Uniforms Affect the Accuracy of Children’s Eyewitness Identification Decisions

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Abstract

A substantial proportion of line-up identifications involving child eyewitnesses in the UK are conducted by police officers wearing uniform. This study examined the possibility that wearing a uniform constitutes an authority cue that adversely affects a child’s ability to make accurate eyewitness identifications. Sixty participants aged 9–10 years old witnessed a staged crime and were later asked to identify a ‘burglar’ from a simultaneous line-up using a 2 (uniform: present vs. absent) × 2 (target: present vs. absent) design. Children in the uniform present conditions made significantly more choices than children in the uniform absent conditions. More importantly, in the presence of a uniform, children made significantly more false identifications in target-absent line-ups. Analysis of supplementary, identification-related variables (identification time and confidence, state anxiety) suggested that (1) the children experienced uncertainty if the target was absent from the line-up, but (2) this uncertainty was not expressed when the line-up administrator wore a uniform, leading to an increase in false identifications. Implications for line-up administration procedures for children are discussed. Copyright © 2009 John Wiley & Sons, Ltd.

Key words: eyewitness identification; line-ups; children; social influence

Eyewitnesses play a critical role in criminal justice systems throughout the world and are often essential in identifying, charging, and ultimately convicting perpetrators of crimes. Jurors tend to over-believe, or are at least greatly influenced by, eyewitness evidence (Kennedy & Haygood, 1992; Williams & Loftus, 1994), which is worrying considering the growing and substantial body of evidence from laboratory studies, field studies, and the criminal justice system supporting the conclusion that eyewitnesses frequently make mistakes (Cutler & Penrod, 1995; Huff, 1987; Huff, Rattner, & Sagarin, 1986; Innocence Project, 2009; Wells, Small, Penrod, Malpass, Fulero, & Brimacombe, 1998). According to a number of studies, eyewitness misidentifications are the most common cause of wrongful convictions (Huff, Rattner, & Sagarin, 1986; Wells et al., 1998; Yarmey, 2003)

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and, through the use of forensic DNA testing, have been found to account for more convictions of innocent individuals than all other factors combined (Innocence Project, 2009; Wells, Memon, & Penrod, 2006).

YOUNG CHILDREN AND EYEWITNESS IDENTIFICATION

The capability of young children to provide accurate eyewitness testimony has been the subject of increasing attention by social scientists and members of the legal profession (Davies, 1996). Cases relying on evidence provided by child witnesses, such as physical or sexual abuse cases, have helped bring to the fore issues pertaining to the accuracy and reliability of such eyewitness reports (see Ceci & Bruck, 1993, for a review). As a result there has been a concomitant increase of scientific studies of children’s eyewitness competences, with results indicating that very young children perform significantly worse than younger adults. In line-up identification studies, young children perform at a similar level to young adults when the line-up presented contains the actual culprit but commit more false identifications when it does not (see meta-analysis by Pozzulo & Lindsay, 1998; see also Wells & Olson, 2003). Outside the laboratory, a growing number of case studies (available to view at http://www.innocenceproject.org) clearly demonstrate that mistaken identifications made by child witnesses contribute to miscarriages of justice. For example, Gene Bibbins served 15 years of a life sentence after being convicted based primarily on a mistaken identification made by a 13-year-old victim; Jimmy Ray Bromgard served 14 years of a 40-year sentence based on a mistaken identification made by an 8-year-old victim; Danny Brown served 18 years of a life sentence after being convicted based on a mistaken identification made by a 6-year-old eyewitness; and Larry Youngblood served 9 years of a 10-year sentence based on a mistaken identification made by a 10-year-old victim. DNA evidence has established the innocence of all these men, and in all cases mistaken identification is cited as the primary basis for conviction. This list is far from comprehensive, but these cases highlight the significant forensic implications of child witness misidentifications.

This higher rate of mistaken identifications exhibited by the children, when compared with adult eyewitnesses, is consistent with previous research showing that when presented with a line-up, children ‘make more choices and are prone to guessing’ (Lindsay, Pozzulo, Craig, Lee, & Corber, 1997, p. 397). A number of researchers have theorised that children make the assumption that an adult would not provide the task if the target was not present, and hence the presentation of the line-up array suggests to a child that the adult expects the child to choose someone. The child then, through a reluctance to admit uncertainty, will instead provide an answer (Ricci, Beal, & DeKle, 1996) or may interpret the task to require a selection that most resembles the target (King & Yuille, 1987). Ricci, Beal, and DeKle (1996) noted that given the sensitivity of young children to ‘contextual implications’, the children might feel pressured to make an identification regardless of whether the perpetrator is in fact recognised at all and regardless of the confidence in the selection.

