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Running head: CHILDREN'S SUGGESTIBILITY

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Three experiments were conducted to test the proposition that children's suggestibility about an occurrence of a repeated event is heightened when an interviewer suggests false details that were experienced in non-target occurrences of the event as opposed to new details that never occurred. In each experiment, children participated in a repeated event during which specific items varied each time (e.g., the children always got a sticker but the theme of the sticker was different in each occurrence). Separate biasing and memory interviews were then conducted. In Experiment 1, the interviewer merely suggested that the false details *might* have occurred in the event. In the remaining experiments, the suggested details were clearly linked to the target occurrence with either a contextual or temporal cue. The potential moderating effect of the child's age (Experiment 1) and the retention interval (Experiments 1 and 2) were also examined. Consistent with the initial hypothesis, suggestions about experienced (non-target) details were more likely to be repeated by the children compared to suggestions about non-experienced details. In Experiments 2 and 3, experienced suggestions were also more likely to inhibit children's recall of the target occurrence. The relevance and generalisability of these findings to the legal setting are discussed.

The impact of experienced versus non-experienced suggestions on children's recall of repeated events

The current research addresses the question of the effect of interviewers' suggestions on children's recall of an occurrence of a repeated event. This is an important issue because, for many children involved in abuse investigations, the matter involves a repeated offence (e.g., acts of sexual or physical abuse that occurred on numerous occasions). In many jurisdictions, for an alleged offender to be charged and convicted in relation to a repeated offence, at least one specific occurrence must be identified with reasonable precision with reference to place and time (see *S v. R.*, 1989). While all witnesses usually remember details that were experienced the same way across multiple occurrences of an event, the act of *identifying* an occurrence of an event and *distinguishing* it from other similar occurrences is an extremely difficult task. This task is especially difficult for child witnesses whose knowledge and understanding of time is not as well developed as that of adults (Friedman, 1993).

Children's difficulty in distinguishing between similar occurrences of a repeated event is depicted in several ways. First, the accuracy, certainty, and consistency of children's reports about an occurrence of a repeated event is usually lower compared to a single (one-time) event (Powell, Roberts, Ceci, & Hembrooke, 1999; Powell & Thomson, 1996; Powell & Thomson 1997a; Roberts & Powell, 2005a, 2006). Second, the detrimental effect of repeated experience on children's event memory is reflected by a high rate of migration of details from other occurrences of the event into the occurrence that is being recalled. Such responses, referred to as 'internal intrusion' errors, are the most common type of error made by children when recalling an occurrence of a repeated event (Hudson, 1990; Connolly & Lindsay, 2001; Powell et al., 1999). External intrusion errors (i.e., false details that were not

included in any occurrence of the event) are less likely to be reported by children who experienced a repeated compared to a one-time event (Powell & Thomson, 1996). Indeed, external intrusion errors rarely feature in children's reports about repeated events unless there has been strong external contaminating influences (e.g., prior misleading interviews). However, the rate of internal intrusion errors is highly influenced by a range of individual and contextual factors. The more similar the occurrences, the greater the difficulty in distinguishing between them (Lindsay, Johnson & Kwon, 1991). Further, the younger the child and the longer the retention interval, the greater the number of internal intrusion errors (Farrar & Goodman, 1992; Powell & Thomson, 1997b). While age and retention interval also impact on children's ability to recall a single event, the impact of these factors is greater in non-suggestive paradigms when children are required to recall an occurrence of a repeated event.

The high number of internal intrusions, especially with younger children and after long delays in time, arises because recalling an occurrence of a repeated event involves two distinct memory components. One component is the ability to recall *content* details (i.e., the particular objects, actions, persons, verbalizations that were included in the to-be-recalled occurrence). Another component is the ability to identify the temporal source of various content details within the series. Previous research has shown that performance on *each* of these tasks is related to both age and retention interval. For example, in a study by Powell and Thomson (1997b), 6- to 8-year-old children remembered a greater proportion of details from a series of occurrences than 4- to 5-year-old children (irrespective of when the details occurred), and total recall of content details declined over time. However, the children's ability to identify which content details were included in a particular occurrence in the series

also decreased over time and increased with age irrespective of any loss of memory for content.

As with recall of single (one-time) events, the type of question asked by the interviewer has a major impact on the accuracy of children's recall of an occurrence of a repeated event. Broad open-ended questions that encourage elaborate responses minimise internal intrusion error rates whereas these errors are heightened when the question narrows the range of response options and focuses on specific details that may have varied (Powell & Thomson, 1996). Further, questions that refer to, or presume, false details also increase the number of internal intrusion errors irrespective of whether the misleading questions were presented in a separate biasing interview, or were phrased as yes/no questions in the memory interview (Connolly & Lindsay, 2001; Powell et al., 1999). The influence of interviewer suggestions is moderated by several factors. Overall, errors are heightened when suggested details are similar rather than dissimilar in theme to the event details (Roberts & Powell, 2006), refer to details that changed rather than remained the same across the occurrences (Powell et al., 1999), are presented after a long rather than short delay in time (Roberts & Powell, 2005b), and are explicitly linked to the target occurrence (Powell, Roberts & Thomson, 2000). Research, however, is still in its infancy. There are likely to be many other factors that moderate the influence of interviewer suggestions on children's memory of a repeated event.

One potential influential factor that has not yet been explored is the impact of interviewer suggestions about *experienced non-target* details (i.e., suggestions about details that occurred in the event, but not in the target occurrence). In most of the prior research on children's suggestibility (involving single as well as repeated events), the misleading questions included *non-experienced* details (i.e., plausible details that had not occurred at all

in the event). With repeated events, however, false suggestions can relate to experienced as well as non-experienced details. An examination of the relative impact of interviewer suggestions about experienced (non-target) details is important because false details of this nature are more likely to be suggested by an investigative interviewer than non-experienced details. Indeed, in field interviews about repeated offences (e.g., familial child abuse), children's accounts of a particular occurrence are often preceded by an account of a different occurrence (on average, interviews contain accounts of 2.9 distinct occurrences, Guadano, 2005). Further, it is not uncommon for a witness to talk generally about an offence (in present tense) before the interviewer queries about a particular occurrence (Powell & McMeeken, 1998). The interviewer's prior knowledge about a broad array of event details creates a risk that the interviewer will falsely link certain details to a particular occurrence.

