Control conditions, p = .876. Participants in the Sketch-RC were also significantly more accurate, $M_{\text{Percentage Accuracy Sketch}}$ = 93.70, SD = 6.17, 95% CI [88.56, 100.04], than those in the MRC, $M_{\text{Percentage Accuracy MRC}}$ = 79.73, SD = 23.90, 95% CI [73.22, 84.71], p = .001, and Control conditions, $M_{\text{Percentage Accuracy Control}}$ = 83.49, SD = 19.59, 95% CI [78.04, 89.52], p = .035, with no significant difference between the latter two conditions p = .726. There were no significant main effects for the amount of correct or confabulated information recalled, all Fs < 1.677, all ps > .380.

	Information Recalled					
	Correct		Errors		Confabulations	
Condition/Group	*M*	*SD*	*M*	*SD*	*M*	*SD*
Sketch (total)	17.77	9.09	.43	.63	.70	1.02
MRC (total)	17.07	13.13	1.60	2.18	1.17	1.91
Control (total)	13.77	7.07	1.17	1.54	1.37	2.67
ASD (total)	12.71	8.71	1.04	1.52	1.36	2.46
Sketch	15.27	7.11	.53	.74	.60	.91
MRC	12.40	11.81	1.60	2.29	1.27	2.09
Control	10.47	6.00	1.00	.93	2.20	3.53
TD (total)	19.69	10.32	1.09	1.58	.80	1.33
Sketch	20.27	10.35	.33	.49	.80	1.15
MRC	21.73	13.08	1.60	2.13	1.07	1.79
Control	17.07	6.64	1.33	1.45	.53	.92

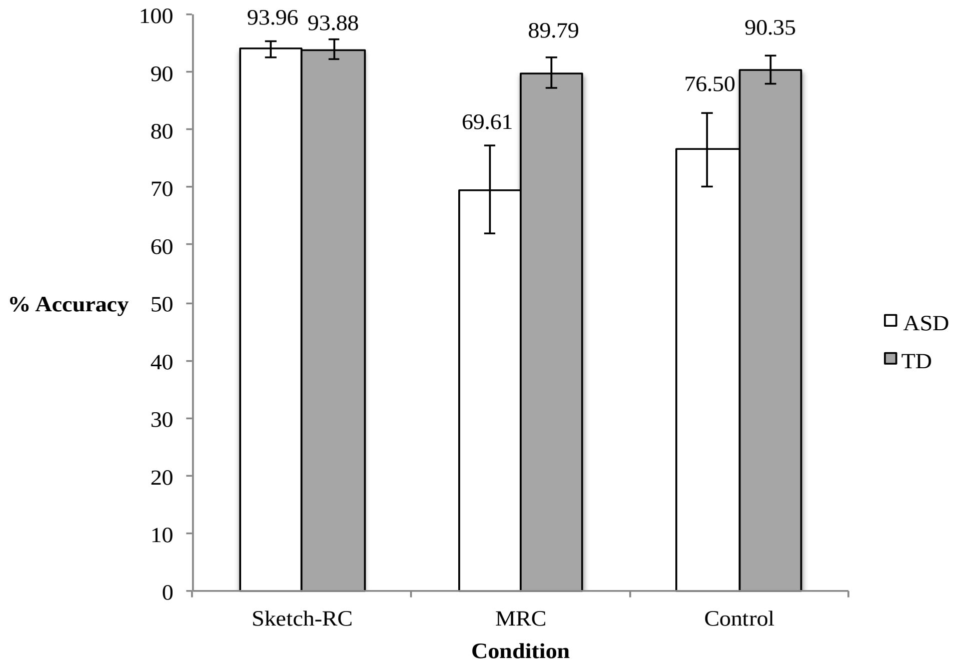
Table 2

Means and (SDs) for total correct, erroneous, and confabulated items of information recalled as a function of group, condition, and group X condition.