Davies (1996) has similarly suggested that the reason children veer towards choosing in identification line-ups is due to a tendency to feel pressured or required to respond ‘positively’ to questions regardless of whether the answer is known or not. This is supported by a study by Pozzulo and Lindsay (1997), who also noted that due to ‘status and power differentials’ (p. 127) between themselves and adults, children may be less likely
to recognise that ‘don’t know’ is an option available as a response and so may be less likely to use it in comparison with adults.

Which processes might be responsible for these effects? Steblay (1997) conducted a meta-analytic review of line-up instruction effects and described two types of social influence. Normative social influence is influence resulting from a desire to gain approval or avoid disapproval, whereas informational social influence is at work when an individual accepts information from others as the truth (Deutsch & Gerard, 1955). Informational social influence operates through a belief that the information is truthful rather than a desire to conform to others’ expectations. Steblay (1997) notes that during a line-up procedure a witness is asked to make an identification by an authority figure who may provide both informational social influence (the target is in the line-up) as well as normative social influence (the correct response is to make a selection). A child who is interviewed by a uniformed line-up administrator may feel an increase in both types of social influence and hence be more likely to make an inaccurate identification decision.

Importantly, in the present context, the status and authority of a line-up administrator may increase both informational influence (as the line-up administrator will be perceived as more credible) and normative influence (because the line-up administrator will be perceived as an important source of approval or disapproval). Hence, status and authority might be expected to increase the previously mentioned problems with children’s eyewitness identifications. It is to the effects of these variables that we turn next, drawing initially on findings from research on children’s recall accuracy and then focusing more specifically on the effect of authority on children’s accuracy in eyewitness identification.

THE EFFECT OF AUTHORITY ON CHILDREN’S RECALL ACCURACY

There is some research on the effect of authority and social influence on children’s eyewitness testimony that has focused on recall accuracy (see overviews by Ceci & Bruck, 1995; Goodman, 1993). For example, in a study by Tobey and Goodman (1992), 4-year-olds were invited to play a game with a ‘babysitter’ (actually a confederate). Eleven days later, the children returned to the laboratory. Half of the children met a police officer who claimed that the babysitter from last time might have done some bad things and attempted to find out what had happened. Another uniformed ‘police officer’ then questioned these children, whereas the other half of the children never met any police officer and were only questioned by a casually dressed interviewer about what had happened with the babysitter. Compared with the ‘casual’ condition, the children in the police condition gave fewer accurate statements and more inaccurate statements. Goodman (1993) summarised these findings by stating that ‘one should be concerned not only with the actual questions but also with the context of the interview. An accusatory or intimidating context leads to increased errors in children’s reports’ (p. 15).

Ceci and Bruck (1995) also examined the possible effects of interviewer status and noted that interviews by high-status adults may have negative effects on the accuracy of children’s reports. They concluded that young children are sensitive to the status and power of their interviewers and, consequently, are especially likely to comply with the implicit and explicit agenda of such interviewers. To some extent the children’s recognition of this power differential may be one of the most important causes of their suggestibility (Ceci & Bruck, 1995). Bull and Corran (2002) are more reserved in judgement, suggesting that whilst such a claim may seem reasonable and even attractive, very few
previously published studies have directly examined the effects of an interviewer’s authoritative manner on children’s accounts.

**THE EFFECT OF AUTHORITY ON CHILDREN’S EYEWITNESS IDENTIFICATION**

Going beyond the above-mentioned findings regarding children’s recall accuracy, our study examines the effect of authority on children’s performance in eyewitness identification line-ups. Extrapolating from the recall studies, we suggest that an increased appearance of authority and power in the investigator increases a child’s suggestibility, with possibly detrimental effects on identification accuracy (Memon & Gabbert, 2003; Pozzulo & Lindsay, 1998). We focus specifically on potentially negative effects of a line-up administrator wearing uniform or plain clothes. The police uniform is a powerful cue as to the wearer’s authority, capabilities, and status, and when an individual wears the police uniform citizens tend to be more co-operative with any requests made (Bickman, 1974; Bushman, 1988). Hence, it may be expected that uniforms also increase suggestibility in children’s eyewitness identifications.