Overall, there are strong reasons to hypothesise that error rates would be heightened when an interviewer suggests experienced (non-target) details as opposed to non-experienced details. As indicated earlier, children's source discriminations are influenced by multiple criteria, including temporal as well as content information (Powell & Thomson, 1997b). Rejection of a non-experienced detail would be largely based on content information (i.e., whether the content is familiar to the child). Prior research has indicated that the content details of repeated events (particularly those events that include a distinct context or coherent framework) are relatively well remembered over time (Powell & Thomson, 1997a, 1997b). With experienced non-target details, however, a decision to accept or reject an interviewer's suggestion cannot be made on the basis of content alone. Rather, children must determine not only whether a detail was present, but also *when* it was present. Children's memory for temporal information is vulnerable to decay over time as is their ability to monitor the sources of individual events using other contextual or cognitive information. When the

temporal information is forgotten, the child would be forced to respond on the basis of some factor independent of temporal sequence (e.g., saliency of content, random guessing). The interviewer's suggestion that an item occurred would increase the strength of familiarity for that item (Murdock, 1974; Thomson, 1972), thereby increasing the risk that the child will choose that item over other items that occurred in the series. If (as we anticipate), experienced (non-target) suggestions are more detrimental to children's recall of repeated events, this would imply that the prior work on children's suggestibility for repeated events has underestimated the degree to which children are influenced by interviewer suggestions.

Specifically, the current research included three separate experiments that tested the proposition that children's suggestibility is heightened when an interviewer suggests false details that were experienced in the event as opposed to details that did not occur. Each of the experiments adopted an event that had the same underlying structure and context but involved variations in the specific instantiations of items throughout the series. For example, the children were always required to sit on a mat during the activities but the type of mat varied across the occurrences. In an initial biasing interview, experienced non-target details as well as non-experienced details were raised. Subsequently, the children were asked to recall the particular detail for each item that was included in the final occurrence of the event. The experiments differed depending on how the details suggested in the biasing interview were linked to the occurrence. In the first experiment, the interviewer merely suggested that the details *might* have occurred at any time during the series of repeated events. In the remaining experiments, the details in the biasing interview were clearly linked to the final occurrence with either a contextual and/or temporal cue. The impact of the age of the child (Experiment 1), and the retention interval (Experiments 1 and 2) were also examined to determine whether they moderated the impact of intrusion type. Although, in the absence of

interviewer suggestions, younger children usually make more internal intrusions than older children, and internal intrusions increase over time (Roberts & Powell, 2001), the effects of age and retention interval have been attenuated in previous *suggestive* paradigms involving repeated events (see Powell et al., 1999).

Irrespective of the way in which the interviewer's suggestion was presented, we expected that most of the children's errors would be internal intrusions. A high rate of internal intrusion errors has been a consistent finding of past research (Roberts & Powell, 2001). Further, we expected that the target (final) occurrence would be less accurately recalled when experienced (non-target) compared to non-experienced details had been suggested in the biasing interview. If age and retention interval is found to impact the rate of intrusion errors, their effect is expected to be negligible and these factors were not expected to moderate the impact of interviewer suggestion.

EXPERIMENT 1

Method

Design

All children experienced six occurrences of an event, which involved unpredictable variations in the specific instantiations (versions) of items throughout the series. Subsequently, the children were given a biasing interview after either 3 days or 3 weeks. In this biasing interview, the children were asked whether particular instantiations of the memory items had been included in *any* occurrence of the event. For some items, an instantiation was suggested that had been included in one of the first five (non-target) occurrences, whereas for other items, instantiations were suggested that had not been included in any occurrence. The next day, the children were asked to recall the instantiation for each item that was included in the target (sixth and final) occurrence. The design

employed was a 2 (Age: 3-5 years vs. 6-8 years) x 2 (Delay: short vs. long) x 2 (Suggestion: experienced non-target instantiation vs. non-experienced instantiation) with the last factor being manipulated within-subjects.

Participants

The children were recruited through letters to parents that were distributed by one elementary school and three daycare centers in the Ithaca region of New York State. Only children whose parents gave informed consent participated. The sample consisted of 27 daycare children (M age = 54 months; SD = 7.68, age range = 40 to 66 months) and 35 elementary school children (M age = 85 months; SD in months = 7.14, age range = 76 to 103 months). Children in each age group were assigned to experimental conditions pseudo-randomly with the constraint that age (in months) and gender of participants were equated across the retention intervals.

Materials

Each occurrence of the event consisted of 12 memory items that were administered in the same temporal order, but varied in each occurrence across the series. For example, one of the items was a sticker. The children received a sticker in each occurrence, however the theme of the sticker differed across the occurrences. Each specific sticker was therefore referred to as an instantiation of the memory item 'sticker'. For six of the memory items, an experienced instantiation of the item was suggested in the biasing interview. While only one instantiation was suggested per memory item, instantiations were chosen from each of the six occurrences of the event. Thus one of the suggested experienced instantiations was from the target (final, to-be-recalled) occurrence of the event, whereas five suggested experienced instantiations were from non-target occurrences. For the remaining six memory items, a completely new detail was suggested in the biasing interview (i.e., an instantiation of the

item that was thematically related but had not been included in any occurrence of the event). Refer to Table 1 for the full range of instantiations associated with the 12 memory items that were included in this study.

Procedure

The Event

One person carried out the event with the assistance of the children's regular teacher. The six occurrences of the event were evenly spaced over three weeks and were always carried out at the same time of day. On the first occurrence, the confederate said "I've called it the Aussie Activities because some people in a place called Australia helped me to get all the things ready for what we are going to do today." Each occurrence represented various kinds of information (e.g., verbalizations, actions, objects, persons), and centered around several activities: Listening to a story, doing a puzzle, having a rest, getting a surprise, and getting refreshed. The structure of the event was similar across the occurrences; it included numerous fixed as well as variable items where a new instantiation represented the item in each occurrence across the series.