Significant main effects of group (ASD; Typically Developing) emerged for the amount of correct information recalled, F (1, 83) = 11.596, p = .001, η^2 = .12, and percentage accuracy, F (1, 83) = 9.139, p = .003, η^2 = .10. Typically developing children recalled significantly more correct information, 95% CI [16.75, 21.87], and were significantly more accurate, 95% CI [86.04, 95.43], $M_{\text{Percentage Accuracy TD}}$ = 91.37, SD = 8.92, than children with ASD, $M_{\text{Percentage Accuracy ASD}}$ = 80.06, SD = 24.20, 95% CI [10.53, 15.65], 95% CI [75.94; 85.32], respectively. No significant main effects were found for the number of errors or confabulated information items recalled across the participant groups, all Fs < 2.173, all ps > .120.

Figure 1.

Percentage accuracy as a function of group (ASD; TD) and retrieval condition (Sketch-RC; MRC; Control).



There was a significant group X retrieval condition interaction for percentage accuracy (see Fig 1), F (2, 83) = 4.294, p = .017, η^2 = .17. ASD participants in the Sketch-RC condition were significantly more accurate, 95% CI [87.80, 104.15], than ASD participants in the MRC, 95% CI [60.97, 77.19], p < .001, and control conditions, 95% CI [68.71, 84.93], p = .004, with no statistically significant difference between the latter two conditions, p = .551. There was no significant difference in percentage accuracy between ASD participants, 95% CI [87.80, 104.15], and typically developing participants, 95% CI [84.49, 100.77], in the Sketch-RC condition, p > .05. However, ASD participants in the MRC and control conditions were significantly less accurate than typically developing participants in both the MRC, 95% CI [80.72, 96.96], p = .001 and control conditions, 95% CI [82.62, 98.84], p = .018. These results confirm our second hypothesis. No significant group X retrieval interactions emerged for the amount of correct, erroneous, or confabulated information items recalled, all *F*s < 2.189, all *p*s > .120.

Type of Information

Means and standard deviations for the type of information recalled as a function of group X condition are displayed in Table 3. Significant main effects of group (ASD; Typically Developing) emerged for the amount of correct action information recalled, F (1, 83) = 24.571, $p < .001$, $\eta^2 = .21$, the accuracy of the action information recalled, F (1, 83) = 6.695, $p = .011$, $\eta^2 = .13$, the amount of confabulated surroundings information recalled, F (1, 83) = 5.355, $p = .023$, $\eta^2 = .16$ and the accuracy of the surroundings information recalled F (1, 83) =11.884, $p = .001$, $\eta^2 = .15$. Children with ASD significantly fewer correct action information items, 95% CI [3.862, 6.364], than typically developing children, 95% CI [8.281, 10.783], $p < .001$, and were significantly less accurate when recalling action information, 95% CI [71.428, 85.595], than typically developing children, 95% CI [84.487, 98.654], $p = .011$. Children with ASD also confabulated significantly more when recalling surrounding information, 95% CI [.397, 1.006], than typically developing children, 95% CI [-.155, .514], $p = .023$ and were significantly less accurate when recalling surrounding information, 95% CI [74.991, 85.979], and 95% CI [88.487, 99.475], $p = .001$ respectively.

Significant main effects of condition were found for for the percentage accuracy of person information, F (2, 83) = 5.842, $p = .004$, $\eta^2 = .19$, and surrounding information, F (2, 83) = 5.505, $p = .006$, $\eta^2 = .24$, the amount of correct action information, F (2, 83) = 4.076, $p = .020$, $\eta^2 = .11$, and the number of action errors, F (2, 83) = 3.594, $p = .032$. Sketch-RC participants were more accurate when recalling person information, 95% CI [80.892, 100.340], than participants in both the MRC, 95% CI [61.559, 81.038], $p = .020$, and control, 95% CI [59.440, 78.887], $p = .008$, with no significant difference between the latter two conditions, $p = .981$. Sketch-RC participants were also more accurate, 95% CI [89.461, 102.897], when recalling surrounding information than those in the MRC, 95% CI [74.328, 87.785], $p = .007$, and control, 95% CI [77.747, 91.182], $p = .049$, with no significant difference between the latter two conditions, $p = .967$. Thus, our third hypothesis is confirmed.

Sketch-RC participants also recalled more correct action information, 95% CI [7.451, 10.510], than those in the Control, 95% CI [4.375, 7.434], $p = .018$. Sketch-RC and MRC, 95% CI [5.549, 8.614], and Control and MRC conditions, did not differ significantly, both ps $>.628$. Sketch-RC participants recalled fewer items of erroneous action information, 95% CI [-.125, .396], than those in the MRC, 95% CI [.338, .857], $p = .045$. Sketch-RC and the Control, 95% CI [-.059, .603], and Control and MRC conditions, did not differ significantly, both ps $>.110$.

