Running head: SKETCH PROCEDURE

Measuring the Effectiveness of the Sketch Procedure for Recalling Details of a Live Interactive Event

Joseph Eastwood

University of Ontario Institute of Technology

Brent Snook

Memorial University of Newfoundland

Kirk Luther

Lancaster University

Author Note

Joseph Eastwood Faculty of Social Science and Humanities, University of Ontario Institute of Technology, Oshawa, ON, Canada. Brent Snook, Department of Psychology, Memorial University of Newfoundland, St. John's, NL, Canada, and Kirk Luther, Department of Psychology, Lancaster University, United Kingdom.

We would like to thank Melissa McMillan, Lindsay Ostridge, and Melanie King for their assistance in completing this research.

Correspondence concerning this article should be addressed to Joseph Eastwood, Faculty of Social Science and Humanities, University of Ontario Institute of Technology, 2000 Simcoe Street North, Oshawa, Ontario, L1H 7K4, Canada. E-mail: Joseph.Eastwood@uoit.ca.

Abstract

The effectiveness of a sketch procedure for enhancing the recall of a live interactive event was assessed. Participants (N = 88) engaged in an interaction with a confederate, were administered either a sketch, mental reinstatement of context (MRC), or control procedure, and then asked to recall the experienced event. Results showed that participants who were administered a sketch procedure recalled more correct details than those administered a MRC or control procedure (d = 0.55 and d = 1.31, respectively). The increased recall was seen primarily for action and object details, with little difference between procedures for recall of person and verbal details. In addition, the effect of interview procedure on the number of incorrect details recalled was non-significant. The utility of the sketch procedure for investigative interviewing is discussed.

Keywords: Sketch procedure; investigative interviews; Cognitive Interview; information recall

Measuring the Effectiveness of the Sketch procedure for Recalling Details of a Live Interactive Event

Researchers have long utilized psychological science to develop ways to obtain detailed and accurate information from cooperative interviewees (Snook, Eastwood, Stinson, Tedeschini, & House, 2010). The most well-known and empirically-validated interviewing method is the Cognitive Interview (CI), which consists of a number of memory-enhancing techniques (e.g., adapting questions to the interviewee's unique perspective, mentally reinstating the context of the original event; Fisher & Geiselman, 1992). Meta-analyses assessing the effectiveness of the CI against a control interview produced large effect sizes for the number of correct details recalled (ds > 0.87), and small effect sizes for the number of incorrect details recalled (ds < 0.28; Köhnken, Milne, Memon, & Bull, 1999; Memon, Meissner, & Fraser, 2010). The body of empirical research on the CI has led to its general acceptance by the scientific community as the preferred method for questioning victims and witnesses of crimes. Moreover, the CI forms the basis of many police interview frameworks worldwide (e.g., PEACE, see Clarke & Milne, 2001).

Despite the general acceptance of the CI as an effective interview method, the amount of empirical scrutiny for individual techniques has varied (see Memon et al., 2010). One technique outlined in the original CI that has only been subjected to experimentation relatively recently is sketching.[1] A sketch procedure typically involves having the interviewee draw the details of the to-be-recalled event, and then use the sketch as a reference when providing a verbal account (Dando, Wilcock, Behnkle, & Milne, 2011). As conceptualized originally, sketching was recommended to assist eyewitness recall for events or actions that may be complex or difficult to explain verbally (e.g., traffic accident), as well as to allow the interviewer to ask meaningful questions by having a more thorough understanding of the interviewee's perspective of the

recalled event (e.g., determine the position and movements of individuals during an event; see Fisher & Geiselman, 1992).

It has been suggested that the sketch procedure may also serve as a general memory enhancement technique for any witnessed event (Dando, Wilcock, & Milne, 2009a). The theoretical premise for the sketch procedure comes from the encoding specificity principle of memory, which states that recall is enhanced when the cues present during the encoding of an event are also present during the recalling of that event (Tulving & Thomson, 1973). Utilizing a sketch allows the interviewee to recreate the context of the original target event (e.g., people, locations, actions) while providing their recall. Relatedly, the encoding specificity principle is the main theoretical explanation for the mental reinstatement of context (MRC) component of the CI, an empirically-supported process whereby interviewers use a series of instructions that activate the senses (e.g., sights, sounds, feelings) that help interviewees mentally recreate the experienced event prior to providing a verbal account (Fisher & Geiselman, 1992).

