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Children's Identification from Lineups Matching Suspects, Descriptions, and Composites

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This study investigated the selection of distracters for identification lineups based on suspect-matched, description-matched, and composite-matched procedures. The composite-matched procedure was newly developed and had components of visual description. Child and adult participants watched a video in which a "crime" occurred and then identified the perpetrator two days later from the lineups that were created based on the similarity to the suspect picture, verbal description and composites made by children. Results showed that the identification from the description-matched lineups was more accurate than the other two in the perpetrator-absent condition. Participants' confidence on their answers was marginally higher in the perpetrator-present condition than perpetrator-absent condition. Adults were more accurate than children, however showed no significant differences among three lineup procedures. Both suspect and composite matched procedures have visual components. Higher similarity among distractors on these procedures could have caused children to be more confused and less accurate than adults and to be relatively better in the description matched procedure.

Key words : Line-up, Eyewitness Memory, Composites, Face perception

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There has been increasing number of child victims who were the sole witnesses of the crimes such as rape or other sexual abuse. Children in the developing stage may be inaccurate in identifying the perpetrator, not only because their experience was not in an optimal condition for their memories, but also children have lack of world knowledge, and they are in the beginning stage of attention, memory and language development. How accurate are children's eyewitness memories? What should be done to facilitate children's accurate identification?

Eyewitness identification plays a vital role in the investigation and prosecution of a suspect. There have been, however, many documented cases of innocent individuals falsely convicted of crimes based mainly on misidentification. Eyewitness identification is of great importance during the beginning of an investigation in the acquisition of evidence as well as during the prosecution of a criminal. There are many factors that affect eyewitness memory, but police system variables such as variables from the lineup formation that are not about the witness or the crime scene environment variables, could be an important factor for eyewitness memory.

The literature shows that the identification of a suspect in a lineup is often an extremely powerful piece of evidence, and the way that the lineup of the suspects is constructed will have a major effect on outcome during the identification procedure. The key to getting high accurate identification rates and low false identification rates lies mainly with the selection and presentation of the distracters for the lineup (Beresford & Blades, 2006; Flowe & Ebbesen, 2007). In the field of eyewitness memory and identification, suspect matched and description matched strategies are currently the two most commonly used for constructing lineups (Wells, Rydell, & Seelau, 1993; Tunnicliff & Clark, 2000).

The suspect matched method requires that the lineup be composed of individuals who closely resemble the picture of the actual suspect. The description matched method involves selecting distracters who match the description of the perpetrator given by the eyewitness. Previous studies have found that the description matched strategy was far superior to the suspect matched strategy in increasing the true identification and decreasing the false identification (Wells, et al., 1993).

One major flaw of the suspect matched strategy is that there is no concrete way to define when the distracters are considered similar enough to the suspect. Another problem of this procedure is that the distracters are similar to a suspect who may or may not even be the actual perpetrator, which may lead to a false identification. In contrast, the description matched strategy tends to lead the distracters to be less similar to each other and to the suspect

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in overall appearance than the suspect matched strategy, and the descriptions are based on the verbally described physical characteristics of the perpetrator.

However, description matched lineups are only based on the verbal description that has no visual components, and gathering verbal descriptions may be difficult especially in certain population such as children. There have been documented cases in which children were the sole witnesses. Young children have shown limitations in their ability to make accurate identification and in omission errors of memory for the perpetrator (Bruck & Ceci, 1999; Crookes & McKone, 2009). They are also limited in their ability to describe facial features and characteristics of the perpetrator. Sugimura (2010) showed when child participants gave a verbal description of the face and hair style preceding the identification tests, they tended to be less accurate in facial recognition and their descriptions of the person were uninformative.

A third type of line-up procedure was developed by the author: the composite matched method. This method chooses distracters based on the similarity to the composite that has visual description components. created from the verbal description of the characteristics of the perpetrator. Unlike the suspect matched method, this is not based on an actual picture of the suspect, but still retains the component of visual characteristics. Unlike the description matched method, distracters are selected based on their similarity to the visual description of the perpetrator. This technique may eliminate flaws found in the previous two strategies, and will likely be more effective and have higher accuracy rates, than the description matched or suspect matched methods. This is especially true for child eyewitnesses who have limitation on verbal description of facial features that could lead to inaccuracy in description matched method, and who have less accuracy in discriminating faces that share many features that are usually the case on the distracters in the suspect matched method. It is hypothesized that the composite matched method will elicit higher accuracy in the recognition of the perpetrator in the lineup than the suspect or description matched methods.

