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Simultaneous Lineups, Sequential Lineups, and Showups: Eyewitness Identification Decisions of Adults and Children

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Two experiments were conducted comparing the identification accuracy of children aged 3–15 years (N = 307) and undergraduates (N = 384) using target-present and target-absent simultaneous and sequential lineups and showups. Correct identification rates tended not to vary across either age of subject or identification procedure. However, children show a significant tendency to guess as indicated by their lower rate of correct rejection when the target is absent. The tendency for children to make false positive choices was particularly evident with showups.

Sexual abuse of children in combination with changes of attitudes toward children as witnesses has increased the likelihood of children testifying in court. During the past 15 years, research on children as witnesses has increased (Ceci & Bruck, 1993). The majority of the research has examined children's memory for and report of events (e.g., Leippe, Manion, & Romanczyk, 1991). Much less research has addressed children's ability to identify strangers. Parker reported that children were more likely than adults to identify innocent people when confronted with an identification task (Parker & Carranza, 1989; Parker & Ryan, 1993). Thus, children are prone to making either false identifications leading to wrongful convictions or foil selections discrediting children as witnesses. Employing identification procedures that increase correct rejections may lead to increased identification accuracy of child witnesses as well as increased credibility of children's identification evidence.

The adult identification literature has addressed the issue of false identification extensively. Studies revealed that lineup biases (e.g., use of foils dissimilar to the suspect, instructions stating that the criminal is in the lineup, dressing only the suspect in clothing similar to that described as worn by the criminal) increase the likelihood of false identification of innocent suspects (Lindsay & Wells, 1980; Lindsay, Wallbrigde, & Drennan, 1987; Malpass & Devine, 1981). Poor foils and clothing

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bias make the suspect stand out relative to the other lineup members while biased instructions directly suggest that it would be an error not to select some one. These findings have all been interpreted as the result of witnesses using relative judgments, i.e., witnesses selecting the lineup member who most closely resembled their memory of the criminal (Lindsay & Wells, 1985; Wells, 1984, 1993).

Presenting witnesses with all lineup members in view at the same time (simultaneous lineup) allows, and possibly encourages, the use of relative judgments. When the criminal is present, this approach may be effective since the guilty suspect is more likely than any other lineup member to resemble the witness' memory of the criminal. However, when the criminal is absent from the lineup, the witness is still likely to identify some one, namely the lineup member who most closely resembles their memory of the criminal. Presenting lineup members one at a time (sequential lineup) has been suggested as a means of reducing reliance on relative judgment (Cutler & Penrod, 1988; Lindsay, Lea, & Fulford, 1991; Lindsay et al., 1991; Lindsay & Wells, 1985). Compared to simultaneous presentation, sequential lineup presentation does not significantly influence the correct identification rate but does significantly reduce the rate of false identification by increasing the probability that the lineup will be correctly rejected. The increase in target-absent lineup rejections is believed to result from witnesses comparing each lineup member to their memory of the criminal, i.e., because witnesses used an absolute judgment strategy (Lindsay & Wells, 1985). If this procedure worked as well with children as it did with adults, concerns about the identification accuracy of children could be greatly reduced.

Parker and Ryan (1993) found that, without training, adults and children on average made more correct rejections from sequential lineups (.54) as compared to simultaneous lineups (.29). They also tested the effects of "training" witnesses regarding correct responses. Providing feedback indicating that "none of them" is the appropriate response to a target-absent lineup was expected to and did increase correct rejections of absent lineups, presumably by freeing witnesses from perceived demands to identify someone. Training reduced children's errors with simultaneous absent lineups to .50 from .84 without training. Lindsay et al. (1995) replicated the Parker and Ryan (1993) study and, consistent with the original study, found that sequential lineups failed to significantly increase correct lineup rejections by children and that there was a clear tendency for children to guess when confronted with identification tasks. Lindsay et al. (1994) found that children (.18) were significantly less likely to reject absent lineups than were adults (.51) and children were only slightly more likely to reject the lineup when it was presented sequentially (.25) than simultaneously (.12). Adults were much more likely to correctly reject a sequential (.76) than a simultaneous lineup (.26). Unfortunately, the one aspect of Parker and Ryan's data that did not replicate was their most positive result. Training increased neither correct rejections nor correct identifications by children. In fact, trained subjects (.29) were slightly less accurate than untrained subjects (.40). Both studies also reported a tendency for children to be more likely than adults to select multiple lineup members. Training and sequential lineups do not appear to be the solution to the problem of children making selections from criminal-absent lineups.

