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Reducing Children's False Identification Rates in Lineup Procedures

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by

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Abstract

Is the wildcard lineup or elimination lineup more effective than the other in improving children's recognition accuracy in target-absent lineups? Forty-five children between ages 4- to 6-year olds to 10- to 12-year olds (62.22% female) watched a brief 5-minute geology demonstration completed by a research assistant. After the demonstration, the children were randomly assigned to one of four experimental conditions: elimination target-absent, elimination target-present, wildcard target-absent, wildcard target-present. The elimination lineup involves a two-judgement detail. The wildcard lineup includes a picture of a question mark or a blank silhouette (or both) that the child can choose if she doesn't see the target. The children were individually interviewed and asked to identify the research assistant. The patterns of the data showed that the children's identification was comparable when the lineup was target-present. However, when the lineup was target-absent the younger children performed better on the wildcard lineup whereas the older children performed better on the elimination lineup.

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Reducing Children's False Identification Rates in Lineup Procedures

Eyewitness identification plays a key role in the justice system and higher false identification rates in forensic lineups with children as witnesses have serious ramifications (Havard & Memon, 2013). Several studies have shown that children do not perform much differently then adults when the target is present ("target-present") in a lineup procedure (Havard, 2014; Lindsay, Pozzulo, Craig, Lee, & Corber, 1997; Pozzulo, Dempsey & Crescini, 2009). However, when the target is absent ("target-absent"), children are found to be more likely to falsely identify a wrong suspect compared to adults (Havard, 2014; Zajac & Karageorge, 2009; Pozzulo et al., 2009). To address children's higher false identification rates for target-absent lineups two main lineup procedures have been developed: the wildcard (also referred to as the Mr. Nobody and Mystery Man) lineup procedure and the elimination lineup procedure.

Both the wildcard and elimination lineup procedures are effective at reducing children's false identification rates in target-absent lineups compared to other lineup procedures (e.g., simultaneous and sequential; Havard & Memon, 2013; Karageorge & Zajac, 2011; Pozzulo et al., 2009; Pozzulo & Lindsay, 1999; Zajac & Karageorge, 2009). But no study has compared these two lineups to reveal which procedure is more effective at reducing children's false identifying rates. Thus, we are testing whether the wildcard lineup or elimination lineup is more effective in reducing children's false identification rates for target-absent lineups. It is expected that the elimination lineup and wildcard lineup procedures will have comparable false identification rates when the lineup is target-present. However, when the lineup is target-absent, we hypothesize that wildcard lineup procedure will be more effective.

In lineups, the goal is to correctly identify the target if he is there, and correctly reject the lineup if he is not there to therefore avoid making false identifications. Adults tend to do well if

target is present but, if target is absent, this increases the rate of false identifications (Wells, 1993). Researchers have tested and developed different lineup techniques to reduce the rate of false identifications (Lindsay & Wells, 1985). Adults' false identification rates drop when adults engage in absolute judgments when making their selections – that is, when comparing each presented faces to their memory of the target (Wells, 1993).

Children do well if the target is present, but in target-absent lineups, they make more false identifications than adults (Havard, 2014). In lineup tasks, children typically have higher rates of false identifications than adults. For example, Beal, Schmitt, and Dekle (1995) examined children's tendency to guess when given a target-absent lineup. Five-year-old children witnessed a staged event and were later given either a target-present or target-absent simultaneous lineup. The children made more false identifications when presented with a target-absent lineup. Parker and Carranza (1989) compared how children and university students performed on simultaneous target-present and target-absent lineups. The participants viewed a staged crime and were later asked to identify the suspect in the lineup. Compared to the university students, the children had higher false identification for target-absent lineups. Havard (2014) argues that while sequential lineup procedures increase adults' false positive rates in target-absent lineups, the sequential lineup does not increase children's false positive rate because of children's tendency to conform to social pressure.

One explanation of why children are worse than adults at target-absent lineups is that children have difficulty with making absolute judgments. Absolute judgement involves comparing one's memory of a suspect to a presented photo whereas the other type of memory, called relative judgment, involves comparing multiple photos to one another to pick which one looks most like the suspect. Pozzulo and Lindsay (1999) developed a lineup procedure to engage

children's absolute judgments with the goal of reducing their rate of false identifications. The elimination lineup procedure allows for a two-judgment process. In the first step, the witness compares the people in the lineup to one another and identifies the one who looks most like the suspect; this relies on relative judgment processes. In the second step the witness compares the person selected in step 1 to their memory of the suspect to determine whether the lineup member is the suspect; this accesses only absolute judgment.