Our research question is a practically relevant one because the procedures followed in real police line-ups do not seem to be consistent in this respect, as a recent survey of line-up procedures in England revealed: in an information request made by the first author in May 2008, 36 out of the 39 police constabularies across England were contacted via e-mail and asked to describe the typical procedures followed in the conduction of line-ups involving child eyewitnesses in their respective counties. Replies were received from 23 out of the 36 constabularies contacted. They revealed that—despite the fact that all ID procedures are conducted under Code D of the Police and Criminal Evidence Act (1984)—there is no universal requirement for the officer in charge of a line-up to be either uniformed or in plain clothes. Specifically, the results of the survey suggested that police in England currently adhere to one of four types of practice regarding the use of uniforms: (1) the line-up administration officer wears street uniform (7 responses); (2) they wear office uniform (3 responses); (3) they wear casual clothing (10 responses); or (4) they wear a mixture of street uniform, office uniform, or casual clothing (3 responses). In short, line-ups involving child eyewitnesses are conducted by uniformed officers in about half of police constabularies in England and by informally clothed officers in the remaining half. Hence, there is no standardised practice with respect to the wearing of a uniform in conducting line-ups, and therefore the question regarding its impact on identification accuracy is an important one.

**STUDY OUTLINE AND HYPOTHESES**

Our study investigates the impact of a line-up administrator’s uniform on children’s identification performance in target-present and target-absent line-ups. We expect children to make more identifications in the presence of a uniformed line-up administrator, which will necessarily reduce accuracy if the perpetrator is not in the line-up. Beyond these main predictions, we were also interested in the children’s experienced anxiety during the identification procedure, in their confidence in their identification decisions, and in decision times as an—if crude—indicator of the identification decision process. Children’s anxiety
and suggestibility are plausibly related, and therefore we expected anxiety levels to roughly match the pattern of identification performance; specifically, higher anxiety should be associated with poorer performance. We had no specific hypothesis linking confidence and identification times to performance but treated these dependent variables as exploratory ones.

**METHOD**

Participants in this study witnessed a mock crime before viewing a line-up and attempting to identify the target. Participants took part in three stages: (1) the witnessing phase, in which a distracter task was provided whilst the participants witnessed a computer monitor being stolen; (2) the identification phase, in which the participants were asked to select the target from a simultaneous presentation of black-and-white photos; and (3) the debriefing stage in which the true purpose of the study was revealed.

**Participants and design**

Sixty participants (31 male, 29 female) aged 9–10 years old took part in all stages of this experiment. All were current pupils from one of two class groups at a primary school in Southampton, England and were from a variety of ethnic origins, although predominantly white (40 white, 7 Asian, 7 black, 6 mixed ethnic origin). The children and their parents were both asked to give consent to participate in the study. Out of 67 children approached, 4 decided not to participate and 3 only participated in the first stage of the study.

Fifteen children were randomly allocated to one of four conditions (seven boys and eight girls or vice versa in each condition) resulting from the combination of two independent variables: (1) whether or not the actor conducting the eyewitness identification procedure was dressed in a uniform (uniform: present vs. absent) and (2) whether the target was present in the line-up (target: present vs. absent). The dependent variables were (1) whether or not the participant identified somebody from the line-up (*choosing*) and (2) whether or not the identification was correct (*accuracy*). In the target-absent conditions, a correct decision was recorded if the participant stated that the target was not present in the line-up. A simultaneous rather than sequential line-up procedure was used to allow the timing of the participants’ identification decisions. In addition to participants’ identification responses, we also recorded participants’ confidence in the accuracy of their identification decision on a scale from 1 to 5 and the time taken to make the identification. Participants’ anxiety was assessed using the State-Trait Anxiety Inventory for Children (STAI-C; Spielberger, 1973).

**Materials and study environment**

The study was conducted in a Southampton primary school. The classroom used for the witnessing stage of the study was arranged in such a way that all the tables and chairs faced the front wall. Each of the desks contained a pen and a piece of spare plain paper. At the front of the room another table was placed that was completely empty except for a computer monitor. Above the front desk there were two A1 white sheets of paper that contained a list of 20 names on each.

A stopwatch was used to time the participants in both the witnessing stage and the identification stage. The target in the witnessing stage was an actor who was a mid-20s
white male with dark hair and no distinguishing features. The target was wearing a white T-shirt and blue jeans at the time of the offence. The line-up administrator in the identification stage was a different mid-20s white male who was also an actor. In the uniform present condition, the actor was dressed in clothes approximately consistent with that of a UK police officer. This consisted of a white shirt, navy blue tie, navy blue trousers, navy blue jacket, black shoes, and a police hat. In the uniform absent condition, the same actor was dressed in a striped blue, brown, pink, and grey jumper, blue jeans, and brown shoes.