On the target (final) occurrence, the children wore a colourful badge during the activities to enable the interviewer to identify which occurrence of the repeated event was to be recalled. Teachers were instructed not to talk with the children about the activities outside the event or to inform them that they would later be interviewed about the event. No person other than the child's teacher, the administrator of the events, and the children were present in the room during the activities. Refer to Powell et al. (1999) for a full rationale of this design and more explicit detail regarding the procedure.

The Interviews

The children individually attended two separate interview sessions which were held in an isolated room at the school (not the room where the activities took place). All interviews were conducted by one person who used a standard list of questions and prompts for each child. The first interview was held either three days or three weeks after the final or single occurrence. The second interview was held one day after the first interview.

Biasing interview. The purpose of the first session was for the interviewer to suggest details (instantiations of items) that may have occurred in the event. The interviewer said, "I'm going to ask you some questions about the Aussie Activities and all you have to do is say 'yes' if it happened in the Aussie Activities and 'no' if it didn't happen. It's OK if you don't know the answers but it's really important that you do your best to tell me what you remember." The interviewer then showed a series of 12 props (one for each of the 12 memory items). For six of the 12 memory items, a new instantiation (referred to as a *non-experienced* instantiation) was shown that was not included in any occurrence of the event. For the remaining six memory items, an instantiation that occurred during the series was presented; one for each of the six occurrences. Thus, five of these six instantiations shown to the child were *non-target, experienced* instantiations. The final column of Table 1 presents the particular instantiation that was shown to the child in the biasing interview for each of the 12 memory items.

Recall interview. The aim of the second interview session was to elicit the children's recall of the target (final) occurrence, so that the effect of the biasing interview (Session 1) could be determined. A series of cued recall questions were asked; one question for each of the 12 memory items included in Table 1. For each item, the children were required to recall the instantiation that was included in the target (final) occurrence. Examples of cued-recall questions include; "What was the story about on that day?", "What was on your sticker that

day?" As in the first interview, the children were instructed to say "I don't know" if they did not know an answer. The importance of remembering 'the badge day' and not any other day was emphasized.

Coding

Interviews were audiotaped and transcribed verbatim for coding. Responses for the recall interview were coded separately for items where a non-experienced detail had been suggested in the biasing interview and the five items where an experienced non-target instantiation had been suggested in the biasing interview. Any instantiation reported by the child in response to a cued-recall question was assigned to one of five mutually exclusive categories as follows:

(i) Correct: When the instantiation from the target occurrence was reported (irrespective of what instantiation the interviewer had previously suggested).

(ii) Interviewer suggestion: When the instantiation that was suggested by the interviewer in the biasing interview was reported. Interviewer suggestions were explicitly coded for whether the suggestion was an experienced non-target or non-experienced instantiation.

(iii) Experienced (non-target) and not suggested: When an experienced, non-target instantiation was reported that had not been suggested by the interviewer in the biasing interview. Note that because only one non-target instantiation for each item was suggested in the biasing interview, there was four other not-suggested non-target instantiations that could be reported by the child in the recall interview.

(iv) Not experienced, not suggested: When the child reported an instantiation that was not included in the event and had not been suggested by the interviewer.

(v) Other responses: A small number of children also reported a detail from within the same occurrence or said “I don’t know” to a question. These responses were grouped together but were not analysed further. For completeness, their means are represented in the table.

Children were credited with identifying an experienced (non-target or correct) instantiation provided that they referred to the instantiation in such a way that it could not be confused with any other instantiation. For example, merely saying the story was about an animal was not sufficient because there were multiple stories about animals; the type of animal needed to be reported. All the transcripts were coded first by an experienced coder. A person who was not otherwise involved in the study then scored 15% of the transcripts representing a cross-section from all the conditions. Inter-coder agreement was at least 98% for all question types.

Results and Discussion

As indicated earlier, the recall interview consisted of five questions about items where an experienced (non-target) instantiation had been suggested in the biasing interview and six questions about items where a non-experienced suggestion had been made. Table 2 presents the mean proportion of responses to these questions that fell into the five response categories. Scores for each of the first two response categories were entered into a 2 (Age: 3-5 vs. 6-8-year olds) x 2 (Delay: 4 vs. 22 days) x 2 (Suggestion type in the biasing interview: non-experienced vs. experienced non-target instantiation) ANOVA with the last factor manipulated within subjects.

For the proportion of correct responses, there was one finding; a main effect of delay, $F(1, 58) = 4.30, p < .05, \eta_p^2 = .07$. Irrespective of the type of suggestion that was made in the biasing interview, a higher proportion of accurate responses in the recall interview were

provided at the shorter ($M = .31, SD = .20$) than the longer delay ($M = .22, SD = .14$). For the proportion of responses where the child repeated a suggestion previously made by the interviewer in the biasing interview, the results revealed a main effect of suggestion type, $F(1, 58) = 10.98, p < .01, \eta_p^2 = .16$. Children were more likely to repeat interviewer suggestions in the recall interview if they were experienced (non-target) instantiations ($M = .22, SD = .22$) compared to details that had not been experienced in the event ($M = .10, SD = .13$). Importantly, suggestion type was not found to interact with age or retention interval, $F_s < 1$.

Finally, to determine the degree to which the internal intrusion responses in the recall interview were repetitions of interviewer suggestions from the biasing interview, a 2 (Age: 3-5 vs. 6-8 year olds) x 2 (Delay: 4 vs. 22 days) x 2 (Internal intrusion type: suggested non-target instantiation vs. not suggested non-target instantiation) ANOVA was performed on the number of non-target instantiations mentioned by the child in the recall interview. This revealed a main effect of intrusion type, $F(1, 58) = 7.29, p < .01, \eta_p^2 = .11$, and a main effect of delay, $F(1, 58) = 7.60, p < .01, \eta_p^2 = .17$. Overall, there was a higher rate of internal intrusion errors that had not been previously suggested by the interviewer ($M = .35, SD = .25$) than those that had been suggested ($M = .22, SD = .22$). Further, internal intrusion errors were less likely to be reported at the shorter delay ($M = .24, SD = .13$) than the longer delay ($M = .33, SD = .12$).