In an initial study measuring the effectiveness of the sketch procedure with adults, Dando and colleagues compared the sketch procedure against a control procedure (i.e., simply asking interviewees to report what they remembered) and a MRC procedure (Dando et al., 2009a). Sixty participants were shown a video (1 minute and 20 seconds) of a mock theft and questioned about the details of that theft 48 hours later. Dando et al. found that participants who were administered the sketch and MRC procedures recalled more correct details from interviewees compared to the control procedure (d = 0.93 and d = 1.85, respectively); the average number of incorrect details recalled was similar between conditions. Interviewees who were administered the sketch procedure produced fewer confabulations (i.e., mentioned details or events that were not present in the video) than participants administered either the MRC or control procedure (d = 1.18 and d

= 1.36, respectively). They also found that the sketch procedure interviews were substantially shorter than interviews that contained the MRC procedure (d = 1.17).

In a second study assessing the effectiveness of the sketch procedure, Dando, Wilcock, Milne, and Henry (2009b) showed 60 participants a mock crime video (2 minutes and 30 seconds) of a vehicle theft, and interviewed them approximately 48 hours later. The interviewer conducted one of three types of interviews, each of which consisted of three recall attempts: (1) full CI (MRC, direct questioning, change temporal order), (2) sketch (sketch, direct questioning, unaided free recall), and (3) control (unaided free recall, direct questioning, unaided free recall). Dando and colleagues found that participants who were administered the sketch or full CI recalled substantially more correct details than those administered a control procedure (d = 1.99 and d = 1.20, respectively). They also found negligible differences in the average number of incorrect details between interview procedures (ds < 0.27). Interviewees who were administered the sketch procedure produced fewer confabulations than those administered the control procedure (d = 0.94). The full CI interviews were, on average, longer than sketch or control interviews (d = 1.94 and d = 2.65, respectively).

In a third study, Dando and colleagues (2011) had 60 participants view a video (approximately 5 minutes) depicting a theft of a handbag. Participants were interviewed approximately 48 hours later using one of three types of interviews, which differed on the amount and type of recall procedures used: (1) full CI (MRC, direct questioning, change temporal order procedure, and change perspective), (2) modified CI (MRC, direct questioning), and (3) sketch (sketch, direct questioning). The amount of correct information, incorrect information, and confabulations generated by interviewees, as well as the type of information (i.e., action, object, person, surrounding) was measured. Participants who were administered a

full CI produced more confabulations than those administered a modified CI or sketch interview (d = 0.65 and d = 0.84, respectively). The sketch interviews were, on average, shorter than the full CIs and modified CIs (d = 1.55 and d = 0.79, respectively). In terms of the type of details recalled, participants who were administered a full CI recalled more incorrect person and action details than those administered either a modified CI (d = 0.92 and d = 0.44, respectively) or sketch interview (d = 1.35 and d = 0.34, respectively). Their results showed negligible differences between interview conditions in the amount of correct and incorrect information recalled.

More recently, Dando (2013) compared the sketch procedure against a control procedure (i.e., no memory aids) and a MRC procedure using a sample of older adults (i.e., > 67 years old). Potential participants attended a community presentation entitled “Introductory Psychology”, and were not made aware that they would later be asked to participate in a research study. During the presentation, two actors entered the room and interrupted the speaker, interacted with the speaker regarding whether or not they should attend the presentation, and apologized before leaving the room. The interaction lasted for approximately one minute. Attendees who were willing to be interviewed about the event were questioned – using one of the three aforementioned procedures – approximately 48 hours after the target event occurred. Dando found that participants who were administered a sketch procedure recalled more correct details than those administered the MRC or control procedure (d = 1.86 and 2.62, respectively). Those administered the sketch procedure also recalled fewer incorrect details than those administered the MRC or control procedure (d = 1.66 and 1.29, respectively). The effect of interview procedure on the number of confabulated details produced was minimal (ds < 0.16). In terms of the type of details recalled, participants who were administered the sketch procedure recalled more correct person details

than those administered either the MRC or control procedure (d = 1.43 and 1.56, respectively), and more correct object details than those administered the MRC and control procedures (d = 1.36 and 1.35, respectively).