Neither training nor sequential lineups eliminated the problems of low correct rejection rate and multiple choices by children.

SHOWUPS

A third identification procedure, the confrontation or showup, has recently received attention as an alternative to lineups. Rather than presenting witnesses with an array or sequence of people or pictures, the showup consists of the presentation of a single individual, the suspect. The witness is asked to indicate if the suspect is or is not the criminal. Such a request calls for a comparison of the suspect to the witness' memory of the criminal. If, as Lindsay and Wells (1985) suggested, the use of absolute judgments reduces false identifications by increasing the rate of criminal-absent lineup rejection, then the showup may work much like a sequential lineup with a nominal size of one. If so, then showups may increase correct rejections. Since only a single person or photograph is shown to the witness, showups are certain to eliminate the problem of multiple selections. The use of showups, particularly with child witnesses, may seem attractive.

Despite the opinion of many experts that small lineups and/or showups are dangerous (e.g., Kassin, Ellsworth, & Smith, 1989), little data existed until very recently about their impact on identification accuracy. Nosworthy and Lindsay (1990) compared the accuracy of identification decisions across lineups varying in nominal size from 4 to 20 and found no significant differences in the rates of either correct or false identification. However, they did not examine smaller lineups and could draw no conclusions regarding showups. Wagenaar and Veefkind (1992) compared identification accuracy across one, two, six, and ten face arrays and found that correct identification rate varied inconsistently with lineup size while correct rejections were about half as likely from the one and two person procedures as from the six and ten person lineups. Gonzalez, Ellsworth, and Pembroke (1993) conducted two experiments comparing identification performance on lineups vs. showups. In both experiments, the rate of choosing from a criminal-absent, simultaneous lineup was approximately six times the rate of choosing from a criminal-absent showup. Unfortunately, a similar reluctance to choose applied when the criminal was present resulting in substantially higher rates of correct identification from lineups as compared to showups. Yarmey, Yarmey, and Yarmey (1994) conducted a field study comparing identification performance on simultaneous lineups and showups. They reported no significant differences in the rates of either correct identifications or correct rejections. Beal, Schmitt, and Dekle (1995; also Dekle, Beal, Elliott, & Huneycutt, 1993) compared identification performance of children (5 and 6 years old) and adults with simultaneous lineups and showups. Children were more likely than adults to correctly identify the criminal from either lineups or showups but also significantly less likely to correctly reject lineups when the criminal was absent. Correct rejections were much less likely from target-absent lineups than from target-absent showups. From the data reviewed it would appear that, contrary to earlier speculation, showups produced more rather than less correct rejections.

The interpretation of correct rejection rates from target-absent lineups and showups deserves some thought. One of the functions of lineup foils is to draw choices away from innocent suspects. A false positive from a criminal-absent lineup may or may not be an identification of the innocent suspect. If the suspect is innocent and the lineup has been constructed properly, with a single suspect and reasonable foils, there is no more reason for the suspect to be identified than any other lineup member (Lindsay, Martin, & Webber, 1994; Luus & Wells, 1991; Wells, 1988; Wells, Rydell, & Seelau, 1993; Wells & Turtle, 1986). As a result, the rate of false suspect identifications from an absent lineup can be estimated as the proportion of false positive selections divided by the nominal size of the lineup. The same logic can be applied to the showup. However, since the nominal size of a showup is one, the false positive selection rate and the false identification rate are the same.

Applying this logic to the existing literature leads to a different conclusion about the potential value of showups. Dekle et al. (1993) obtained a 33% false positive selection rate for adults for a six-picture, target-absent lineup and 4% for the showup. The estimated false identification rates would then be 5.5% from the lineup and 4% from the showup. For children, the lineup generated 61% false positive selections for an estimated false identification rate of about 10% while the showup produced 33% choices and false identifications. Compared to simultaneous lineups, showups in the Dekle et al. study produced substantially higher estimated false identification rates for the children but not for the adults. This result is consistent with the data from other studies as well. Beal et al. (1995) obtained 8% estimated false identifications from lineups but 25% from showups with children as witnesses. Gonzalez et al. (1993), using only adult subjects, obtain comparable false identification rates for lineups and showups in both of their experiments (8% vs. 7% in experiment 1 and 4% vs. 3% in experiment 2). Finally, Yarmey et al. (1994) obtained 7% false identifications from lineups and 12% from showups again with adult subjects. The reader is cautioned that all of the lineup false identification rates reported here are adjusted by dividing the total false positive rate reported by the nominal size of the target-absent lineups used and thus differ from the rates as reported in the original studies.