Significant group X condition interactions emerged for the number of confabulated surrounding information recalled, $F(2, 83) = 3.209$, $p = .045$, and the percentage accuracy of the surrounding recall, $F(2, 83) = 3.644$, $p = .030$. ASD children in the Sketch-RC condition confabulated fewer surrounding details, 95% CI [-.456, .709], than ASD children in the Control Condition, 95% CI [.954, 2.110], $p = .003$, with no significant differences between the Sketch-RC and MRC, 95% CI [-.043, 1.113], $p = .978$, or MRC and Control, $p = .053$. Children with ASD in the Sketch-RC condition recalled more accurate surrounding information, 95% CI [87.170, 106.312], than those in MRC, 95% CI [59.772, 78.772], $p < .001$, and Control conditions, 95% CI [65.945, 84.940], $p = .007$, with no significant difference between the latter two conditions, $p = 1.00$.

	Group and Condition											
	Sketch				MRC				Control			
	ASD		TD		ASD		TD		ASD		TD	
Information type	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Action												
Correct	6.73	3.79	11.00	5.81	4.67	4.92	9.93	6.05	3.40	2.95	8.20	3.39
Errors	.20	.41	.07	.26	.60	1.06	.60	.99	.07	.26	.33	.82
Confabulations	.47	.74	.47	.92	.33	.82	.27	.59	.33	.90	.33	.82
% Accuracy	85.37	25.82	95.27	8.16	69.24	39.46	89.62	18.1	77.78	36.55	92.96	15.23
Person												
Correct	2.80	1.61	3.33	1.50	3.07	3.22	3.87	3.42	2.07	2.12	2.80	1.37
Errors	.13	.35	.20	.41	.47	.83	.60	1.06	.27	.46	.73	.70
Confabulations	.00	.00	.27	.70	.40	1.06	.47	.92	.33	.82	.07	.26
% Accuracy	90.00	26.39	89.65	18.96	62.30	42.32	83.33	17.25	59.04	42.44	77.83	21.46
Surroundings												
Correct	5.73	3.56	5.93	4.04	4.67	4.25	7.93	5.39	5.00	2.73	6.07	3.62
Errors	.20	.41	.07	.26	.53	.92	.40	1.30	.67	1.05	.27	.59
Confabulations	.13	.35	.07	.26	.53	.64	.33	.72	1.53	2.50	.13	.35
% Accuracy	95.05	9.23	96.67	9.34	69.71	26.12	93.64	14.15	75.17	31.32	93.16	13.54

Table 3.

Memory performance (correct; errors; confabulations; % accuracy) means and standard deviations for type of information recalled (action; person; surroundings) as a function of group (ASD; TD) across retrieval condition (Sketch-RC; MRC; Control), n=15 in each group x retrieval condition.

In the Control condition, ASD children, 95% CI [.951, 2.110], confabulated more surroundings information than typically developing children, 95% CI [-.446, .716], p = .001. No differences were found in the Sketch-RC condition between ASD, 95% CI [-.456, .709] and typically developing children, 95% CI [-.509, .651], p = .894, nor in the MRC conditions between ASD , 95% CI [-.043, 1.113] and typically developing children, 95% CI [-.245,