The available experimental research suggests that a sketch procedure tends to lead to more correct details being recalled than a control procedure (average d = 1.85 from the aforementioned three studies), while matching – and in some cases exceeding – the performance of well-established CI (average d = 0.64 from the aforementioned four studies). All previous studies also found that fewer incorrect details tend to be recalled for the sketch procedure compared to the other procedures utilized (average d = -0.56 from the aforementioned four studies). The sketch procedure also has several practical benefits compared to the traditional techniques within the CI, and specifically the MRC procedure. First, results from Dando and colleagues' studies suggest that the sketch procedure is quicker to administer than the full CI, which is practically significant given the time constraints faced by police interviewers (Clarke & Milne, 2001). Second, the sketch procedure has been reported to be less cognitively demanding for the interviewer as it is largely self-directed as opposed having to deliver a series of cues in a precise, well-timed manner (Dando, Wilcock, & Milne, 2009). Third, interviewees generate the retrieval cues as opposed to the interviewer, which means that the cues should be personally salient and therefore more effective for recall. Thus, the risk of the interviewer suggesting cues that may unwittingly contaminate the interviewee's memory is also mitigated (Dando, Wilcock, Milne, & Henry, 2009).

Although the sketch procedure is seemingly promising for enhancing interviewee recall, there are at least two features of the existing research that need further exploration. First, three of the four aforementioned studies assessing the sketch procedure utilized short mock crime videos

as opposed to a live event for the target event. Using videos may limit the ecological validity of the findings because the knowledge that participants are going to questioned about the videos may lead them to put more effort put into encoding details contained in them. Past research has also shown that the efficacy of the CI increased with experienced, compared to passively-viewed, events (Kohnken et al., 1999). We aimed to test the extent to which the sketch procedure may be impacted by a live and interactive event. Second, the same group of researchers has conducted all published studies on the effectiveness of a sketch procedure for adult witnesses,[2] which highlights the need for independent replication of the findings.

The Current Experiment

The purpose of the current experiment was to examine the relative effectiveness of the sketch procedure in aiding the recall of details about an experienced event. Each participant engaged in an interaction with another individual that included a number of physical movements and verbal exchanges. Importantly, the interaction was constructed in such a way that participants were unaware that they would be questioned about it later. Participants were then administered either a sketch, MRC, or control procedure. We hypothesized that: (1) participants administered the sketch procedure would recall more correct details than those administered a MRC (moderate effect) or control procedure (large effect), (2) the greater number of correct details would be seen primarily for object and person details, (3) the amount of incorrect details recalled will be similar between interview procedures, and (4) the recall phase for the sketch procedure would be shorter than both the MRC and control procedures.

Method

Design

A three-factor between-participants experimental design was used, with interview procedure as the independent variable. The procedures included: (1) control, (2) mental reinstatement of context (MRC), and (3) sketch. The dependent variables were the number of details recalled correctly, the number of details recalled incorrectly, and the type of details recalled (i.e., person, object, action, verbal). The length of the recall – calculated from the end of the interview instructions until the end of the interview – was also measured.

Participants

The sample consisted of 88 students (31 men and 57 women) enrolled in an introductory psychology course at [redacted university]. The mean age of the participants was 19.92 (*SD* = 2.87, *Range* = 17 – 30), and the mean year of study was 1.78 (*SD* = 0.99, *Range* = 1 – 4). There were no significant differences in age, distribution of genders, or year of study between conditions (*p*s > .05).

Materials

The experimental materials consisted of a live interaction script, two demographics questionnaires, and three scripts that the interviewer delivered verbally to participants depending on the interview procedure that was assigned randomly.