Such estimated false identification rates have not been the norm in prior research. Instead, previous studies frequently used a substitute for the criminal who was selected and designated the "innocent" suspect. Normally, these innocent suspects have been selected to be the person in the criminal-absent lineup that most closely resembled the criminal. Only choices of that person were considered false identifications (e.g., Lindsay & Wells, 1980).[2] However, the use of highly similar substitutes risks overestimating false identification rates because innocent suspects in the real world need not be highly similar to the criminal. Many suspects will be

[2]If the researcher intends to compare rates of identification or nonidentification across the present vs. absent versions of the lineups (e.g., for a diagnosticity analysis, Wells & Lindsay, 1980), substituting a specific innocent suspect for the criminal avoids confounded comparisons since both the guilty and innocent suspects are surrounded by the same foils. This is not true for any other picture in the lineups. Another advantage arises if the purpose of the research is to demonstrate that one identification procedure is better than another at reducing false identifications. It can be useful to show that such superiority holds even when a strong resemblance exists between the innocent suspect and the criminal.

arrested for reasons other than physical similarity to the criminal (e.g., prior record for similar offenses or being found in the area of the crime shortly after the event). The challenge in the current research was to assess both the relative rates of false identification across procedures as well as the absolute rate for showups. To do this, we used every member of the criminal-absent lineup in the absent showup condition. This permitted an examination of both the overall rate of choosing with each procedure as well as the rate of selection of each innocent individual. We conducted two experiments exploring the performance of children and adults using showups, simultaneous lineups, and sequential lineups. Both studies employed live presentation of the target.

EXPERIMENT 1

The first experiment employed elementary school children and undergraduates. Given previous findings, we expected to replicate the superior identification performance of adults in criminal-absent conditions, especially with sequential lineups. We expected children to be particularly prone to guessing and thus to have lower rates of correct rejection, particularly with showups. Children were expected to make more correct rejections of showups than lineups but to select each innocent person more frequently from showups than lineups. Adults were expected to show approximately equal rates of identifying innocent people from simultaneous lineups and showups but a lower rate from sequential lineups. The rate of correct identification was not predicted to vary as a function of identification procedure.

Participants. Elementary school students in Kingston, Ontario (N = 250) were recruited from the fourth through eighth grades (age 8–15 years, M = 10.8, SD = 1.51). Mean ages across the grades were 9.0, 10.1, 11.1, 12.2, and 13.4 with standard deviations of .28, .24, .40, .44, and .61 for the fourth through eighth grades, respectively. Undergraduates (N = 304) were recruited from the introductory psychology subject pool of Queen's University and received additional marks for their participation.

Procedure. The elementary school students were participating in a survey of violence and aggression in the schools. The data were collected at the students' schools, usually in their classrooms and always in groups of up to 20. A general introduction to the session was provided by a White, male graduate student who introduced himself as "Owen, a graduate student from Queen's University." Owen wrote his name in large letters on the blackboard and commented on the nature of the questionnaires that would be handed out. After approximately 1 minute of this introduction, Owen left. The experimenter then informed the children that they would be asked to attempt to identify Owen from pictures. For the undergraduate subjects, Owen was introduced by course instructors at the beginning of classes. Owen gave a brief speech designed to be the same duration as the introductory remarks in the elementary schools. He wrote his name on the board and stated that he was a graduate student in psychology asking for volunteers to participate in research and provided a general but vague description of the research (memory

and person perception). When Owen left, the experimenter informed the subjects that they would be asked to attempt to identify Owen from pictures.