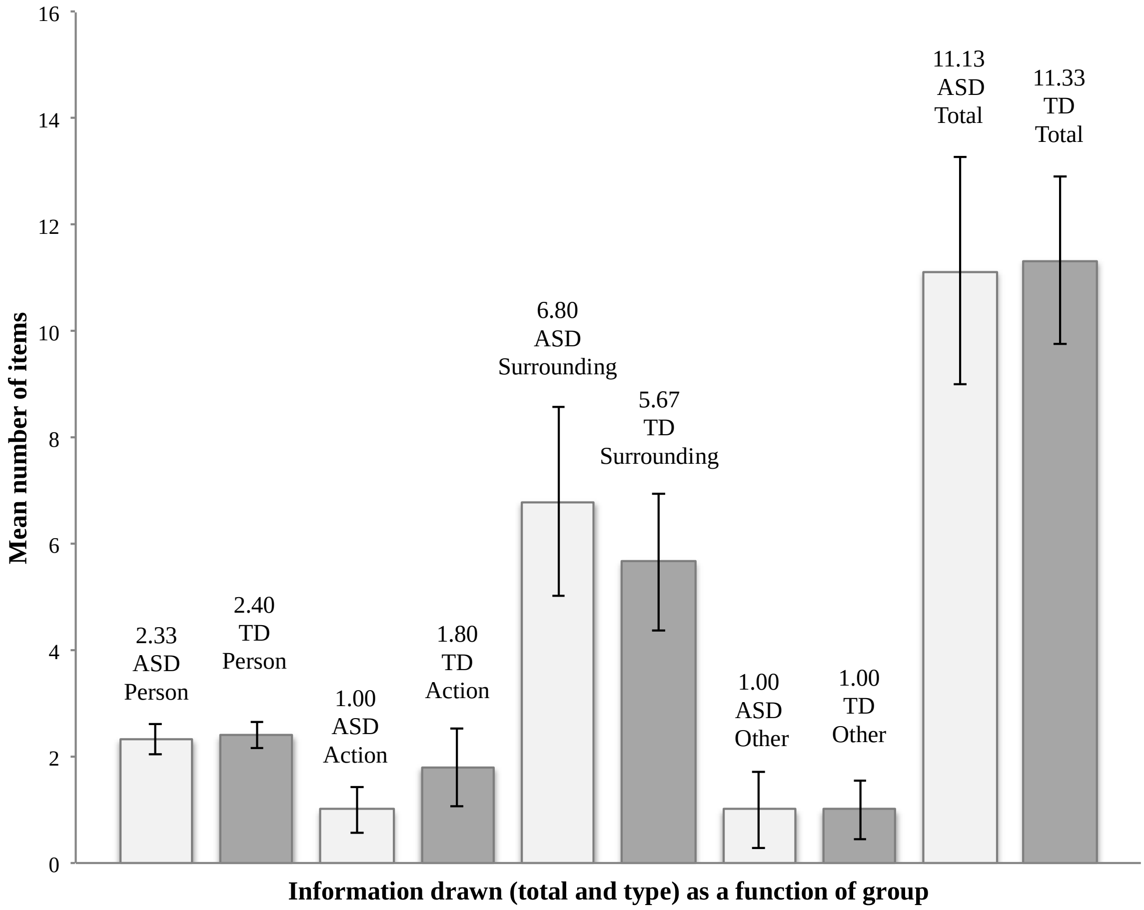
.916], $p = .630$. ASD children were less accurate when recalling surrounding information in the MRC, 95% CI [59.772, 78.772], and Control conditions, 95% CI [65.945, 84.940], than typically developing children in the MRC, 95% CI [83.328, 102.984], $p = .001$, and Control conditions, 95% CI [83.988, 102.988], $p = .009$. No differences emerged in the Sketch-RC condition between ASD, 95% CI [87.170, 106.312], and typically developing children, 95% CI [86.092, 105.141], $p = .869$. All other group X condition interactions for type of information were non-significant, all *F*s < 2.449, all *p*s > .093.

Sketches

Drawings were comparing across groups for the number of items drawn, and the number of items in each of the four categories. There was no significant difference between the two groups (ASD; TD) for the total number of items drawn, or the number of items drawn in each of the four categories (see Fig. 2), all *p*s > .329. For children with ASD, we found a significant positive correlation for total number of items drawn and the total amount of correct information freely recalled, $r(15) = .667$, $p = .007$. However, for typically developing children this relationship was not significant, $p = .917$. The relationship between the types of items drawn (person; action; object; other) and the types of information recalled in both the ASD and typically developing groups were not significant, all *p*s > .251.

Figure 2.

Mean amount of information drawn by participants in the Sketch-RC condition (total overall and type) as a function of group (ASD; typically developing).



Discussion

The current study involved children with a neurodevelopmental disorder known to impact upon episodic free recall performance. Using the mock witness paradigm, we investigated how to assist children with ASD to freely recall event information using two support methods and a no support control, and then compared their performance to a control group of typically developing children. To date, theoretically and empirically validated support tools to assist this group of vulnerable witnesses to provide freely recalled best evidence have yet to emerge. However, on the basis of the eyewitness memory literature, and the theoretical and applied literature concerning adults and children with ASD we offered three hypotheses, each of which will be discussed in light of our findings.