Live interaction. The live interaction script began with a research assistant (RA) bringing the participant into a conference room in the [redacted] psychology research laboratory. At this point, participants were not provided with any information regarding the true purpose of the study. The RA mentioned that the experimenter was running late and asked the participant to sit down and fill out a demographics questionnaire while they waited. Participants were also

asked to turn off their cell phone to reduce distractions, and to put the demographics questionnaire in a tray on the left side of the room when they completed it. Once the questionnaire was completed and deposited in the tray, the RA mentioned that it was the incorrect questionnaire and then retrieved the correct questionnaire from a small filing cabinet. The RA asked the participant to complete the new questionnaire and put it in a tray on the right-hand side of the room when finished. After the participant completed and deposited the newly completed questionnaire, the RA spilled a small cup of water on the table and asked the participant to retrieve a roll of paper towel from a chair in the back of the room. As the RA cleaned up the spill they asked the participant what year and program they were in at the university. The RA then received a mock phone call from the experimenter discussing when the experimenter was scheduled to arrive, and once the call was completed they asked the participant to fill out their name and email in the RA's laptop to ensure their participation was recorded. The RA then checked their phone, mentioned that the experimenter had sent a text stating that she was now present and ready to proceed with the study, and asked the participant to follow them out of the room to complete the consent form.

Interview scripts. All interviews began with an introductory phase where the interviewer engaged the interviewee and explained the procedures (e.g., shaking hands, establishing preferred name, outlining purpose of the interview). A free recall of the live event was then obtained using one of the three experimental procedures. The control procedure requested the participant to "*Please tell me everything that you remember from the time you entered the conference room until the time you left*". Once the participant provided their response, the interviewer probed for additional details by asking "*Anything else*?".

The MRC procedure was as follows:

"In a moment I am going to ask you to tell me what you remember about what happened while you were waiting in the conference room. Before you begin I am going to ask you to try something that can often help people to remember more about what they have experienced. What I would like you to do is to close your eyes, are you are comfortable with that? [If the participant was not comfortable with closing their eyes, they were instructed to focus on a particular point in the room].

Now please concentrate on the instructions I am going to give you. I would like you to listen silently to each of my instructions. I will pause between each instruction to give you time to do as I ask. While keeping your eyes closed [staring at that point], I would like you to think back when you first entered the lab…[pause]…Think about what you could see…[pause]…think about what you were feeling…[pause]… Now picture in your mind entering the conference room…[pause]… think about what you could see…[pause]… think about what you could hear…[pause]… think about what you could smell…[pause]… think about the furniture in the room…[pause]…

Now when you have a really clear picture in your mind, please tell me everything that you remember from the time you entered the conference room until the time you left.

[Wait to ensure they have finished recalling information]. Anything else?"[3]

The sketch procedure was as follows:

"In a moment I am going to ask you to tell me what you remember about what happened while you were waiting in the conference room. Before you begin I am going to ask you to try something that can often help people to remember more about what they have experienced. [give paper and pen] What I would like you to do is to please draw a detailed sketch of what happened while you were in the conference room. I would like you to draw on that sketch as many details as you can about the event. It can be absolutely anything that you wish and anything that might help you to remember what happened. Also I would like you to describe to me each item/thing that you are drawing as you draw it. Please keep in mind that your artistic abilities are not being judged at all, but this is simply a technique used to enhance memory. When you are ready you can start [pause to allow participant to complete sketch].

Now, please feel free to refer to your sketch to explain or clarify anything, and tell me everything that you remember from the time you entered the conference room until the time you left [Wait to ensure they have finished recalling information]. Anything else?"

Procedure

Two different female RAs were used to conduct the live interaction. Both RAs were similar in physical characteristics (e.g., height, weight, hair color) and each wore their same outfit for every interaction to ensure consistency across the interactions. The RAs also were provided with the interaction script and performed rehearsals prior to beginning data collection. Participants were greeted at the entrance to the psychology research laboratory by one of the two RAs and brought to the conference room. The RA then proceeded to work through the scripted

interaction (mean interaction length in seconds = 340.42, *SD* = 59.01). There was no statistically significant difference in interaction length between the three conditions (F <1). Each interaction was videotaped using a hidden camera so that the participants' subsequent recall performance could be measured. The participant was then brought out of the conference room into an open area of the lab and asked to complete a consent form. Approximately five minutes later, the participant was brought to a private testing room where a third RA conducted the interview using one of the three procedures. To ensure consistency across procedures, the third RA administered all interview procedures. All interviews were audio and video recorded. Participants were debriefed fully about the nature of the study and thanked for their participation prior to leaving the laboratory.