In sum, this experiment demonstrated that when suggested details in the biasing interview are not specifically linked to any occurrence, children are more likely to repeat an interviewer's suggestion if it reflects an experienced instantiation compared to an instantiation that did not occur at all in the event. Accuracy in reporting target instantiations, however, is not affected by whether the interviewer's suggestion was experienced in the

event. Further, when reporting internal intrusion (experienced, non-target) errors, children are more likely to report non-suggested than suggested details. While accuracy declined over time, there were no effects involving age and the findings involving intrusion type did not interact with either age or delay. This latter result (the fact that previously experienced details are less likely to intrude if they were suggested in a prior recognition test) accords Fuzzy Trace Theory (FTT). Brainerd and his colleagues have observed this phenomenon and variously termed it “false recognition reversal” and “verbatim priming” (Brainerd, Reyna, & Kneer, 1995; Brainerd, Reyna, & Mojardin, 1999). The FTT principle that is operative is that cuing information on a recognition test that has been previously encountered (e.g., the previously experienced details in this experiment) causes correct verbatim traces of the exact details of their prior occurrence to be retrieved, allowing both children and adults to avoid falsely accepting those details as having been experienced in some other context.

EXPERIMENT 2

So far, the current research has established that children are more likely to repeat an interviewer’s suggestion about an occurrence of a repeated event if it relates to an experienced compared to a non-experienced detail. In Experiment 2, we sought to determine whether this finding can be replicated using a new event and sample (6-7 year olds). Further, we explored whether the findings are generalisable to a paradigm where presumptive cued-recall questions, as opposed to yes/no questions, are used in the biasing interview and where the suggestions in the biasing interview are clearly linked to the target occurrence. Prior research suggests that these modifications to the biasing interview would heighten the likelihood that children would succumb to the interviewers’ suggestions (see Greenstock & Pipe, 1996; Powell, Roberts & Thomson, 2000; Roberts, Lamb & Sternberg, 1999). Thus, it may be that the detrimental effect of suggesting experienced non-target (as opposed to non-

experienced) details is accentuated. Overall, we expected that with this stronger suggestibility paradigm, children's ability to accurately recall the final occurrence of the repeated event would be poorer for items where experienced non-target details had been suggested in the biasing interview compared to non-experienced details.

Method

Design

All children experienced four occurrences of an event that involved unpredictable variations in the specific instantiations of items throughout the series. Either three days or three weeks after the final occurrence, the children were given a biasing interview where the interviewer falsely presumed that certain instantiations of items had been included in the target (final) occurrence. Half of the instantiations that were falsely suggested in the biasing interview were not experienced in the event and half were experienced (non-target) instantiations. The day after the biasing interview, the children were asked to recall the particular instantiation for each item that was included in the target (final) occurrence. The design employed was a 2 (Delay: 4 vs. 22 days) x 2 (Interviewer suggestion: experienced non-target instantiation vs. non-experienced instantiation) with the last factor being manipulated within-subjects.

Participants

Children were recruited through letters to parents that were distributed by several primary (elementary) schools in the Melbourne metropolitan region of Australia. Only children whose parents gave informed consent participated. The sample consisted of 48 children (M age = 6 years, 8 months; SD in months = 3.83, age range = 6 years, 1 month to 7 years, 4 months). The children were randomly assigned to each of the retention intervals with the constraint that age (in months)

and gender of participants were equated and that each condition included children from a number of different classrooms.

Procedure and materials

The Event

The children participated in the event four times with each occurrence being evenly spaced over two weeks. The event, referred to as the ‘Deakin Activities’, comprised 16 target items that were administered in the same temporal order by a research assistant to groups of 18-20 children. While the particular items and instantiations were different to those included in Experiment 1, the event structure and the administration procedure was similar. As with Experiment 1, the children wore a distinctive badge during the final occurrence to designate the target occurrence. Further, all items varied each time, such that a new instantiation represented the item in each occurrence across the series. For example, children received a sticker in each occurrence, however the theme of the sticker differed across the occurrences. Refer to Table 3 for a full set of the target items and instantiations that were included in this experiment.

The Interviews

The children individually attended two interview sessions (a biasing and a recall interview), that were conducted by one person who used a standard list of questions and prompts for each child. The biasing interview took approximately 10 minutes to complete and was held either three days or three weeks after the final or single occurrence. The recall interview took approximately 30 minutes to complete and was held one day after the first interview.

Biasing interview. The purpose of the first session was for the interviewer to suggest instantiations that may have occurred in the event. After seeking an acknowledgement from

the children that they remembered the event, a series of 16 cued-recall questions (one for each target item) were asked whereby some of the questions introduced misleading information about the target occurrence. Four of the instantiations that were suggested in the biasing interview were true (i.e., they represented the target/final instantiation). These were not analysed; they were merely included so that not all of the suggestions were false. The remaining suggestions were false (i.e., not included in the target occurrence). Six of these suggestions referred to experienced (non-target) instantiations (two for each of the three non-target occurrences) and six referred to instantiations that were not experienced at all in the event. For example, if a child experienced occurrences CDBE (see Table 3), a corresponding question suggesting a non-experienced instantiation might be “What colour was the sticker of the rocket?” (when there was never a rocket sticker). A corresponding question suggesting an experienced (non-target) instantiation might be “What colour was the sticker of the apple?” (when the apple was in the first occurrence of the event).

Despite the fact that the number of occurrences was smaller in this study compared to Experiment 1, more extensive counterbalancing of items was incorporated into the design. Specifically, the order and choice of experienced and suggested instantiations varied among the children. Half the children (Group A) experienced Sets CDBE in that order, and Set A was used as the non-experienced suggested instantiations. The other group (Group B) experienced, in order, Sets ABDC and Set E was used for the non-experienced suggested instantiations. In addition, the items relating to interviewer suggested non-experienced versus experienced (non-target) instantiations were counterbalanced¹.

¹ For Group A, the non-experienced instantiations that were suggested in the biasing interview were assigned to items 3, 4, 6, 11, 14 and 15 and the suggested experienced non-target instantiations were assigned to items 2, 5, 9, 12, 13, and 16. The instantiations that were selected for these items came from occurrences 3, 1, 2, 2, 3, and 1 respectively. For Group B, the non-experienced instantiations that were suggested in the biasing interview were assigned to items 1, 5, 7, 13, 16 and 9 and the suggested experienced non-target instantiations were items 3, 6, 9, 8, 1, 11 and 14, with the specific instantiations drawn from occurrences 1, 3, 2, 2, 1, and 3 respectively.