Our first hypothesis was that children with ASD who are supported by the Sketch-RC technique at retrieval would show improved free recall performance compared to their ASD peers in both the MRC and no support control conditions. Our results support this hypothesis. Children with ASD in the Sketch-RC condition were 25% more accurate than their ASD peers in the MRC condition and 20% more accurate than those in the Control condition. Special populations such as children with ASD offer unique challenges for researchers, in that they typically display greater variability in performance than that found with other populations. Indeed, despite substantial mean performance differences across the three retrieval conditions for the amount of correct, erroneous or confabulated information recalled (e.g., increased correct information, and reduced errors - see Table 2), these did not reach statistical significance. However, these differences are clearly important, because they incrementally accumulated to significantly improve percentage accuracy for ASD children in the Sketch-RC condition.

Our results show some similarities to the findings of research investigating the efficacy of mental reinstatement for adults (Maras & Bowler, 2010; 2012) in that the MRC technique significantly reduced recall accuracy for children with ASD compared to the Sketch-RC. However, here no difference in accuracy was found between MRC and the no support control. This pattern of results suggests that children may not have attempted to apply MRC, which supports our concerns that MRC may be ineffective because it is both developmentally and intellectually inappropriate. That said, irrespective of participant group all children in the MRC condition reported more errors than those in the Sketch-RC. Conversely, these differences in recall performance indicate that our children may have attempted to implement the MRC instructions, but doing so had interfered with the retrieval process. Interference at retrieval is known disrupt free recall performance (e.g., Craik, 1981; Torres et al., 2001), as was evident here in the MRC condition *per se*. However, the number of errors reported by ASD children in the MRC condition was no different to the no-support Control, although both conditions resulted in significantly more errors than those in the Sketch-RC. It may be, as we suggested following our review of the literature, that MRC is particularly challenging for children with ASD and so they do not attempt to apply it.

Overall, with reference to our first hypothesis and the MRC, our findings are not entirely clear. The internal nature of the MRC technique means that we were unable to measure implementation (that is whether children did/attempted as they were instructed) other than by considering output performance. Further research investigating children's understanding of the MRC instructions is necessary, and would help shed light on this. What is clear is that ASD children's performance markedly improved (> 90 % accurate) when supported by sketching. Previous research has reported similar improvements in episodic recall accuracy for children with Asperger's syndrome (McCrory et al., 2007) when they were interviewed appropriately. Our findings provide further evidence that this group of vulnerable witnesses can be reliable when appropriately supported. However, for the purposes of the Criminal Justice System, McCrory et al.'s findings are severely limited because of the directive nature of the retrieval methods employed. That is, children were asked event specific questions, directing them to particular aspects of the to-be-remembered event, rather than being supported to freely retrieve items in such a manner so as to maximize the investigative and evidential and value of the resultant information. The Sketch-RC technique is entirely different, it is non-directive and so is Criminal Justice appropriate.

Our second hypothesis was that children with ASD in the Sketch-RC condition would show free-recall performance comparable to that of their typically developing peers, while those in the MRC and Control conditions would perform less well. Indeed, when supported at retrieval using the Sketch-RC technique, children with ASD were just as accurate, whereas those in both the MRC and Control conditions exhibited much reduced accuracy versus typically developing children. This significant finding emerged despite the fact that overall children with ASD recalled far fewer correct information items and were significantly less accurate than typically developing children, results that largely concur with the limited literature concerning eyewitness memory in both children (McCrory et al., 2007; Roberts, 2002) and adults (Maras & Bowler, 2010; Maras et al., 2012) with ASD.

The success of the Sketch-RC technique for this group may arise from it being a flexible retrieval strategy that allows spontaneous self-directed drawing, supporting children to access their own contextual retrieval cues rather than being directed by the interviewer. Furthermore, in contrast to MRC, Sketch-RC alleviates demands on working memory, and negates the need for numerous complex linguistic instructions. Difficulties following complex linguistic instructions, and impaired working memory have been reported in ASD (Goldstein, Minshew, & Siegel, 1994; Minshew & Goldstein, 1998; 2001). The Sketch-RC instructions are simple and few, and the technique allows children with ASD to quickly execute the verbal instructions and also to externalize the task, which we contend makes this method appropriate for supporting conscious remembering in a manner suitable for the purposes of the criminal justice system (cf. Bowler et al., 1997).