All lineup materials were photocopies of black-and-white, head-and-shoulder photographs of White males similar in appearance to Owen. Students were instructed in all conditions that a picture of Owen may or may not be included in the materials and that they did not have to choose anyone. Students were asked to refrain from looking at any materials other than the ones handed to them and not to discuss the experiment until everyone in the class had completed the task. All sessions involved several research assistants so that materials were distributed quickly and the students were monitored while answering the questions. This also allowed us to assist elementary students who were unable to read the materials without assistance.

Simultaneous lineups and showups were on a single page while the sequential lineups included a set of seven pages stapled together with an instruction page on top and a picture of one face on each of the remaining pages. Because the subjects were participating in groups, all students in a session received either the multipage (sequential lineup) conditions or the single-page (showup and simultaneous lineup) conditions. Instructions were given to the entire group before any student attempted the identification. In the single-page conditions, the students were told to answer the question on the bottom of the page by circling the appropriate response. In the showup conditions, the question was "Is this a picture of Owen? YES/NO." In the simultaneous lineup conditions, the question was "Is Owen's picture one of these? YES/NO," and was followed by instructions to circle Owen's picture if the student responded yes. Students also rated confidence on a 7-point scale where 1 was labeled "not at all confident" and 7 was labeled "absolutely confident."

In the sequential conditions the students were instructed to answer all questions on the first page before looking at the next page, then to proceed to the second page and answer all questions on that page, etc. until all of the pages were completed. It was emphasized that the students should never look forward in the pages and that once a page was completed they were not to go back to that page either to look at it or to change any of their answers. Each page of the sequential lineup was identical to a showup (i.e., a single face with the same question and confidence scale as for the showup).

Design. The study employed a 3 (age of witness: 8- to 10-year-old children, 11- to 15-year-old children, adult) by 3 (identification procedure: simultaneous lineup, sequential lineup, showup) by 2 (presence or absence of the confederate in the identification materials) between subjects design.

Data Analyses. Data analyses began with overall chi-square calculations followed by breakdowns into component effects as recommended by Winer (1971).[3]

[3]There is some dispute about the appropriateness of analyzing data from criminal-present and -absent conditions in a single analysis. Although responses in both conditions can be classified as correct vs. incorrect, correct rejections are failures to choose anyone while correct identifications require selection of the target. Thus, choosing and accuracy are confounded. Different psychological processes may control these decisions and separate analyses may be warranted (our preference). For example, correct identification rates may be determined more by factors associated with the event such as duration while false identification rates may be determined more by retrieval factors such as the nature of the identification procedure. However, we provide an initial chi-square comparing correct decision rates in all conditions, present and absent, followed by simple effects analyses.

Because the data are reported as proportions, tests of simple effects employed Z tests for differences between proportions (these tests are mathematically equivalent to chi square tests on the cell frequencies). Effect size (h) is provided for the reported differences between proportions (Cohen, 1977).

Results and Discussion. The children were divided into two groups: 8–10-years old (younger, $N = 133$) and 11–15 years old (older, $N = 125$). The age of subjects and identification procedures significantly influenced the likelihood of subjects making a correct response [$\chi^2(17, N = 554) = 134.52, p < .01$]. Adults (.67) were significantly more likely to make correct identification decisions than younger children (.52, $Z = 3.35, p < .01, h = .31$) or older children (.56, $Z = 2.35, p < .05, h = .22$) but the two groups of children did not differ ($Z = 0.80, h = .08$). Performance of all three groups was significantly different in the present vs. the absent conditions; however, not for the same reason (see Table 1). Younger children were more likely to be accurate if the perpetrator was present (.68) rather than absent (.36) ($Z = 3.71, p < .01, h = .65$). Similarly, older children were more likely to be accurate if the perpetrator was present (.74) rather than absent (.38) ($Z = 4.08, p < .01, h = .74$). Adults were less likely to be accurate when the perpetrator was present (.56) than absent (.78) ($Z = 3.98, p < .01, h = .47$). This result is consistent with the previous findings indicating that children make more choices and are prone to guessing.

The correct decision rates did not differ across younger children, older children, and adults for either the showup or simultaneous lineup procedures. However, adults (.68) were more likely to make correct decisions from sequential lineups than were either the younger children (.43), ($Z = 4.86, p < .01, h = .51$) or older children (.46), ($Z = 4.10, p < .01, h = .45$). This result supports the previous findings that sequential lineups do not improve the overall identification performance of children to the same degree that they aid adults.