Recall interview. The aim of the second interview session was to elicit the children's recall of the target (final) occurrence, so that the effect of the misleading suggestive questions in Session 1 could be examined across the conditions. The interviewer began by saying "Hi [child's name]. It's nice to see you again. You may remember that my name is [name] and I spoke to you yesterday about the Deakin activities. Do you remember that you told me about what happened in the Deakin Activities the day that you wore the different badge? Well you know what I did? I lost the tape with all of your answers. So I'd like to ask you again about what happened the day you wore the badge in the Deakin Activities. Just do your best to answer my questions and tell me what you remember about the day you wore the special badge." A series of 16 cued recall questions were asked; one question for each of the items included in the event (see Table 3). For each item, the child was required to recall the instantiation that was included in the target occurrence. Examples of cued-recall questions include; "What was the story about on that day?", "What was on your sticker that day?" The importance of remembering the badge day and not any other day was emphasised.

Coding

Interviews were audiotaped and transcribed verbatim for coding. For the recall interview, the children's responses were assigned to one of the same five categories that were used in Experiment 1. These response categories included; correct, interviewer suggestion (further noted by whether the suggestion was an experienced non-target or non-experienced instantiation), experienced (non-target) not suggested, not experienced not suggested, and other. Responses were coded separately for the six cued-recall questions where a non-experienced instantiation had been suggested in the biasing interview and the six cued-recall questions where an experienced non-target instantiation had been suggested in the biasing interview.

Results and Discussion

The numbers of responses that fell into the five response categories in the recall interview are displayed in Table 4. Note that these data only refer to items where a *false* (non-experienced or experienced non-target) instantiation had been reported in the biasing interview. Scores for each of the first two response categories were entered into a 2 (Delay: 4 vs. 22 days) x 2 (False suggestion: non-target experienced vs. non-experienced instantiation) ANOVA with the latter factor manipulated within subjects. For the correct responses (i.e., the number of instantiations reported by the child in the recall interview that did occur in the target occurrence), there was a main effect of suggestion type, $F(1, 33) = 5.63, p < .05, \eta_p^2 = .15$. Accuracy in recalling the target occurrence was greater when a non-experienced detail had been falsely suggested in the biasing interview ($M = 1.46, SD = 1.27$) compared to an experienced (non-target) detail ($M = 0.94, SD = 1.24$). There was also a main effect for delay, $F(1, 33) = 25.91, p < .001, \eta_p^2 = .44$. Children's responses about the target occurrence were more likely to be correct at the shorter delay ($M = 1.97, SD = 1.23$) compared to the longer delay ($M = 0.55, SD = 0.81$). There was no interaction between intrusion and delay, $F(1, 33) = 0.04, p = .84$.

When considering the number of times that a child reported an instantiation in the recall interview that had been previously suggested in the biasing interview (refer to Column 2, Table 4), the results revealed main effects for suggestion, $F(1, 33) = 74.61, p < .001, \eta_p^2 = .69$, and delay, $F(1,33) = 13.04, p < .001, \eta_p^2 = .28$. However there was no significant interaction involving these factors, $F(1,33) = 2.35, p = .14$. Interviewer suggestions that referred to experienced (non-target) instantiations ($M = 3.80, SD = 1.41$) were more likely to be repeated by the child in the memory interview than suggestions about non-experienced details ($M = 1.49, SD = 1.52$). Further, irrespective of the type of suggestion, the children

were more likely to repeat interviewer suggestions after the longer ($M = 3.24$, $SD = 1.35$) than the shorter delay ($M = 1.94$, $SD = 1.23$).

Next, to determine the degree to which the internal intrusion responses in the recall interview were repetitions of interviewer suggestions from the biasing interview, a 2 (Delay: 4 vs. 22 days) x 2 (Internal intrusion type: suggested non-target instantiation vs. not suggested non-target instantiation) ANOVA was performed on the number of intrusions mentioned by the child. This analysis revealed a main effect of intrusion, $F(1, 33) = 94.38$, $p < .001$, $\eta_p^2 = .74$. Internal intrusion errors (i.e., reports of experienced, non-target instantiations) were more likely to have been suggested by the interviewer ($M = 3.80$, $SD = 1.41$) than not suggested ($M = 0.94$, $SD = 0.80$). The results also revealed an effect of delay, $F(1, 33) = 21.24$, $p < .001$, $\eta_p^2 = .39$, which was modified by an interaction of intrusion and delay, $F(1, 33) = 10.00$, $p < .01$, $\eta_p^2 = .23$. When the effect of delay was analysed separately for each intrusion type, it was revealed that the reporting of internal intrusion errors (non-target instantiations) that had been previously suggested by the interviewer increased over time (M shorter delay = 2.88, $SD = 1.20$; M longer delay = 4.58, $SD = 1.07$; $F(1, 33) = 19.64$, $p < .001$). However, the retention interval had no effect on the proportion of internal intrusion errors that had not been previously suggested by the interviewer (M shorter delay = 1.00, $SD = 0.82$; M longer delay = 0.89, $SD = 0.81$; $F(1, 33) = 0.15$, $p = .71$).

In summary, when recalling the final occurrence of the event, the children were more likely to report a previous suggestion if it referred to an experienced (non-target) detail compared to a non-experienced detail. However, unlike Experiment 1 where the suggestions were not linked to the target occurrence, a significant effect of suggestion type was found on the children's ability to recall the target occurrence. Specifically, the negative impact of experienced (non-target) suggestions on children's ability to discriminate between the

occurrences was greater than that for non-experienced suggestions. The findings involving suggestion type did not interact with retention interval.

EXPERIMENT 3

The final experiment provided yet a different examination of the impact of experienced versus non-experienced suggestive details on children's recall of the final occurrence of a repeated event. The paradigm employed was highly similar to that of Experiment 2 except for one modification. Instead of using a unique contextual cue (the special badge) to label the final occurrence in the biasing and memory interviews, the interviewer merely used a temporal cue (the phrase 'last time').