Additional benefits may have arisen from simply drawing *per se*, that is, the process of drawing. It has been suggested that individuals with ASD compensate for deficits in episodic memory by relying on perceptual representations rather than verbal processes to access episodic memories (Ben Shalom, 2003, also see Whitehouse, Mayberry, Dirkin, 2006). Indeed, for our children with ASD there was a significant positive relationship for the total number of items drawn, and the amount of correct information recalled. Typically developing children's verbal free recall can be improved when they are encouraged to draw at retrieval (Barlow, Jolley & Hallam, 2011), and unless directed otherwise, children draw subject matter and events that are most salient to them, which here may have stimulated the children to talk about the episode in more detail. More specifically, the items they draw act as representational retrieval cues: as the drawing unfolds, children naturally talk about what they are producing (and hence the event), which cues the child to think about related episodic information (e.g., Salmon, 2001; Wesson & Salmon, 2001). Imaging has also been found to increase episodic first response in typically developing adult populations, and children (Anderson, Dewhurst, Nash, 2012; Calabrese & Marucci, 2006). Drawing necessarily includes imaging, and so it may also be that drawing simply encourages a more effortful search through memory.

Our third hypothesis was that the Sketch-RC technique would improve the recall of person information by children with ASD. This is exactly what we found: children with ASD in the Sketch-RC condition were 25% more accurate when recalling person information, and reported more correct action information and fewer erroneous action information items than children with ASD in both the control and MRC conditions. This is an important finding because good quality information about persons, and their actions, supports the investigation of crime in terms of identifying offenders, and other witnesses and victims, and so significantly improves opportunities to access justice. We believe that improved person remembering occurred because, from the offset, sketching focuses witnesses on event-specific contextual cues. The MRC technique was originally designed to 'recreate the general context associated with the event' (Fisher & Geiselman, p. 149), rather than the context of the event itself. This approach was adopted for good reason, because for the purposes of the criminal justice it is important not to lead a witness in terms of offering event specific cues that may be incorrect/inappropriate (including suggesting the presence of people when in fact the event witnessed may not have included people). Hence, MRC instructions concern the general context, and typically ask the witness to think about the environment (weather, physical surroundings etc.) and what they might have been doing in the time leading up to the event. MRC instructions may, therefore, create a demand characteristic for our ASD participants by cueing them to focus their retrieval efforts on the environment and personal context of the witnessed event rather than the event itself. This would account for the increased surrounding information recalled by children in the MRC condition, but may have limited the retrieval of other kinds of information. In support of this explanation, both ASD and TD groups recalled less surrounding information in the Sketch-RC, but that information was significantly more accurate than in the MRC condition, and ASD children confabulated fewer surrounding information items.

It is less clear why sketching might have improved person detail accuracy and the reporting of action information. Like typically developing children, those with ASD benefited from sketching support, indicating that sketching scaffolds retrieval of a broad range of event information whereas MRC focuses more on environmental context rather than event context. This benefit is evidenced by the enhanced reporting of person information by ASD children in the sketch condition. An analysis of the ASD and TD children's drawings from the sketch conditions did not reveal any significant differences in the numbers of each type of information that were produced in the drawings. One cannot tell definitively from these data the source of the increase in person information in the ASD children's recall after sketching. However, the lack of clear difference in drawings is consistent with sketching operating to make the retrieval focus of ASD children, as with typically developing children, more balanced across different types of information and less focused upon the kinds of information (e.g., about inanimate objects) that they find easier to communicate verbally than other kinds (e.g., the involvement of other people in an event).