A different room (an office in the same school) was used in the identification stage of the study and arranged to be empty except for a table with two chairs opposite each other. A series of eight black-and-white photos (25 × 19 centimetres) on A4 size paper were all placed on the table in front of the participant. Each photo presented the head and shoulders of a white male in his mid-20s with short dark hair and no distinguishing facial features on a white background. In the target-present conditions, the participants were shown one photo of the real target and seven foils. The foils were selected to match the general description and physical characteristics of the target. In the target-absent condition, the photo of the target was replaced with another matching foil. The position of the target in the target-present line-ups was randomly allocated for each participant between all eight possible positions, ensuring that it did not appear in the same place each time.

In the identification stage, the ‘State’ component of the STAI-C was administered. The STAI-C comprises two separate self-report scales that measure state anxiety (20 items) and trait anxiety (20 items). The state anxiety scale measures transitory anxiety states that fluctuate depending on the level of stress experienced in a given situation. Questions on the scale assess how an individual is feeling at a particular time and responses are rated on a three-point response scale ranging from 1 (not at all) to 3 (very much).

**Procedure**

**Witnessing phase**

The participants were seen in two groups of approximately 30. The second group was seen almost immediately after the first group had finished in order to limit communication between the two groups. They were seated at a table of their choice and were provided with an opening set of standardised instructions that essentially welcomed the participants to the study and explained the purpose of the study. The participants were then requested to look at the lists of names provided at the front of the room and try to memorise as many as possible for a memory test that was going to be held subsequently. It was confirmed that all the participants understood the instructions before proceeding. The stopwatch was started by the experimenter, who then left the room.

After 15 seconds an individual unknown to the participants (the target) entered the classroom quickly from the left-hand side, crossed the front of the classroom in front of the blackboard, picked up the computer monitor, and left the classroom carrying it. The target was in the room for no more than 15 seconds. The participants were left for another 30 seconds and then the original investigator re-entered the room and asked all of the participants to stop. The list of names at the front of the room was removed, and then a second set of standardised instructions was delivered asking the participants to attempt to write down all of the names previously displayed that could be remembered. After this the participants were thanked for taking part and shown out of the room. Anticipating that some of the participants might mention the individual taking the computer monitor to the
experimenter, a contingency plan had been prepared, which required the experimenter to thank the participant for mentioning it and assuring that it would be looked into. This was not needed, however, as no participants mentioned the incident, possibly because in the school environment, it is not uncommon for adults to enter classrooms and remove equipment for use.

Identification stage

The second part of the experiment was the identification stage, which took place approximately a week (between 5 and 7 days) after the first phase of the experiment and in which the participants were seen individually. Each participant was asked individually to enter a room and be seated at a desk. Present in the room was an actor who was playing the line-up administrator. Depending on the uniform condition, the actor was dressed in clothing resembling a police uniform or was wearing casual clothes, as described in the materials section. In both uniform conditions, the line-up administrator introduced themselves as such. A standardised statement was then used that essentially informed the participant that during the experiment last week a computer monitor had been taken from the test room (implying, in the context of the identification request and the line-up procedure, that this had been a criminal act) and requested that the participant look at some photos in an attempt to identify the individual who took the monitor.

Following this the line-up administrator provided another set of standardised unbiased line-up instructions that informed the participant that eight A4 black-and-white photos were to be placed on the table. Each participant was informed that the target may or may not be present in the line-up but that they were required to look at the photos and indicate if they could identify the target. The photos were placed on the table, and the participant was then asked to look at each photo for at least 10 seconds and, once all the photos had been examined, either to (1) point to the photo of the target (if recognised from the line-up) or (2) state that the target was not present in the line-up. The line-up administrator then overtly started a stopwatch, subsequently removing this from the participant’s view to leave him or her to the identification task. The watch was stopped as soon as the child had indicated his or her decision.

Once the participant had pointed out a picture or stated that the target was not present, he or she was asked to indicate his or her confidence in the accuracy of his or her decision on a scale from 1 (very unconfident) to 5 (very confident). The participant was then asked to fill out the STAI-C before finally being thanked for co-operating.