There are two reasons for removing the contextual cue. First, in many investigative interviews involving repeated offences (e.g., child familial abuse), the interviewer does not often have a distinct label for the target occurrence – the use of temporal terms such as 'first' and 'last' is quite common (Guadagno, 2005). Second, Pearse, Powell and Thomson (2003) showed that internal intrusion errors when recalling a final occurrence of a repeated event were reduced when a single contextual cue was combined with a temporal cue compared to a situation in which the temporal cue was provided on its own. Their study utilised a single interview containing non-leading open-ended questions and an age group (i.e., 6-7 year olds) who would have been able to comprehend the term 'last' (Bangs, 1990; Richards & Hawpe, 1981). If temporal (compared to contextual) cues reduce children's ability to keep their memory of an occurrence 'intact' and distinct from other occurrences, then the use of these cues in the memory interview should heighten reporting of suggested experienced (compared to suggested non-experienced) details, possibly reducing the accuracy of their recall of the target instantiation. However, it needs to be considered that the strength of the suggestion in the biasing interview would also be reduced. As with Experiment 1, a weak suggestibility

paradigm may result in a null finding of suggestion type on the number of correct details recalled about the target occurrence in the memory interview.

Method

The sample consisted of 32 children (M age = 6 years, 8 months; SD in months = 3.93, age range = 6 years, 2 months to 7 years, 5 months). The event, item set, recruitment procedure and interview format was the same as that used in Experiment 2 except for two modifications. In this experiment, only the shorter retention interval was included. Further, the interviewer did not refer to the special badge that the children wore when asking them to recall what happened in the final occurrence. The label ‘the last time’ was solely used to refer to the target occurrence in both the biasing and memory interviews.

Results

The number of responses (out of 6) that fell into the five response categories in the recall interview are displayed in Table 5. Scores for each of the first two response categories were entered into one-way repeated measures ANOVAs to compare the effect of interviewer suggestions regarding experienced (non-target) instantiations versus non-experienced instantiations on children’s recall of the target occurrence. For the correct responses, there was a main effect of suggestion, $F(1,15) = 7.64$, $p < .05$, $\eta_p^2 = .34$. Accuracy was greater for questions regarding items where a non-experienced instantiation had been presented in the biasing interview ($M = 2.56$, $SD = 1.50$) compared to an experienced (non-target) instantiation ($M = 2.00$, $SD = 1.41$). When considering the number of times a child reported an instantiation in the recall interview that had been previously suggested by the interviewer, the results revealed a main effect of suggestion type, $F(1, 15) = 17.93$, $p < .001$, $\eta_p^2 = .54$. Interviewer suggestions were more likely to be repeated by the child in the memory interview if they referred to an experienced non-target instantiation ($M = 2.44$, $SD = 1.03$) compared to

a non-experienced instantiation ($M = 0.69$, $SD = 0.95$). Finally, a one-way repeated measure ANOVA was performed to compare responses for experienced items where suggested non-target instantiation versus not suggested non-target instantiation was reported. Specifically, this analysis revealed that when children reported an experienced, non-target instantiation, the instantiation was more likely to have been suggested by the interviewer in the biasing interview ($M = 2.44$, $SD = 1.03$) than not suggested ($M = 0.69$, $SD = .70$), $F(1, 15) = 29.40$, $p < .001$, $\eta_p^2 = .66$.

In sum, the pattern of results for this experiment was entirely consistent with the findings of Experiment 2. Irrespective of the fact that a temporal cue was solely used to label the target occurrence, the children were still more likely to repeat an interviewer's suggestion if it reflected an experienced (non-target) instantiation compared to a non-experienced instantiation². Importantly, suggestions about experienced non-target instantiations had a more potent negative effect on children's ability to discriminate between the occurrences than suggestions about non-experienced instantiations.

GENERAL DISCUSSION

The three experiments reported in this paper explored whether suggestions about experienced (non-target) details made by an interviewer in a biasing interview are more detrimental than suggestions about non-experienced details on children's recall of an occurrence of a repeated event. We reasoned that because the rejection of an experienced (non-target) detail cannot be made on the basis of content alone (i.e., the children were required to monitor the *sources* of experienced details) suggestibility would be higher for

² It needs to be kept in mind that these findings may not generalise to a situation where a longer retention interval is used, or where there are no major contextual differences between the target and non-target occurrences. Even though the interviewer solely used a temporal cue to label the target occurrence, a unique contextual cue (i.e., the distinctive badge) was still included in that occurrence. Further, subsequent analyses revealed that the effect of contextual cue may have been negligible at this short retention interval. A comparison of the absolute level of correct recall and suggestibility across the participants in Experiment 2 and Experiment 3 revealed no significant differences on any of the variables.

these details compared to non-experienced details. In most part, our findings supported this hypothesis. Across all experiments, and irrespective of the child's age and the retention interval, interviewer suggestions were more likely to be reported by the child if they referred to experienced (non-target) instantiations. This finding cannot be explained *entirely* by a natural tendency of children to report internal intrusion errors (i.e., experienced instantiations) per se. In Experiments 2 and 3, when internal intrusion errors were reported in the recall interview, they were more likely to be details that had been previously suggested by the interviewer in the biasing interview than those that had not been previously mentioned at all.

Two other findings were consistent with our initial hypotheses. First, suggestions about experienced non-target details were more likely than suggestions about non-experienced details to reduce the accuracy of children's reporting of which details were included in the target occurrence of the event. Interestingly, this was found to be the case in Experiments 2 and 3 but not Experiment 1. In Experiment 1, suggestion type had no impact on children's identification of the target details. While a definitive explanation can not be offered for the null effects in Experiment 1 (this experiment varied from the other experiments on many dimensions), one likely explanation relates to the fact that Experiment 1 utilised a less potent suggestibility paradigm. That is, the suggestions in Experiment 1 were not linked to the occurrence and the interviewer did not presume that the false information had occurred. Prior research has demonstrated that these two factors would have decreased the impact of the suggestive details on children's subsequent false event reports (see Greenstock & Pipe, 1996; Powell, Roberts & Thomson, 2000; Roberts, Lamb & Sternberg, 1999) and the findings provided clear evidence to support lower suggestibility effects in Experiment 1. Specifically, the rate of internal intrusion errors that had been suggested by the

interviewer was lower ($M = .22$) in this experiment than the rate of internal intrusion errors that had not been suggested ($M = .35$). This pattern is the inverse of that observed in Experiments 2 and 3 where internal intrusion errors were more likely to have been suggested by the interviewer previously. Finally, no interactions in the current study were found between age or delay and the type of suggestion (non-experienced versus experienced non-target instantiation) in the biasing interview. This supports previous findings where the effect of age and delay have been reduced in *suggestive* paradigms involving repeated events (Powell et al., 1999). The current study showed that this attenuation occurs irrespective of the type of suggestion (experienced versus non-experienced).