Methods

Participants

A total of 66 participants participated. Six 9- to 11-year-old children (3 boys and 3 girls) participated in verbally describing a perpetrator or making facial composites. Thirty additional 9- to 11-year-old children (17 boys and 13 girls) and 30 adults (12 men and 18 women, age ranged from 18 to 25 years old) participated in the identification of the perpetrator as well.

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Procedure

Six 9- to 11-year-old children viewed a crime scene video of a male perpetrator taking items from four different areas in an apartment. Immediately after viewing the crime scene video, half of the children verbally described the perpetrator and the other half participated in making facial composites with mock police officers using the Identi-Kit (2004) face composite computer program. There were 3 mock police officers, and they were research assistants who have been trained to use Identi-kit program and have not seen the crime scene video used in this experiment.

Photos for the lineups were then selected from the La Sierra University Perspectives year book (2002-2003 academic year: this year book was chosen to make sure the students in the year book were not on campus) by 3 other mock police officers, based on the similarity to the suspect 's picture, to the verbal description, and to the composites created jointly by children. Each lineup condition had perpetrator-present and perpetrator absent conditions, so there were 6 possible lineups: (1a) suspect matched perpetrator present, (1b) suspect matched perpetrator-absent, (2a) description matched perpetrator present, (2b) description matched perpetrator-absent, (3a) composite matched perpetrator present, and (3b) composite matched perpetrator-absent.

A new group of 30 9- to 11-year-old children then viewed the crime scene video, and two days later, they were asked to identify the perpetrator by choosing one out of 6 pictures or checking a box indicating "suspect not present." They were also asked to indicate on a Likert scale how sure they were about their answers (1 = not sure at all to 7 = absolutely sure). Thirty adults also viewed the same video and completed the same identification process.

Results

Child data

Chi-square analyses were first conducted for the child data. It was found that the false identification rate in the perpetrator absent condition was significantly different among three lineup procedures, $\chi^2(2, N = 30) = 8.55$, $p=.014$, Cramer's $V=.534$. Significantly more correct answers were reported with the description matched condition (80%) than in either the suspect matched (20%) or composite matched (0%) conditions (Figure 1). True identification in the perpetrator-present condition was not different among the three conditions, $\chi^2(2, N = 30) = .042$, $p=.98$.

Overall (perpetrator present and perpetrator absent conditions) true and false identification rates were compared among the three types of lineups, and no significant differences were found, $\chi^2(2, N = 30) = 4.613$, $p=.10$,

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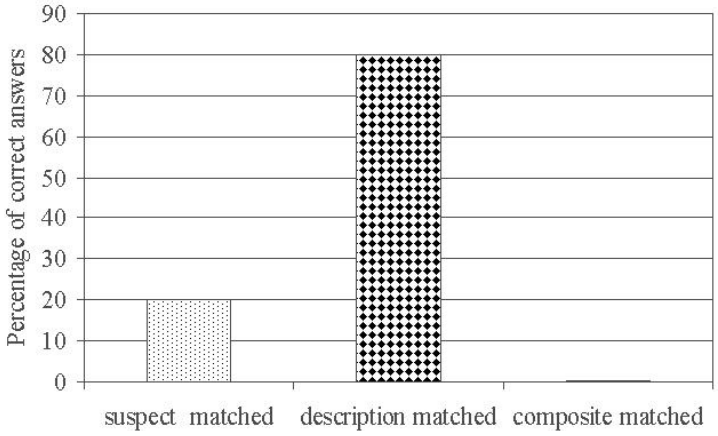

Figure 1. Percentage of correct answers of the child participants in the perpetrator absent condition

V=.392. However, when the two lineups were compared, the correct answers from the description matched lineup (50%) were significantly higher than from the composite matched lineups (9%), $\chi^2(1, N = 30) = 4.295$, p=.038, V=.378 (Figure 2).

Confidence ratings were marginally higher in the perpetrator present condition (M = 4.86, SD = 1.79) than in the perpetrator absent condition (M = 3.88, SD = 1.60), $F(1,28) = 2.99$, p=.095, h^2 = .096 (Figure 3). There was no gender difference, $\chi^2(1, N = 30) =$

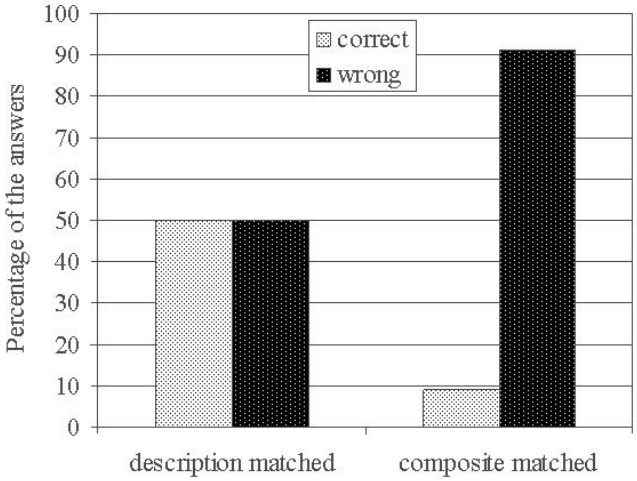

Figure 2. Percentage of answers of the child participants in the description matched and composite matched lineups