Data coding and reliability. The interaction script was first broken into its unique individual details to create a model scoring template. Each detail was also designated as either a person (e.g., RA's hair color, RA's clothing), object (e.g., table, chair), action (e.g., sitting down, walking across room), or verbal (e.g., "please take a seat", "I'm in forensic psychology") detail. Each interaction video was transcribed verbatim by an RA. Each interaction transcript was then compared against the model template and details were adjusted depending on the specific interaction (e.g., exact wording of verbal responses from participants). The amount of unique details in each participants' scoring template (based on what occurred in each of the live interactions) ranged from 206 - 278 (M = 238.98, SD = 17.68). There was no difference in the average amount of unique details between conditions (p = .570). Each interview was also transcribed verbatim by an RA. Every individual detail mentioned by the participant was then coded as either correct or incorrect using their respective coding template.

In order to assess inter-rater reliability, 78 (88.64%) of the interviews were coded independently by a RA who was naïve to the purpose of the study. The RA was first provided with a detailed coding guide and coded the first 10 interviews as a training exercise. Any disagreements were then discussed with the first author prior to coding the remaining 78 interviews. The mean Kappa value was 0.86 for correct details and 0.67 for incorrect details, suggesting excellent and substantial agreement between the two coders, respectively (Landis & Koch, 1977).

Results

Recall performance. The mean recall performance (and associated 95% confidence intervals) as a function of procedure is shown in Table 1. An ANOVA revealed a significant effect of procedure for the total number of details recalled (correct and incorrect), $F(2,85) = 9.67$, $p < .001$. Participants who were administered the sketch procedure recalled, on average, 15.83 more details than participants administered the control procedure, and the effect size ($d = 1.32$) suggests this finding has high practical significance. Participants administered the sketch procedure recalled, on average, 8.79 more details than those in the MRC procedure; the effect size ($d = 0.57$) suggests this difference has moderate practical significance. The difference in the average total number of details recalled by participants in the MRC and control procedures was non-significant; the resulting effect size ($d = 0.48$) suggests the difference has moderate practical significance.

There was a significant effect of procedure on the number of correct details recalled, $F(2,85) = 9.30$, $p < .001$. Participants who were administered the sketch procedure recalled, on average, 14.97 more correct details than participants administered the control procedure, and the effect size ($d = 1.31$) suggests this difference has a high practical significance. Participants

administered the sketch procedure recalled, on average, 8.14 more correct details than those administered the MRC procedure; the resulting effect size (d = 0.55) suggests the difference has moderate practical significance. The difference in the average number of correct details recalled by participants administered the MRC and control procedures was non-significant; the resulting effect size (d = 0.48) suggests the difference has moderate practical significance.

The effect of procedure on the number of incorrect details recalled was non-significant, $F(2,85) = 2.24$, $p = .113$. Participants administered the sketch procedure recalled, on average, 0.75 more incorrect details than those administered the control procedure, and the effect size (d = 0.53) suggests that this finding has moderate practical significance. The size of the difference in number of incorrect details recalled between the sketch and MRC procedures and the MRC and control procedures has low practical significance (d = 0.39 and d = -0.15, respectively).

Type of details recalled correctly. The mean recall performance for type of details recalled, as a function of procedure, is shown in Table 2. An ANOVA revealed a significant effect of procedure on the number of object details recalled, $F(2,85) = 14.07$, $p < .001$. Participants who were administered the sketch procedure recalled, on average, 7.02 more object details than those administered the control procedure, and the effect size (d = 1.51) suggests that this difference has high practical significance. Participants administered the sketch procedure recalled, on average, 3.22 more object details than those administered the MRC procedure; the effect size (d = 0.57) suggests that this difference has moderate practical significance. Participants administered the MRC also recalled, on average, 3.80 more object details than those administered the control procedure; the effect size (d = 0.73) suggests the difference has moderate to high practical significance.

There was a significant effect of procedure on the number of correct action details recalled, F (2,85) = 8.70, p < .001. Participants who were administered the sketch procedure recalled, on average, 4.45 more action details than those administered the control procedure, and the effect size (d = 1.19) suggests that this difference has high practical significance. Participants administered the sketch procedure recalled, on average, 3.58 more action details than those administered the MRC procedure, and the practical significance of this difference is moderate to high (d = 0.78). The practical significance of difference in the average number of action details recalled between the MRC and control procedure is low (d = 0.19).