Correct identification rates did not differ significantly across the showup (.69), simultaneous lineup (.69), and sequential lineup (.66) conditions. Correct rejections

Table 1. Proportion (N) of Correct Identification Decisions as a Function of Age, Identification Procedure, and Presence vs. Absence of the Target

	Showup	Simultaneous lineup	Sequential lineup
Target-Present			
Younger children	.68 (22)	.71 (21)	.65 (26) .73[a]
Older children	.72 (18)	.80 (20)	.71 (31) .90[a]
Adults	.50 (30)	.55 (31)	.62 (58) .64[a]
Target-absent			
Younger children	.60 (25)	.28 (25)	.21 (14)
Older children	.60 (20)	.33 (21)	.20 (15)
Adults	.93 (119)	.66 (29)	.75 (36)

[a]Target choices including multiple selections.

were more likely to occur using the showup (.74) than either the simultaneous lineup (.39) ($Z = 4.98, p < .01, h = .72$) or the sequential lineup (.39) ($Z = 4.86, p < .01, h = .72$). This was true both for adults and children. The adult rate of correct rejections from sequential lineups (.75) is somewhat lower than in recent studies (e.g., Lindsay, Lea, & Fulford, 1991; Lindsay, Lea, Nosworthy, Fulford, Hector, LeVan, & Seabrook, 1991). We believe this occurred because of the classroom presentation. Many of the undergraduates did not follow the instructions and flipped back and forth through the pictures, increasing their ability to use relative judgments. The children generally followed instructions. Alternatively, adults may have been prone to making choices because we did not disguise the number of pictures to be seen, a factor known to inflate false positive responses from sequential lineups (Lindsay et al., 1991).

Correcting for the number of lineup members, the expected false identification rate for adults with the showup (.07) was similar to that of the sequential lineup (.04) and the simultaneous lineup (.06). As predicted, the result with children was much more dramatic. The children's estimated rate of false identification was .40 with the showup but only .14 with the simultaneous lineup and .17 with the sequential lineup. A more detailed analysis of the false positive choices from the target-absent procedures reveals a clear pattern (see Table 2). Children were more likely to identify any innocent individual from the showup than from either lineup. The data for the adults is less clear but the showup certainly did not consistently outperform lineups.

Our data strongly support previously expressed concerns about the potential dangers of employing showups and suggest that less negative conclusions claiming reduced rates of false identification were based on failure to address the impact of known innocent foils in lineups. Any hope that showups might be a superior technique for use with children (or adults) either because they force the use of absolute judgment or because they eliminate the possibility of multiple selections is misguided.

Table 2. False Positive Choices as a Function of Age of Witness, Identification Procedure, and "Suspect"

Witness age	Procedure	N	Lineup member "suspected"						(%) Who chose
			1	2	3	4	5	6	
Children	Showup	45	.29	.38	.62	.29	.33	.50	40
	Simult[a]	46	.06	.06	.22	.11	.20	.02	67
	Sequen[a]	29	.14	.03	.03	.17	.28	.07	72
Adults	Showup	119	.05	.05	.15	.00	.10	.00	06
	Simult	29	.03	.07	.14	.00	.10	.00	34
	Sequen	36	.11	.06	.06	.00	.03	.00	25

[a]Simult = simultaneous lineup, sequen = sequential lineup.

EXPERIMENT 2

It is possible that sequential lineups and showups might perform differently with children younger than those tested to date. Young children may be confused by standard lineup tasks requiring them to choose one person from among many. Although very young children are unlikely to be asked to attempt identifications of strangers, their ability to do so is of interest both as a legal issue and from a developmental perspective. If performance does not change dramatically with age of the child, then there is no reason to treat identifications by younger children as less probative than those of older children. Also, since the performance of 8- to 15-year-old children differs from that of adults, but performance of 8- to 10-year-olds did not differ from 11- to 15-year-olds, it is of interest to know if eyewitness performance of younger children differs from that of older children such as those tested in Experiment 1.

Participants. Preschool children (N = 57) age 33–72 months (M = 50.1 months) and Queen's University undergraduates (N = 80) were recruited to participate. The children received colorful stickers for participating while the undergraduates were rewarded with additional marks in their introductory psychology course.