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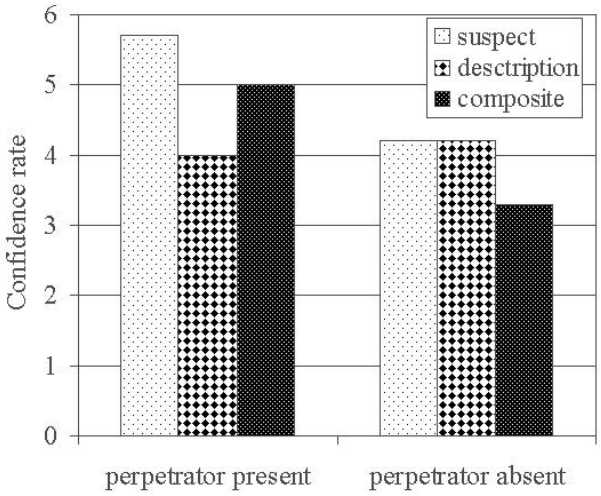

Figure 3. Confidence rating of the child participants

.15, p=.697, and noage difference, χ^2 (3)=1.01, p=.8.

Adult data

Adult data exhibited no difference among the three types of lineups, χ^2(2, N = 30) = .268, p=.875 (Figure 4). However, more correct answers were reported in the perpetrator absent condition (73%) than in the perpetrator present condition (33%), χ^2(1, N = 30) = 4.821, p=.028, V=.401 (Figure 5). There were no confidence rating difference among the three lineups, F(2,27)=.29, p=.75, and no gender

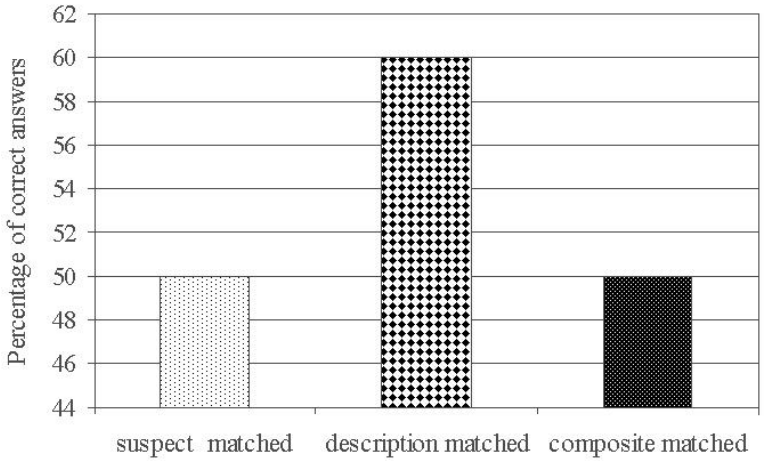

Figure 4. Percentage of correct answers of adult participants

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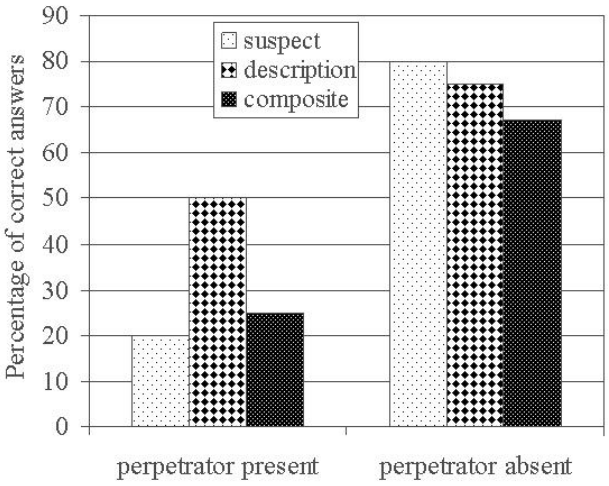

Figure 5. Percentage of correct answers of adult participants in the perpetrator present and perpetrator absent conditions

difference, χ^2 (1, N = 30) = .153, p=.696.