Several studies have examined whether the elimination lineup can reduce false identification rates with both children and adults. Pozzulo and Lindsay (1999) investigated how a two-judgement process of an elimination lineup would increase correct identification rates. Children from ages 10 to 14 and undergraduate students witnessed an informational video that starred a confederate. After the video, undergraduates were either shown a target-present simultaneous lineup or target-absent simultaneous lineups to identify the confederate. The children were either shown simultaneous or elimination lineup that was target-absent or target-present. The results showed that the children's false identification rates were improved in the elimination target-absent group compared to the simultaneous lineup. Pozzulo and Lindsay argued that elimination lineups access both children's relative and absolute memory, which in turn helps them correctly identify a suspect perhaps by accommodating underlying limited cognitive development.

Pozzulo et al. (2009) tested the effectiveness of the elimination lineup for reducing false identification for target-absent lineups with preschool aged children. Children 3 to 6 years old were shown a demonstration in groups. Afterwards, the children were shown either a simultaneous or elimination lineup and were asked to identify the demonstrator. The results indicated that the correct identification rates were not significantly different when (target-

present) simultaneous or elimination lineup procedures were used. In addition, the elimination lineup had a lower false identification rate than the simultaneous lineup when the target was absent. These findings suggest that the two-step process of elimination lineup may help children to better convey what they remember since they may have limitations in recognition.

A second explanation for children's high rates of false identifications on lineup tasks involves social pressure. Children, more so than adults, may feel pressure to make a selection when given a lineup task (Havard & Memon, 2013). When children are asked to help adults they want to be compliant and be capable to help so they have a tendency to guess (Beal et al., 1995; Lindsay et al., 1997). When the target is absent, this means that they are making more false identifications than adults (Havard, 2014). Researchers have developed another lineup procedure designed to allow children to make a non-foil choice when shown a target-absent lineup. This technique is called the wildcard lineup procedure (also referred to as "Mystery Man" or "Mr. Nobody"). The target-absent lineup includes a picture of a question mark or a blank silhouette (or both) that the child can choose if she doesn't see the target (Zajac & Karageorge, 2009). The wildcard lineup procedure allows children to conform to social pressures without making a false identification. Children will pick a suspect regardless of whether the lineup member is guilty or not because they view giving positive answers as more desirable.

Researchers have conducted studies to examine the wildcard lineup procedure's effectiveness for reducing false identification rates for children. Recently, Havard and Memon (2013) investigated whether using a wildcard would lower false identification made by children in target-absent lineups. Children between 5 to 7 and 8 to 11 years of age were shown a short film of a crime. One to 2 days later the participants were given either the wildcard lineup or a simultaneous video lineup. The results showed that the addition of the wildcard helped reduce

false identification to 75% compared to 40% who had the regular simultaneous lineup. This suggests that this addition to lineups can allow children to conform to the social pressures of choosing while still reducing false identification errors.

Moreover, Karageorge and Zajac (2011) examined the use of wildcard lineup effectiveness for children 5 to 7 and 8 to 11 years of age and delay between the event and the lineup. The children witnessed an event and were interviewed 1 to 2 days or 2 weeks later. The participants were either given a simultaneous lineup for the control or a target-absent or target-present wildcard lineup. The results indicated that the probability of identifying the suspect when target-present or correctly rejecting the lineup member when target-absent was 94% with the wildcard compared to 59% with the simultaneous lineup. Younger children were less accurate than older children, despite the improved rate of false identification from the wildcard lineup. These findings suggest that even with the reduced false identifications there are perhaps some underlying developmental differences in face recognition that influence younger children's performance versus older children.

Zajac and Karageorge (2009) examined if including a wildcard in a lineup procedure would improve children's false identification rates for target-absent lineups while still being able to maintain the correct identification rate for target-present lineups. Children ages 8 to 11 witnessed a staged event. One to 2 days later, children were either given a photograph target-present or target-absent lineup and half of each group had a wildcard included and with the rest were simultaneous. Consistent with other research, children were better at the target-present lineups compared to the target-absent lineups. The inclusion of the wildcard improved the children's correct rejection rates for target-absent lineups compared to the simultaneous lineup. In addition, when the wildcard procedure was used for target-present lineups there was no

difference in comparison to the simultaneous procedure. These findings suggest that the use of the wildcard can help improve children's false identification for a target-absent lineup without the cost of hindering the correct identification for target-present lineups.