Overall, the current findings have several implications for researchers, investigative interviewers, and legal practitioners. From a theoretical perspective these findings make an important contribution to the literature because most prior research on the impact of repeated experience on children's suggestibility has focused on how the presentation of *non-experienced* details affects recall of an occurrence. It could be argued, therefore, that this prior work has underestimated children's susceptibility to interviewer suggestions after repeated experience. In fact, several prior studies on repeated events has portrayed children as being quite resistant to interviewer suggestions, even when recalling event details that had varied across the occurrences. For example, the reporting of external (non-experienced) intrusion errors has been found to be consistently lower compared to children who experience a single event (Powell & Thomson, 1996; Powell et al., 1999). Further, in studies that used similar suggestibility paradigms and interview procedures to those in Experiments 2 and 3, repeated experience has had a negligible effect on the reporting of interviewer suggestions about non-experienced event details from the biasing interview (Powell et al., 1999; Powell et al., 2000; Powell & Roberts, 2002). The current research clearly shows that the findings of prior work

may well have differed if the suggestions about the repeated event had referred to experienced (non-target) details. This contrast makes sense from a Fuzzy Trace Theory perspective because the ability to discriminate between separate occurrences of a repeated event depends critically on the rejection of verbatim recollections (i.e., the verbatim episodic details differ while the gist remains the same), whereas discriminating between non-experienced versus experienced events relies on *both* verbatim and gist recollections. Brainerd and his colleagues have shown that the recollection rejection parameter in their model, T_{rd} (the probability of correct rejection on the basis of recollection of corresponding target presentations) increases as a function of repetition of events but decreases as a function of the presentation of misinformation (Brainerd, Reyna, Wright & Mojardin, 2003). In other words, suggestions that are consistent with the gist of what was experienced are more likely to be accepted than suggestions that are not consistent, *unless* the original verbatim trace is reinstated.

The contrast also makes sense from a source-monitoring perspective. Source-monitoring theory implies that children's reporting of experienced suggestions would be higher than non-experienced suggestions because consideration of the interviewer's suggestions at the time of the biasing interview provides an opportunity for the interviewee to rehearse information stored in relation to various instantiations. Such rehearsal would increase the vividness of memory traces for experienced-suggested details, thus making these details appear more recent at the time of the memory interview (Powell & Thomson, 1997b). Conversely, an interviewer's suggestion about a detail that was not actually experienced, may lead to records indicating that the suggested detail is new. These cognitive records, together with a lack of perceptual information, may reduce the likelihood that the child will report the non-experienced detail in the memory interview.

Another contribution of this research is that it has highlighted the potential danger of several known forensic interview practices. In normal legal proceedings, for an alleged offender to be charged and convicted in relation to a repeated offence, at least one specific occurrence must be identified with the degree of precision that was required in the current experiments (*S v R*, 1989). We know from prior research that suggestions about experienced (non-target) details are not uncommon in police interviews involving children who have alleged repeated offences. There are two contexts in which such suggestions occur. First, interviewers sometimes make presumptions about the structure of the event by directly linking a previously-mentioned detail to a particular occurrence of the offence without first clarifying whether the presumption is correct (Guadagno, 2005). Second, interviewers sometimes shift focus between to-be-recalled occurrences without providing appropriate verbal cues to indicate that they have done so. In this way, interviewers sometimes *inadvertently* link a particular detail to an occurrence, due to a lack of clarity about which occurrence is being referred to (Guadagno, 2005).

Any errors in a child's account of a repeated offence, irrespective of whether they relate to temporal or content details, decrease the risk of successful prosecution. If a child accurately describes an incident of abuse but confuses the time and place of the incident with another similar incident, the perpetrator may be able to provide an alibi and be exonerated even though the child may be truthfully relaying abuse that had actually occurred at some point in the past. Like errors related to content, temporal confusion errors would be minimised if interviewers were effectively trained to; avoid making presumptions about the event, exhaust an account of one occurrence before moving the child's focus to another occurrence, and utilise open-ended questions where possible. Because open-ended questions, by definition, encourage elaborate responses and are generally broad in focus (Poole &

Lamb, 1998), they reduce the risk that the interviewer will raise specific details. This in turn, reduces the risk of contamination from misleading information. However, it is unlikely that questioning about the specific sources of different event details can be avoided entirely, even among interviewers who are competent in maintaining open-ended questions. One of the effects of repeated experience is that it enhances the recall of fixed or general event features at the expense of a loss in memory for specific details that were particular to one occurrence (Farrar & Goodman, 1990; Husdon, 1990; Powell & Thomson, 1996). A reduction in specificity of detail is particularly common among young children (e.g., preschoolers), for highly frequent and similar events, and after long delays in time (see Roberts & Powell, 2001 for review).

Unfortunately, it is not yet possible to make specific recommendations regarding how interviewers can assist children to discriminate between separate occurrences of a repeated event. The development of further interview guidelines is dependent on the degree to which children are aware of differences between occurrences. Further, it depends on how effectively children can generate labels that uniquely identify an occurrence and thereby remove ambiguity regarding which occurrence is under discussion. Currently there is no published research that has addressed each of these aspects. In the absence of such research, interviewers will obviously continue to struggle to accommodate the needs of child witnesses while eliciting highly specific evidence that is required by law to prove a case of abuse that occurred on more than one occasion. In light of (a) the limited research in this area, (b) the tremendous difficulties children experience when providing evidence about repeated offences, and (c) increasing concerns within the courtroom regarding children's susceptibility to interviewer suggestion (Ceci & Friedman, 2000), the importance of further research on this issue cannot be overestimated.