Child and adult data

When the child data were compared with the adult data, adults showed more correct answers (53%) than children (27%), χ^2(1, N = 60) = 4.44, p=.035, V=.272 (Figure 6). However, there was no confidence rating difference between children (M = 4.33, SD = 1.60) and adults (M = 4.47, SD = 1.76), F(1,58)=.094, p=.75.

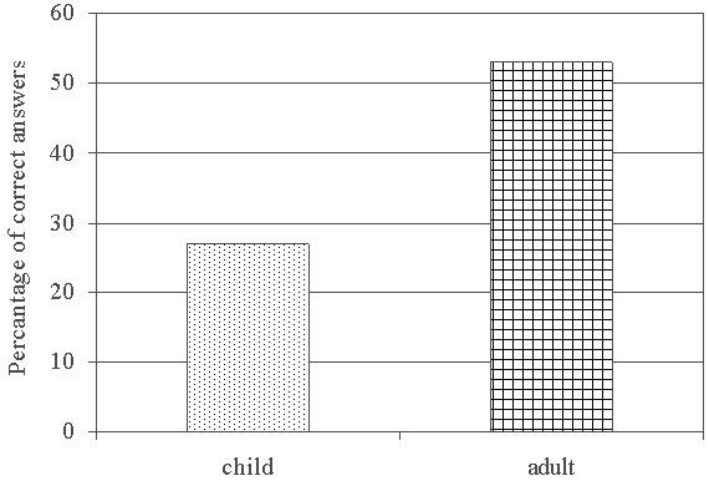

Figure 6. Percentage of correct answers of child and adult participants

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Discussion

Results showed that children had lower rates of false identification in the description matched condition than in the suspect matched or composite matched condition. Children correctly chose the "suspect not here" option more frequently in the description matched condition than in the other two conditions. Children's true identification in the perpetrator-present condition was not different among three conditions. Overall, their true identification rates were very low and there was no significant difference among the three conditions. False identification (choosing a picture other than that of the real perpetrator) in the perpetrator present condition was high, and did not vary significantly amongst the three conditions. The child data thus supports Wells, et al.'s (1993) finding of the superiority of description matched lineups with lower false identification rates than other lineups. This also accords with McQuiston-Surrett (2008)'s study where participants viewed faces and were asked to recall by either giving a physical description or constructing a facial composite. Results showed significantly higher accuracy for the descriptions than the facial composites.

Adults had significantly more correct answers than those of the children, although no significant difference among the three lineup conditions was found. Adults also had more correct answers in the perpetrator absent condition than in the perpetrator present condition. Overall, adults chose the "suspect not here" option more than any other options, regardless of the presence of the perpetrator's picture. This could lead to a higher number of correct answers for the perpetrator absent condition than the perpetrator present condition. The suspect matched lineup in this study was made based on the perpetrator's picture. If it was made based on the similarity to an innocent suspect, the false identification rate may have been different (see Clark & Tunnicliff, 2001). This possibility is currently being explored.

Lineups were made based on children's description, although identification accuracy was compared between adults and children. Kim, Rodriguez, Ruvalcaba, & Solis (2008) found significantly lower similarity ratings between the real picture and the composite that was made by children as compared with adults. If this was also true in the present study, it may have caused a floor effect for the composite matched lineup procedure. In a future study, lineups from children's and adults' descriptions will be included for comparison. Composites made by current computer composite making programs might not be good representations of real faces due to their feature based characteristics. And previous studies (see Davies, Van der Willik, & Morrison, 2000; Kovera, Penrod, Pappa, & Thill, 1997; Wells, Charman, & Olson, 2005) raised questions about the efficacy of composite systems used in recognition of suspects.

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Other studies (Hasel & Wells, 2007; Bruce, Ness, Hancock, Newman, & Rarity, 2002), nevertheless, showed combining face composites improved face likeness and better representations than a single composite. Composites could produce good representational visual descriptions, when multiple composites are combined, and composite matched line-ups with multiple composites may be more effective and have higher accuracy rates than other two line-ups. This possibility of using morphed composite based on multiple composites is being explored.

Participants' descriptions of the perpetrator were based on the 14 questions used in the preliminary questionnaire from the composite program of Identi-Kit, which included a variety of possible response options for each question. This is a more guided procedure for gathering the participant's description than those documented in the existing lineup research literature. Using this technique may have influenced the description toward more objective categories, and eliminated the subjective nature of the participants' descriptions. The lineups in this study were created by six mock police officers. They were college students who were trained to use Identi-Kit program in this lineup research. The choice of the pictures for each lineup was based on their subjective judgment, and that could have affected the outcome of this research, although that problem is not limited to this study.