The effect of procedure on the number of correct verbal details recalled was non-significant, F(2,85) = 1.76, p = .179. The practical significance of the difference in the number of Verbal details recalled between the sketch and control procedure is moderate (d = 0.50), is low for of the difference between the sketch and MRC procedures (d = 0.20), and is low for the difference the MRC and control procedures (d = 0.28).

The effect of procedure on the number of person details recalled was non-significant, F < 1. The practical significance of the difference in the number of person details recalled between the sketch procedure and the control and MRC procedures is low (d = -0.36 and d = -0.26, respectively). The practical significance for the difference between the MRC and control procedures is also low (d = -0.09).

Interview length. An ANOVA revealed that there was a significant effect of procedure on interview length, F(2,85) = 67.78, p <.001. The average length for the control procedure was 177.31 seconds (*95% CI* = 162.46, 192.17), was 328.54 seconds (*95% CI* = 300.40, 356.67) for the MRC procedure, and 369.07 seconds (*95% CI* = 336.10, 402.04) for the sketch procedure. The practical significance of the difference in the average length between the sketch and control

procedures is very high (d = 2.87), and is moderate for the sketch and MRC procedures (d = 0.51). The practical significance of the difference in average length between the MRC and control procedures is also very large (d = 2.56).

Discussion

The effectiveness of a sketch procedure for recalling details of a live interactive event was assessed. The first hypothesis was supported, as participants who were administered the sketch procedure recalled more correct details than those administered a control and MRC procedure. The second hypothesis was supported partially as a greater number of correct details recalled was seen for object details. However, little difference was found for correct person details recalled between procedures, and a greater number of action details were recalled for the sketch procedure. The third hypothesis was supported as procedure did not impact the number of incorrect details recalled. Contrary to our fourth hypothesis, sketch procedure interviews lasted on average, longer than the other two procedures; this finding is in contrast with past research (e.g., Dando et al., 2009a; Dando et al., 2011). Our results build on previous research on this topic and provides further evidence for the effectiveness of sketching for enhancing recall.

Our results showed a clear advantage of the sketch procedure compared to the MRC and control procedures for enhancing recall, with interviewees who were administered the sketch procedure recalling 22% and 51% more correct details, respectively. The ability of the sketch procedure to enhance the number of correct details recalled was even more pronounced than observed in previous studies using a videotaped mock crime for the to-be-remembered event (Dando et al., 2009a; 2009b; 2011). However, Dando's (2013) study, which also used a live interaction for the target event, found a similarly large effect for the sketch procedure compared to a MRC and control procedure in terms of number of correct details recalled. Given that the

target events in Dando's (2013) and the current study were arguably more ecologically valid, using a sketch procedure within a real-world investigative interview may be even more effective than what was thought previously. Overall, our findings add further support to the suggestion that the sketch procedure can be an effective tool for interviewing victims and witnesses.

There are at least two potential explanations for the observed advantage of the sketch and MRC procedures in generating correct recall of details compared to a control procedure. First, both the sketch and MRC procedures are based on encoding specificity theory, which predicts that recall will be enhanced if the same cues present during an experienced event are present during recall of that event. Our results suggest that enhanced recall was likely due to the ability of the procedures to help mentally recreate the context of the target event. However, having the participants both draw and explain what they are drawing (sketch procedure) appears to have been more effective in reinstating the original context than mentally visualizing it (MRC procedure). That is, the procedure of verbalizing thought processes in real-time while drawing the various aspects of the event settings may have allowed participants to better reconstruct their memory of the target event compared to recreating it mentally. Second, and perhaps the most plausible explanation, is that the Sketch procedure contains two free recall attempts (versus one free recall attempt for the other two procedures). That is, the initial phase of drawing and describing what is being drawn constitutes one free recall attempt, and the official free recall phase constitutes the second recall attempt. Anecdotally, many participants mentioned details about the event during the first stage (i.e., sketch and describe) that were not mentioned in their subsequent free recall stage, and vice versa. It is therefore somewhat unsurprising that the participants who were administered the sketch procedure recalled the greatest number of details (see Fisher & Geiselman, 1992).