Recently, Pozzulo, Reed, Pettalia and Dempsey (2015) did a comprehensive study comparing target-present and target-absent sequential, simultaneous, elimination and wildcard lineups, but their study did not include children. The participants of ages 15 to 60 were shown a video of a robbery on a university campus. Following the video, the participants completed either a sequential, elimination, simultaneous or wildcard lineup procedure that was either target-present or target-absent. The results indicated that for target-present lineups, all lineup procedures did not differ significantly. In addition, for target-absent lineups, the elimination lineup was found to have a better rate of correct identifications than simultaneous. The findings also suggested that correct identification rates for elimination lineups were higher than the rates for wildcard, although it was only approaching statistical significance. Lastly, the results revealed that the sequential lineup did perform quite similarly to elimination lineups. These findings may suggest that there is a need for absolute judgement for a higher correct identification rate, which can be achieved by using elimination lineups. But again, this study did not include children to compare the effectiveness of elimination and wildcard lineup, techniques that were developed to help children.

Thus, research has indicated that both the wildcard and elimination lineup procedures are effective at reducing children’s false identification rates in target-absent lineups (Havard & Memon, 2013; Karageorge & Zajac, 2011; Pozzulo et al., 2009; Pozzulo & Lindsay, 1999; Zajac & Karageorge, 2009). But, no study to date has compared the wildcard lineup procedure to the elimination lineup procedure to see which technique is superior at reducing false identification

for target-absent lineups for child witnesses. Using experimental methods to assess which lineup procedure is more effective for children gives a unique contribution as to which lineup procedure should be universally used for children. The present study's purpose was to determine whether the wildcard lineup or elimination lineup procedure is more effective than the other in reducing children's false identification rates for target-absent lineups.

In the current study, we directly compared the elimination and wildcard lineups with children to test which procedure is most effective in reducing false identifications. It is hypothesized that elimination lineup and wildcard lineup procedures will have comparable false identification rates when the lineup is target-present. However, when the lineup is target-absent, wildcard lineup procedure is predicted to be more effective as many previous studies looking at children under 8 used wildcard and found it effective while the elimination lineup is used more often and found effective for older children (Havard, 2014; Havard & Memon, 2013; Karageorge & Zajac, 2011; Pozzulo et al., 2009; Pozzulo & Lindsay, 1999; Zajac & Karageorge, 2009).

Method

Participants

Participants were 45 children (62.22% female) ranging from age 4- to 6-year olds and 10- to 12-year olds (*M*=104.47mos, *SD*=35.49mos) from a preschool and elementary school located in London, Ontario. For the study, the children were categorized into age groups: the younger children were 4- to 6-year olds (*M*=54.71mos, *SD*=10.29mos, 78.57%, female) and the older children were 10- to 12-year olds (*M*=126.94mos, *SD*=11.18mos, 54.84% female). The younger children were randomly assigned to either the elimination target-absent (*M*=56mos, *SD*=18.38mos, 50% female), elimination target-present (*M*=53.33mos, *SD*=9.71mos, 50% female), wildcard target-absent (*M*=53.6mos, *SD*=9.40mos, 80% female) or wildcard target-

present condition (*M*=55mos, *SD*=11.11mos, 100% female). The older children were also randomly assigned to either the elimination target-absent (*M*=124.22mos, *SD*=11.99mos, 55.56% female), elimination target-present (*M*=130.89mos, *SD*=10.49mos, 55.56% female), wildcard target-absent (*M*=127.44mos, *SD*=11.25mos, 44.44% female) or wildcard target-present condition (*M*=129.13mos, *SD*=12.15mos, 50% female). Recruitment involved sending a letter of information home with the children to obtain parental consent. The children were verbally thanked for their participation.

Materials

Geology demonstration. The children observed a 5-minute geology demonstration created for the purpose of the study to expose the children to the scientist. The demonstration consisted of the research assistant teaching the children about geodes. The research assistant showed geodes and passed them around to the children while describing the kinds of crystals inside of them. The research assistant then took any questions about geodes from the children.