References

Beresford, J., & Blades, M. (2006). Children's identification of faces from lineups: the effect of lineup presentation and instructions on accuracy. *Journal of Applied Psychology. 91(5)*, 1102-1113.

Bruce, V., Ness, H., Hancock, P., Newman, C., & Rarity, J. (2002). Four heads are better than one: Combining face composites yield improvements in face likeness. *Journal of Applied Psychology, 87(5)*, 894-902.

Bruck, M., & Ceci, S. J. (1999). The suggestibility of children's memory. *Annual Review of Psychology. Vol.50*, 419-439.

Clark, S. E., & Tunnicliff, J. L. (2001). Selecting lineup foils in eyewitness identification experiments. *Law & Human Behavior, 25(3)*, 199-216.

Crookes, K., & McKone, E. (2009). Early maturity of face recognition: No childhood development of holistic processing, novel face encoding, or face-space. *Cognition,* 111(2), 219-247.

Davies, G., Van der Willik, P., & Morrison, L. (2000). Facial composite production: A comparison of mechanical and computer-driven systems. *Journal of Applied Psychology*, *85(1),* 119-124.

Flowe, H. D., & Ebbesen, E. B. (2007). The effect of lineup member similarity on recognition accuracy in simultaneous and sequential lineups. *Law & Human Behavior. 31*, 33-54.

Hasel, L. E., & Wells, G. L. (2007). Catching the bad guy: Morphing composite faces helps. *Law and Human Behavior, 31(2)*, 193-207.

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Identi-Kit (2004). Identi-Kit Advanced facial composite software, version 6.0. Smith & Wesson.

Kim, I. K., Ruvalcaba, M., Rodriguez, A., & Solis, S. L. (April, 2008). Similarity rating difference between picture and composite made by adults and children. Paper presented in the 88th Annual Convention of Western Psychological Association, Irvine, CA.

Kovera, M. B., Penrod, S. D., Pappas, C., & Thill, D. L. (1997). Identification of computer-generated facial composites. *Journal of Applied Psychology*, *82,* 235-246.

McQuiston-Surrett, D. (2008). Examining the accuracy of facial descriptions vs. composites as a function of the own-race bias. *Experimental Psychology, 55(3)*, 195-202.

Sugimura, T. (2010). Eyewitness recall of a real life event: The effect of verbal descriptions on the accuracy of facial identification by children. *Japanese Journal of Developmental Psychology, 21(4)*, 342-352.

Tunnicliff, J. L., & Clark, S. E. (2000). Selecting foils for identification lineups: Matching suspects or descriptions. *Law and Human Behavior. 24(2),* 231-258.

Wells, G. L., Charman, S. D., & Olson, E. A. (2005). Building face composites can harm lineup identification performance. *Journal of experimental psychology: Applied*, *11,* 147-156.

Wells, G. L., Rydell, S. M., & Seelau, E. P. (1993). The selection of distracters for eyewitness lineups. *Journal of Applied Psychology. 78(5),* 835-844.

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아동의 시각적, 언어적, 몽타주 유사성에 기초한 사진열에서의 범인식별 정확성

김 인 경

라 시에라 대학교

본 연구는 혐의자 색출을 위한 라인업을 구성하는데 용의자 사진 외의 선택 가능한 사진을 택하는데 있어, 용의자의 사진과 유사한 사람을 선택하는 시각적 유사법, 증인의 설명을 기초로 선택하는 언어설명적 유사법, 그리고 몽타주와 유사함을 기초로 선택하는 몽타주 유사법을 비교하였다. 성인과 9-11세의 아동을 대상으로 연구하였는데, 우선 한 그룹의 아동에게 범죄가 행해지는 동영상을 보여주고, 그 아동의 기억에 의거하여 위 세 가지 방법에 기초하여 라인업을 구성한 후, 성인과 위와 다른 그룹의 아동이 위와 같은 동영상을 본 이틀 후에 위의 세 가지 방법으로 만들어진 라인업에서 혐의자를 선택(아니면 그 라인업에 없음을 표시) 하게 하였다. 결과로는 성인의 경우 아동보다 더 정확히 옳은 선택을 하였지만 세 가지 라인업 방법에서는 차이가 없었고, 아동의 경우 혐의자가 라인업에 없는 조건에서 언어설명적 유사법에서 다른 두 방법보다 기억의 정확함을 보였다. 아동의 경우 시각정보에 기초하여 만들어진 시각적 유사법이나 몽타주 유사법의 경우 라인업을 구성하는 사진들간의 높은 유사성으로 인해 오판이 더욱 심각할 수 있음을 시사한다.

주요어 : 라인업, 목격자 기억, 몽타주, 얼굴지각

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