As predicted, participants who were administered the sketch procedure recalled more object details compared to the other two interview procedures. This finding is perhaps somewhat unsurprising, however, as the sketch procedure contains an explicit request for the interviewee draw the various attributes of the room and the objects involved in the target event. This finding also matches one of the original proposed advantages of utilizing a sketch procedure – providing the interviewer with an increased amount of spatial details regarding the event in question (Fisher & Geiselman, 1992).

In contrast to previous research, the current study found that the sketch procedure led to more correct action details being recalled than the other two procedures. This difference is likely due to the unique nature of the target event utilized in the current study. The interaction that the participants engaged in was designed to ensure that multiple actions on behalf of both the RA and the interviewee were included – unlike previous studies in which participants passively viewed either a live or videotaped event (e.g., Dando 2013; Dando, Wilcock, & Milne, 2009). Although the underlying explanation for the effect cannot be teased out empirically given the design of the study, many participants mentioned actions while drawing their sketch and subsequently used their sketch to help explain their movements during their verbal recall (e.g., drawing lines between the different objects in their sketch). These anecdotal responses suggest that the sketch procedure may be effective in both reinstating the context of the event and in providing a mechanism to allow interviewees to better explain the movements of people than what can be accomplished through verbal recall only. Overall, this finding suggests that the sketch procedure may be especially useful in real-world cases for generating information regarding the context of a target event and the spatial movements of the individuals involved in the event.

In contrast to our prediction, no meaningful difference was found between procedures in terms of the number of correct person details recalled. Although speculative, the unexpected lack of difference for person details may be to the fact that there was only one other person involved in the event (i.e., the RA) and the participant was aware that the interviewer knew the RA; thus, providing identifying details regarding the RA may have been seen as unnecessary. This explanation is supported by the small number of person details mentioned between conditions. Alternatively, sketching simply may not be an effective procedure for generating exhaustive person-related details – perhaps because of the difficulty of drawing specific facial and bodily features. Similarly, the lack of difference between procedures for verbal details may be due to the difficulty of recreating these details in a written format. Taken together, the lack of difference in person and verbal details recalled between procedures suggests that sketching may not be very effective in enhancing the recall of those types of details beyond what can be achieved with other procedures.

Unlike findings from previous research, the sketch procedure interviews were longer than the MRC interviews. We suspect that this finding was primarily due to participants who were administered the sketch procedure being given the opportunity to draw and describe their sketch prior to beginning the free recall phase. By contrast, those administered the MRC procedure simply listened to the instructions prior to beginning their verbal free recall. Despite being longer in absolute length, however, the sketch procedure was more efficient than the MRC procedure as it generated almost one more correct detail per minute (7.42 vs. 6.53). It is unclear why the sketch procedure was shorter than the MRC procedure in previous studies. We suspect that it may be due to (a) the use of different interview scripts between studies, (b) the use of a follow-up questioning phase in past research (whereas the current study only generated an initial free

recall), or (c) differences in target events leading to a longer sketch generation phase in the current study.

There are at least two limitations of the current study. First, the sample consisted of undergraduate students, which may not be representative of the types of individuals involved in real-world interviews. It is imperative that replications of this research use a more heterogeneous sample. Second, there was only a small delay between the target event and the interview. It is possible that different results may be observed when there is an extended delay between the target event and memory recall.

Our findings suggest that the sketch procedure is likely to be effective for enhancing recall of experienced events. Not only does the procedure lead to interviewees' generating a greater number of correct details, it may have other benefits for law enforcement settings that are not present with all CI procedures (e.g., less cognitively demanding for interviewers, less potential for memory contamination due to interviewer-generated cues). As always, exploration of the limits of the sketch procedure is required. Thus far, however, the converging evidence suggests that the sketch procedure is a highly-effective technique within the CI that can be utilized within real-world investigative interviews.

References

Clarke, C., & Milne, R. (2001). *National evaluation of the PEACE investigative interviewing course*. Police Research Award Scheme Report No: PRAS/149.