Design. Given the small number of children, the number of conditions was limited. We chose to use target-present conditions only with a showup, simultaneous lineup, and sequential lineup. The sequential lineup condition provided some opportunity to explore target-absent responses by placing the target in the last position for some subjects. The first picture presented in a sequential lineup is analogous to an absent showup with the exception of the witness' expectation that more pictures will follow. At least this provided some estimate of the subjects' tendency to choose the first person shown. Also, the first five pictures presented in a six-person, target-present, sequential lineup are functionally equivalent to a five-person, target-absent, sequential lineup.

Procedure. The children were taken individually to a small testing room where they participated in an unrelated experiment for about 7 minutes. At the end of this experiment, the experimenter told the child that her (the experimenter's) friend "Sam" (Samantha) was in the next room and had a sticker for the child as a gift for helping with the research. Sam then entered the room and interacted with the child as he or she selected one of the colorful stickers and affixed it to a card that the child kept. Sam interacted with the child until eye contact had been established at least twice. Sam then left the room and the experimenter conducted an identification task to determine if the child could identify Sam.

Adult subjects scheduled appointments to appear in the laboratory where they were met by the experimenter. The adults were shown to a small room and told that some preparations were necessary before the study could begin but that an assistant would come in to record the subject's participation to ensure that they received credit. Sam then entered the room, signed the subject's research participation card, and interacted with the subject until eye contact had been established at least twice. Sam left and the experimenter returned and conducted the identification procedure. All subjects were informed that Sam may or may not appear in

the pictures they would be shown and were reminded that they did not have to select any one from the pictures. The identification procedures included a target-present showup (picture of Sam); a target-present, six-person, simultaneous lineup; and a target-present, six-person sequential lineup. The showup and simultaneous lineup conditions each had 19 children and 20 adults. The sequential lineup was presented to 19 children and 40 adults. The sequential lineup was presented with the target in the first position for 10 children and 20 adults and in the last position for nine children and 20 adults. We had originally planned to have approximately 20 subjects per cell in all conditions including sequential lineups with Sam in the first position and last position but exhausted our source of child subjects. The same head-and-shoulder, color photographs of five women all generally resembling Sam were used for both lineups.

Results and Discussion. Correct identifications differed significantly across the experimental conditions of age of subjects and identification procedures [$\chi^2(2, N = 137) = 24.89, p < .01$]. Both adults (.85) and children (.90) were very likely to identify Sam from the showup ($Z = 0.47, h = .15$) (see Table 3). The high rate of correct identification, especially for the adults, may reflect the impact of the live event on encoding (stronger trace strength, perhaps due to greater attention). Alternatively, witnesses may believe that they ought to be able to make an identification of a person they have seen live only minutes before and thus be more willing to choose even when not certain. Regardless of the reason, these data are consistent with Yarmey et al.'s (1994) results which revealed a relatively high rate of correct identification from showups (.57) following exposure to a live event and inconsistent with studies using slide sequences or taped events (e.g., .32 in the Lindsay et al., 1995 study and .10 on average in the two Gonzalez et al. studies). Selection of Sam from the simultaneous lineup also occurred at a relatively high rate for both adults (.80) and children (.68, $Z = 0.85, h = .28$) and neither value differs significantly from the rate of choosing in the showup conditions. Sequential lineups produced fewer choices of Sam by adults (.50) than either the showup (.85, $Z = 2.84, p < .05, h = .78$) or simultaneous lineup (.80, $Z = 1.96, p < .10, h = .64$). For children, simultaneous lineups resulted in a rate of choosing Sam (.95) that was higher but not significantly different from the simultaneous lineup and showup conditions. Children were significantly more likely than adults to choose Sam from the sequential lineup (.90 vs. .50, $Z = 3.35, p < .05, h = .93$). We might conclude that all

Table 3. Proportion of Correct Identifications (Target Identifications) as a Function of Witness Age and Identification Procedure[a]

Witness age	Simultaneous lineup	Sequential lineup	Showup
Children	.53 (.68)	.26 (.95)	.90
Adults	.80 (.80)	.45 (.50)	.85

[a]Target identifications are all choices of the target while correct identifications are limited to those who chose only the target (i.e., target selections minus multiple selections).

three procedures produce roughly comparable rates of correct identification by preschool age children if the event was viewed live, but there are problems yet to be addressed.