Photo lineup. The lineups consisted of a series of six coloured photographs including head and shoulders. The foils in the lineup resembled the researcher assistant in appearance. For the target-present lineups, five of the foils' photos and the scientist's photo were included. For the target-absent lineups, six of the foils' photos were included. The position of the foils was randomly assigned for each lineup. The research assistant's position was manipulated to each position of the lineup. There were 24 different versions of the lineup. The lineups were presented on a 27-inch computer monitor and the photos were each 57x80mm in dimensions.

Elimination lineup procedure. Children viewed a series of six photos simultaneously in the lineup. The researcher told the child, "I am going to show you six photos. Your job is to point to who you think looks most like Christopher the 'Geode Expert'. Christopher's picture may or

may not be here." The child picked out a photo and all the other pictures were set aside. Next, the child was asked to look at the photo they had selected once again. This time, the research assistant said "This may or may not be the Christopher's picture. Is this really Christopher's picture?" The children then compared the photo to their own memory of Christopher.

Wildcard lineup procedure. Children viewed six photos in a lineup simultaneously, but in addition were shown a photo that had an outlined silhouette of a head with a question mark on top. This wildcard remained located in the center of the lineup. The research assistant asked the child, "Your job is to decide if you see Christopher, the 'Geode Expert's', picture. Christopher's picture may or may not be here. If you see his picture, please point to it. But if you do not see his picture, you can point to the picture that looks like this question mark." The child then identified the scientist if they were in the lineup while if the scientist is not present, they chose the wildcard.

Procedure

The schools were contacted by the supervisor of the study. A letter of information and consent form were sent home with the children from a local preschool and elementary school in London, Ontario. Those that received parental consent participated in the study. In the classroom children watched a brief 5-minute geology demonstration completed by a male research assistant. After the geology demonstration, the children were randomly assigned to one of four experimental conditions: elimination target-absent, elimination target-present, wildcard target-absent, wildcard target-present and individually interviewed by a female research assistant. There are two lineup conditions: photo elimination or wildcard lineup procedure. Additionally, for each condition, the target will either be included ('target-present') or the target's photograph will not be included ('target-absent'). In all conditions, the children were asked to identify the

Christopher within the lineup with another researcher. The duration of the interview was approximately 5 minutes. The interviews were written down on a coded recording sheet. After the interview, the children were then verbally debriefed and thanked for their participation.

Design

The current experiment used a between-subjects design. The first independent variable was the lineup condition which manipulated either the elimination lineup procedure or the wildcard lineup procedure. In addition, a second independent variable manipulated the target status either being absent or present. Age was also used as the third independent variable of either age group 4- to 6-year olds and 10- to 12-year olds. The dependent variable that was measured was the children's identification of either correct or false.

Results

The analysis that would have been used was a loglinear analysis since all the variables are categorical and are not normally distributed. The independent variables would have been the lineup condition (elimination or wildcard), target status (target-present or target-absent) and age (younger or older children). With the dependent variable as identification (correct or false).

Unfortunately, the loglinear analysis was not possible to interpret with such low *n*s and breaks the assumption that no expected frequency should be below 1 and no more than 20% of the expected counts should be below 5. Therefore, the focus of the results will be on discussing the patterns of the data.

The first hypothesis expected that the children would have comparable identification for both lineup conditions when the lineup was target-present. As shown in Table 1, when the children were shown a target-present lineup, the older children did well regardless of lineup condition. The number of both correct and false identifications are quite comparable among the

older children. Whereas the younger children struggle more, thus having lower accuracy with more false identifications and fewer correct identifications.

Table 1

Percentage of Correct and False Identifications for Target-Present Lineups

	Wildcard Lineup		Elimination Lineup	
Age	Correct	False	Correct	False
Younger Children	60%	40%	50%	50%
	(3)	(2)	(1)	(1)
Older Children	100%	0%	100%	0%
	(6)	(0)	(7)	(0)

Note: n appears in parentheses below group frequencies.

The second hypothesis expected that when the lineup was target-absent, the wildcard lineup procedure would be more effective for the children than the elimination lineup. As shown in Table 2, when shown a target-absent wildcard lineup, the younger children seem to benefit from this as their accuracy is perfect with only correct identifications. Yet, the older children did not gain the same advantage with the wildcard lineup and accuracy was poor resulting in more false identifications. In comparison, when shown the target-absent elimination lineup the younger children had lower accuracy with this lineup thus more false identifications. But, the older children actually benefited from elimination lineup. Accuracy was higher with more correct identifications than in the wildcard lineup condition.