Dando, C. (2013). Drawing to remember: External support of older adults' eyewitness performance. *PloS One, 8*, e69937. doi:10.1371/journal.pone.0069937

Dando, C., J., Wilcock, R., Behnkle, C., & Milne, R. (2011). Modifying the cognitive interview: Countenancing forensic application by enhancing practicability. *Psychology, Crime & Law, 17*, 491-511. doi:10.1080/10683160903334212

Dando, C., Wilcock, R., & Milne, R. (2009). The cognitive interview: The efficacy of a modified mental reinstatement of context procedure for frontline police investigators. *Applied Cognitive Psychology, 23*, 138-147. doi:10.1002/acp.1451

Dando, C. Wilcock, R., Milne, R., & Henry, L. (2009). A modified cognitive interview procedure for frontline police investigators. *Applied Cognitive Psychology, 23*, 698-716. doi:10.1002/acp.1501

Fisher, R. P., & Geiselman, R. E. (1992). *Memory-enhancing techniques in investigative interviewing: The cognitive interview*. Springfield, IL: C.C. Thomas.

Köhnken, G., Milne, R., Memon, A., & Bull, R. (1999). The cognitive interview: A meta-analysis. *Psychology, Crime, & Law, 5*, 3-27. doi:10.1080/10683169908414991

Landis, J. B., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33*, 159–174. doi:10.2307/2529310

Macleod, E., Gross, J., & Hayne, H. (2013). The clinical and forensic value of information that children report while drawing. Applied Cognitive Psychology, 27, 564-573. doi: 10.1002/acp.2936

Mattison, M.L.A., Dando, C. J., & Ormerod, T. C. (2015). Sketching to remember: Episodic free recall task support for child witnesses and victims with autism spectrum disorder. Journal of Autism and Developmental Disorders, 45, 1751-1765. doi: 10.1007/s1080

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, & Law, 16*, 340-372. doi:10.1037/a0020518

Snook, B., Eastwood, J., Stinson, M., Tedeschini, J., & House, J. C. (2010). Reforming investigative interviewing in Canada. *Canadian Journal of Criminology and Criminal Justice, 52*, 203-217. doi:10.3138/cjccj.52.2.215

Tulving, E., & Thomson, D. M. (1973). Encoding specificity and retrieval processes in episodic memory. *Psychological Review, 80*, 352-373. doi:10.1037/h0020071

Footnotes

[1] Although not the focus of the current research, several recent studies have also demonstrated that the sketch procedure can be effective in detecting deception in suspect interviews (e.g., Leins, Fisher, Vrij, Lela, & Mann, 2010; Vrij, Mann, Leal, & Fisher, 2012).

[2]Although the current study focuses on adult interviewing, the sketch procedure has also shown promise for specialized population as well (e.g., children, Autism Spectrum Disorder; see Macleod, Gross, & Hayne, 2013; Mattison, Dando, & Ormerod, 2015).

[3] Five of the 28 participants in the MRC condition did open their eyes at some point during their free recall.

Table 1. *The Mean Number of Total, Correct, and Incorrect Details Recalled (and Associated 95% Confidence Intervals) as a Function of Interview Condition.*

	Interview Condition		
Recall Performance	Control (n = 32)	MRC (n = 28)	Sketch (n = 28)
Total Details	30.53[a] (25.64, 35.42)	37.57[b] (32.35, 42.80)	46.36[a,b] (41.13, 51.58)
Correct Details	29.53[c] (25.75, 33.32)	36.36[d] (29.74, 42.97)	44.50[c,d] (39.73, 49.27)
Incorrect Details	1.00 (0.51, 1.49)	1.21 (0.69, 1.74)	1.75 (1.23, 2.28)

Note. Superscripts with the same letter indicate statistically significant differences ($p < .05$).

Table 2. *The Mean Number of Person, Verbal, Object, and Action Details Recalled (and Associated 95% Confidence Intervals) as a Function of Interview Condition.*

	Interview Condition		
Type of Detail Recalled	Control (n = 32)	MRC (n = 28)	Sketch (n = 28)
Person Details	1.38 (1.01, 1.74)	1.29 (0.92, 1.65)	1.11 (0.99, 1.23)
Verbal Details	10.44 (7.96, 12.92)	12.57 (9.27, 15.87)	14.21 (11.05, 17.38)
Object Details	8.16[a,c] (6.69, 9.62)	11.96[b,c] (9.61, 14.32)	15.18[a,b] (13.16, 17.19)
Action Details	9.59[d] (8.25, 10.94)	10.46[e] (8.41, 12.52)	14.04[d,e] (12.57, 15.50)

Note. Superscripts with the same letter indicate statistically significant differences (p < .05).