So far we have examined the rate of selecting the target but have ignored the issue of multiple selections. As mentioned previously, selection of more than one person impeaches the witness' credibility. Since it is impossible to select more than one person from a showup, the showup data are unchanged by this consideration. Data from the lineup conditions are not immune to this problem and reveal a dramatic difference. More children (.74) than adults (.05) made multiple selections from the sequential lineup ($Z = 5.54, p < .01, h = 1.62$). Some children (.16) made more than one choice from the simultaneous lineup! Again, children appear to be particularly prone to guess in identification situations. If we treat multiple selections as nonidentifications (because the lack of credibility of the witness may lead to the identification being ignored), adults were nonsignificantly more likely than children to make a correct identification from the sequential lineup (.45 vs. .26, $Z = 1.43, h = .40$). We examined the rate of choosing innocent people presented either in the first or in the first five positions of the sequential lineup (Sam's picture was in the last position for nine children and 20 adults). Children in this condition frequently identified the first picture they were shown (.44) and usually identified one or more of the first five pictures as Sam (.78). No adult selected the first picture shown and only one adult selected any of the first five pictures. If we consider these conditions as five-person, criminal-absent, sequential lineups, the false positive rates would be .78 for the children and .05 for the adults ($Z = 3.69$, $p < .01, h = 1.71$). If we accept the choice of the first picture as equivalent to an absent showup, the false identification rates would be .44 for the children and .00 for the adults ($Z = 2.65, p < .01, h = 1.45$).

Overall, the data indicate that preschool age children may be quite likely to identify a stranger from an identification procedure regardless of whether a simultaneous lineup, sequential lineup, or showup is employed. However, sequential lineups, and to a lesser degree simultaneous lineups, lead young children to impeach their identification by selecting more than one person. The conclusion that showups may be preferable with young children must be tempered with the knowledge that a serious risk of false identification due to guessing was evident since nearly half of the children selected the first wrong picture they were shown in the sequential lineup.

GENERAL DISCUSSION AND CONCLUSIONS

We have presented two studies that have replicated previous findings regarding children's identification accuracy and extended the findings to younger children and to identification procedures not previously studied. All of the available data converges on the conclusion that the reliability of eyewitness identification by children is seriously compromised by the tendency for children to guess. This problem reveals itself most clearly in the failure of children to reject target-absent procedures. Neither training nor alternative identification procedures such as sequential

lineups or showups have been successful in reducing this problem. The sequential lineup procedure that works so well to increase correct rejections with adults is ineffective or even damaging to the identification performance of children. No apparent reduction in these problems appeared to occur with age. Even at the end of elementary school, children's identification performance was inferior to adults, particularly with sequential lineups. At the moment, it is not clear how best to address the issue of what identification procedure to use with children.

At least as important is to consider possible reasons for this inferior performance. Keeping in mind that children's performance in criminal-present conditions was comparable to or better than that of adults, it is clear that children do remember faces and can recognize them when seen again. The critical issue, in signal detection terms, appears to be response bias, not sensitivity. Children are prone to choosing. Others have reported a tendency in children to make positive responses to knowledge questions (e.g., Misciones, Marvin, O'Brien, & Greenberg, 1978). A similar tendency may be reflected in adults to a lesser degree in such phenomena as confirmation bias (Mayer, 1992; Wason, 1960). Common sense and attributional processes such as correspondent inference (Jones & Davis, 1965) may lead people to believe that there is no reason for the experimenter or police officer to show them a lineup unless the person they saw is present in the pictures shown. Such reasoning ought to lead to demand characteristics encouraging selection of someone from the lineup. Demand has often been argued to be greater the larger the difference in status of the actors involved (e.g., Ceci, Ross, & Toglia, 1987). This could explain why children succumb to the demands of identification situations more readily than adults. Future studies could attempt to find means of increasing the ability of both children and adults to resist such demands.

A second focus of the research was the use of showups as an alternative to lineups. Recent publications might lead some to believe that showups are less dangerous than previously assumed. Our data have demonstrated the showup to be a dangerous procedure. Not only do showups seem to reduce correct identification rates relative to lineups in some studies, but the risk of false identification is as great or greater. The use of showups may give police the worst of both worlds!

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