Table 2

Percentage of Correct and False Identifications for Target-Absent Lineups

	Wildcard Lineup		Elimination Lineup	
Age	Correct	False	Correct	False
Younger Children	100%	0%	50%	50%
	(5)	(0)	(1)	(1)
Older Children	40%	60%	87.5%	12.5%
	(4)	(6)	(7)	(1)

Note: n appears in parentheses below group frequencies.

Discussion

This study focused on revealing whether the wildcard or elimination lineup procedure was more effective for children to reduce false identification rates for target-absent lineups. The statistical analysis is not possible to interpret since it breaks the statistical test's assumptions. However, the patterns of the collected data do suggest an interesting trend. The patterns of the data showed that when the lineup was target-present the children's identification was comparable. However, when the lineup was target-absent the younger children performed better on the wildcard lineup whereas the older children performed better on the elimination lineup.

The data showed patterns that are consistent with the first hypothesis that when the target-present lineup is shown the children had comparable accuracy for both lineup conditions. In addition, the data also showed a pattern expected by the second hypothesis that when the lineup was target-absent, the younger children benefited from wildcard lineup. However, the data indicated an unexpected pattern where the older children actually benefited from elimination lineup.

The patterns of the study are consistent with previous research that shows children perform quite well on target-present lineups (Havard, 2014; Lindsay et al., 1997; Pozzulo et al., 2009). In addition for the target-absent lineups, the patterns remain consistent with research that use wildcard lineups more frequently for younger children and found it to be effective for young children (Havard, 2014; Havard & Memon, 2013; Karageorge & Zajac, 2011; Zajac & Karageorge, 2009). While research that uses the elimination lineup use it more often with older children and found it to be effective for children above age 8 is also consistent with the pattern of the data (Pozzulo et al., 2009; Pozzulo & Lindsay, 1999). The patterns of the data may be this way as younger children may rely on social factors that wildcard lineup (Havard & Memon,

2013) accounts for with the additional card it provides to allow children to make a selection without making a false identification. While the older children rely more on cognition processes which elimination lineup accounts for by using a two step judgment process to ensure children access both their relative and absolute memory (Pozzulo & Lindsay, 1999).

This pattern of the data is also consistent with studies that find developmental changes in face recognition around ages 10 and 11. Hay and Cox (2000) reviewed articles on developmental changes in face recognition. They reported that as individuals age, the inversion effect for faces increases. In terms of an age related effect for familiar faces there was two opposing findings presented. The first series of findings suggested that there was no age related difference in how adults vs. children process familiar faces. Other studies had found that for individuals over the age of 15 had an advantage of better recognizing the inner, center part of familiar faces while children under 15 did not display this advantage. Lastly, research studies had suggested that younger children around age 5 to 6 years were better at recognizing faces by looking at the eye regions. But older children were better at recognizing whole faces. With these findings, it could be concluded that these developmental changes in face recognition may play a role in why children do not perform as well as adult at correctly identifying suspect in a lineup.

A limitation of the study was the limited sample size of 45 children. The sample size breaks the main assumption of analyzing categorical data as no expected count should be less than 1 and no more than 20% of the expected counts should be below 5 and this was the case for this study. Thus making any frequency analysis difficult to interpret (e.g. chi-square test or loglinear analysis).

Another limitation of the study is the ecology validity. The study presented the children with a lineup procedure immediately after the staged event, while this is often not the case in real

life circumstances. Often times after crimes are taken place the eyewitnesses are typically not interviewed until several weeks to even years after the crime.

Of course, a major area of improvement for this study is to increase the sample size. As this is part of a larger cross-sectional design, we are continuing to collect data from children ages 4 to 11 to increase the *n* per cell, and to see if we can pinpoint when the wildcard advantage is replaced by the elimination advantage. In addition, it may be ideal that future studies interview the children perhaps several days or weeks after the staged event to create some delay which is typical of real life settings.

Thus this study indicates that underlying developmental changes in the processes involved in face recognition can influence children's accuracy for lineup tasks. The data patterns suggest that when a target is absent in a lineup younger children really do benefit from the wildcard lineup while the older children benefit from the elimination lineup. This study is rather unique as no other studies have compared the wildcard and elimination lineup head to head to determine which lineup procedure is more effective for reducing false identifications with children. The findings have real implications on what lineup procedure is best to use for certain age groups of children to ensure high correct identifications and low false identifications.

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