Children were not instructed to draw particular items or events, but rather to draw whatever reminded them of what they had seen, and so their drawings were not information copied from the world onto paper, but abstractions of what they had experienced. ASD is characterized by an atypical interest in inanimate objects, and children with ASD tend to prefer pictures of inanimate objects (Celani, 2002). Moreover, drawings produced by children with ASD are generally different from typically developing children (e.g., Jolley, O'Kelly, Barlow & Jarrold, 2013; Lee & Hobson, 2006). We did not analyse quality, but in terms of quantity and type of items drawn, the drawings produced did not differ as the literature might predict. It appears that sketching may offer a medium for ASD children to abstract experiences of people, which they are less able to do through a purely verbal medium. Future research in this domain should consider perusing this aspect of the Sketch-RC technique, asking if quality and duration of drawing, for example, impacts on memorial performance.

As with all laboratory mock witness research, there are a number of limitations, which also apply here. This study was conducted in conditions of intentional encoding, and so participants were able to concentrate on the stimulus event in a manner that does not typically occur in the real world. Furthermore, there was a relatively short delay between encoding and retrieval. That said, the children who participated in this research were unaware that they would later be asked to recall the event, and previous work using the Sketch-RC has found similar results in conditions of unintentional encoding, and with longer delays. Here, we have controlled for interviewer variability by using just one trained interviewer throughout. Future work should vary the interviewer. Finally, we have only investigated free recall performance. There is a need to research whether the Sketch-RC effect carries over to the questioning phase of a witness interview.

To conclude, our findings have a number of practical and theoretical implications for a group witnesses who have been largely overlooked by those seeking to improve episodic remembering for the purposes of criminal justice. Memories are complex mental constructions that represent ‘slices’ or ‘samples’ of an experience, and so they are rarely complete and particularly prone to interference. Children with ASD face additional developmental and neurological challenges, which serve to further reduce correct free recall remembering, in particular. However, we have again shown that when appropriately supported children with ASD can perform at more typical levels in forensic interviews that commence with a free recall account (Bowler et al., 1997). Support did improve performance as predicated by the Task Support Hypothesis, which indicates some level of failure at retrieval (Bowler et al., 2004). In many respects failure at retrieval is good news in that it offers hope to those tasked with gathering information in forensic interviews because the retrieval process is one system variable (Wells, 1978) that *can* be managed to augment memorial performance for vulnerable populations.

Acknowledgements

Conducting psychological research with some of the most vulnerable people in society is extremely challenging, but we believe that it adds value to the lives of those who are all too often overlooked. We would like to extend our heartfelt thanks to all of those who trusted us to work with their children. In particular, Cyndy Humphreys from the Tuition and Medical Behaviour Support Service, Shropshire; the children and staff at Hook-a-Gate Education Centre; Michelle Frost, and the children and staff at Platt Bridge Community School, Wigan; and also, the children and staff at: LVS Hassocks, West Sussex; Patcham House School, East Sussex; and Brychall High School, Wigan.

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Appendix A

Mental Reinstatement of Context Instructions

"In a moment I am going to ask you to tell me what you remember about the video that you watched on the iPad, but before you start I would like to spend some time helping you to remember as much as you can"

"As I talk to you I would like you to think about each of the things I say, as I say them"

"Closing your eyes or looking at a blank wall may help you to think"

" To begin I would like you to try to think back to when you saw the video ***… 5 second pause…*** thinking really hard, just as you would do if you had lost something and were trying to remember the last time you saw it ***… 5 second pause…***"

" Think about earlier today ***… 5 second pause…***what had you been doing this morning ***…pause…*** who had you seen or spoken to ***… 5 second pause…***"

"Think about what had you been doing just before coming up to see the video on the iPad ***… 5 second pause…***"

"Now I would like you to think about the place where you watched the video***… 5 second pause…***"

"Try and get a picture of that place in your mind***… 5 second pause…***"

"What did it look like? ***...pause…*** Did you smell anything ***… 5 second pause…***or did you notice anything about it***… 5 second pause…***?"

"Think about where things were in the place that you watched the video***… 5 second pause…***Think about where the iPad was ***… 5 second pause…***and where you sat to watch the video"

"Try to remember if anyone else was there with you ***… 5 second pause…***Where were they sitting ***… 5 second pause…***What were they doing ***… 5 second pause…***Think about whether you spoke to anyone"

"Now think about how you felt as the video started ***… 5 second pause…***What did you think you were going to see***… 5 second pause…***"

"Now think about the video ***… 5 second pause…***Think about what you saw on the video **…pause…**When you feel ready, I would like you to tell me everything that you can remember about what happened on the video, starting from the beginning"