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Table 1

Instantiations of items across the event and the instantiation that was suggested in the biasing interview (Experiment 1)

Item	Occurrences						Suggestion
	1	2	3	4	5	6	
Children sit on a mat	board	bag	bubblewrap	blanket	foil	sheet	foil
Colour of leader's cloak	red	yellow	black	purple	white	blue	green
Reason Koala was kept awake	kangaroo sneezing	goanna hiccups	kookaburra laughing	taz. tiger coughing	dingo howling	anteater eating	wombat snoring
Warm-up exercise	run	wiggle	touch toes	jump	dance	clap	hop
Source of story*	cupboard	leader wrote	posted	library	student left	gift	gift
Content of story	police	sea creature	easter	vacation	supercat	elephant	easter
Person who holds pictures	Child A	Child B	Child C	Child D	Child E	Child F	Child B
Puzzle of clown	in car	banjo	eating	wand	balancing	juggling	tightrope
Music scene for resting	beach	kites	birds	rain	cooking	park	beach
Part of body is relaxed	legs	nose	stomach	shoulder	neck	arms	head
Method of getting refreshed	wet one	fan	handcream	lip balm	cool drink	bucket	facespray
Theme of sticker	clouds	dinosaur	snowman	flag	hat	ball	flag

Note: The analyses only included false suggestions (experienced non-target as well as non-experienced instantiations). Therefore the source of the story was omitted.

Table 2

Mean proportion of responses that fell into the five response categories in the memory interview (Experiment 1)

Condition	Type of instantiation reported by the child				
	Correct (i.e., target instantiation)	Interviewer suggestion	Experienced (non-target) not suggested	Non- experienced not suggested	Other
Non-experienced instantiation suggested in biasing interview					
3- to 5-year-olds					
Short delay ($N = 14$)	.27 (.17)	.13 (.13)	.36 (.24)	.01 (.04)	.23 (.30)
Long delay ($N = 13$)	.19 (.18)	.13 (.14)	.46 (.25)	.03 (.06)	.19 (.22)
6- to 8-year-olds					
Short delay ($N = 18$)	.32 (.22)	.07 (.10)	.43 (.24)	.06 (.16)	.12 (.20)
Long delay ($N = 17$)	.22 (.15)	.10 (.13)	.65 (.22)	.01 (.04)	.03 (.07)
Experienced (non-target) instantiation suggested in biasing interview					
3- to 5-year-olds					
Short delay ($N = 14$)	.30 (.23)	.14 (.18)	.31 (.19)	.01 (.05)	.23 (.33)
Long delay ($N = 13$)	.20 (.20)	.29 (.25)	.32 (.19)	.02 (.06)	.17 (.30)
6- to 8-year-olds					
Short delay ($N = 18$)	.33 (.26)	.22 (.23)	.29 (.22)	.03 (.08)	.12 (.16)
Long delay ($N = 17$)	.26 (.18)	.22 (.20)	.48 (.32)	.00 (.00)	.05 (.09)

Note. Standard deviations appear in parentheses.

Table 3.

Full set of target items and instantiations (Experiment 2).

Item	Instantiation				
	A	B	C	D	E
Children sit on X	cardboard	rubber mat	garbage bag	white sheet	newspaper
Cloak of leader	red	yellow	white	blue	green
Koala's name	boo	kip	pop	stan	jo
Noisy animal	kangaroo	goanna	kookaburra	dingo	wombat
Warm-up activity	run	wiggle	touch toes	jump	dance
Source of story	cupboard	leader wrote	posted	library	present
Content of story	police	sea creature	easter	supercat	elephant
Child who holds pictures	Child A	Child B	Child C	Child D	Child E
Utensil to note who child is	pencil	crayon	chalk	texta	lipstick
Puzzle of clown	driving car	eating cakes	balancing ball	juggling	tightrope
Music/scene for resting	beach	kites	birds	rain	playground
Part of body is relaxed	legs	nose	stomach	arms	ears
Method of getting refreshed	baby wipe	fan	handcream	face spray	cool drink
Theme of sticker	rocket	dinosaur	apple	flag	ball
Container with stickers	box	purse	envelope	jar	basket

Next stop for
assistant

movie

walk dog

hospital

party

holiday

Table 4.

Mean number of responses (out of 6) that fell into the five response categories in the memory interview (Experiment 2)

Condition	Type of instantiation reported by the child				
	Correct (i.e., target instantiation)	Interviewer suggestion	Experienced (non-target) not suggested	Non- experienced not suggested	Other
Non-experienced instantiation suggested in biasing interview					
Short delay ($N = 16$)	2.25 (1.06)	1.00 (1.26)	1.88 (1.20)	0.44 (0.73)	0.44 (0.81)
Long delay ($N = 19$)	0.79 (1.03)	1.89 (1.63)	2.53 (1.39)	0.16 (0.37)	0.63 (0.96)
Experienced (non-target) instantiation suggested in biasing interview					
Short delay ($N = 16$)	1.69 (1.40)	2.88 (1.20)	1.00 (0.82)	0.06 (0.25)	0.37 (0.62)
Long delay ($N = 19$)	0.32 (0.58)	4.58 (1.07)	0.89 (0.81)	0.16 (0.37)	0.05 (0.23)

Note. Standard deviations appear in parentheses. Note that this table only includes responses to questions where a false (non-experienced or non-target) instantiation was included in the event.

Table 5.

Mean number of responses (out of 6) that fell into the five response categories in the memory interview (Experiment 3)

Instantiation suggested in biasing interview	N	Type of instantiation reported by the child				
		Correct (i.e., target instantiation)	Interviewer suggestion	Experienced (non-target) not suggested	Non-experienced not suggested	Other
Non-experienced	16	2.56 (1.50)	0.69 (0.95)	2.06 (1.34)	0.13 (0.34)	0.56 (1.03)
Experienced non-target	16	2.00 (1.41)	2.44 (1.03)	0.69 (0.70)	0.13 (0.34)	0.75 (0.77)

Note. Standard deviations appear in parentheses. Note that this table only includes responses to questions where a false (non-experienced or non-target) instantiation was included in the event.