RESULTS

Overview

The results of this study were first analysed in terms of the number of children who chose someone from the line-up (whether correctly or incorrectly) (choosing) and second in terms of the number of children who made an accurate decision (i.e. a correct identification in target-present line-ups and a correct rejection of the line-up in the target-absent line-ups) (accuracy). Further analyses involved the time taken to make an identification decision (i.e. a positive identification or a rejection), the confidence rating of the decisions, and the participants’ state anxiety levels via the state part of the STAIC. We employed one-tailed tests to investigate our main hypotheses (that uniform presence increases choosing and
reduces accuracy specifically in target-absent line-ups), whereas all tests involving decision-related variables (anxiety, confidence, and decision times) were two-tailed. Because of our relatively small sample size, Fisher’s exact tests were used for the frequency analyses.

Identification decisions

Table 1 shows the frequencies of identification decisions made by the children in different conditions. The two lowermost rows summarise the results in terms of the numbers of children who chose somebody (the target or a foil) from the line-up (choosing) and also in terms of correct identification decisions (correct identifications and correct rejections) (accuracy). Table 1 also gives statistical cell-by-cell comparisons showing that the number of identifications was lower in the uniform absent/target-absent condition compared with each of the other conditions, whereas the number of correct identification decisions was lower in the uniform present/target-absent condition compared with each of the other conditions.

At a more general level, we find that the presence of a uniform (collapsing over the target variable) significantly increases choosing. When the line-up administrator was dressed in a uniform, 28 out of 30 children (93%) made an identification, but only 21 (70%) did so when he wore casual clothes, \( p = 0.02 \). As a measure of effect size, the odds ratio associated with this difference is 6.00, indicating a six-fold increase in the chance of somebody being identified from the line-up in the presence of a uniform. The same difference was found as a result of the target being present in the line-up or not (collapsing over the uniform variable): 28 out of 30 children (93%) made an identification in a target-present line-up, but only 21 (70%) did so in a target-absent line-up, \( p = 0.02 \), odds ratio = 6.00 (indicating a six-fold increase in identification chances with the target being present). With respect to accuracy, there was a significant effect of the target variable [target present: 19 out of 30 correct (63%), target absent: 9 out of 30 correct (30%), \( p = 0.01 \), odds ratio = 4.03] but only a marginal effect of uniform [uniform present: 11 out of 30 correct (37%), uniform absent: 17 out of 30 correct (57%), \( p = 0.098 \), odds ratio = 0.44] (Fisher’s exact tests, one-tailed).

Table 1 also confirms our general idea that the presence of a uniform should have the strongest impact if the target is absent from the line-up: Choosing and accuracy does not differ much as a function of the uniform variable if the target is present. However, with

<table>
<thead>
<tr>
<th>Identification decision</th>
<th>Target present</th>
<th>Target absent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Uniform present ( (n = 15) )</td>
<td>Uniform absent ( (n = 15) )</td>
</tr>
<tr>
<td>Correct identification</td>
<td>9 (60%)</td>
<td>10 (67%)</td>
</tr>
<tr>
<td>False rejection</td>
<td>—</td>
<td>2 (13%)</td>
</tr>
<tr>
<td>Foil identification</td>
<td>6 (40%)</td>
<td>3 (20%)</td>
</tr>
<tr>
<td>Correct rejection</td>
<td>—</td>
<td>2 (13%)</td>
</tr>
<tr>
<td>Total choosing</td>
<td>15(_{a}) (100%)</td>
<td>13(_{a}) (87%)</td>
</tr>
<tr>
<td>Total accuracy</td>
<td>9(_a) (60%)</td>
<td>10(_a) (67%)</td>
</tr>
</tbody>
</table>

Note: Frequencies not sharing a common subscript differ at \( p < 0.06 \) (Fisher’s exact tests, one-tailed).
the target being absent from the line-up (cf. the two rightmost columns in Table 1), the children made more identifications (uniform present: 13 out of 15 [87%], uniform absent: 8 out of 15 [53%], \( p = 0.054 \), odds ratio \( = 5.69 \)) and were less accurate in their identification decisions (uniform present: 2 out of 15 [13%], uniform absent: 7 out of 15 [47%], \( p = 0.054 \), odds ratio \( = 0.18 \)) (Fisher’s exact tests, one-tailed).

The analysis of supplementary decision-related variables probed for possible reasons for the observed pattern of identification decisions. Specifically, we investigated (1) how the children’s experienced anxiety in the identification situation differed across conditions; (2) how long they took to make their identification decisions; and (3) how confident they were in them. Table 2 gives an overview of these results.

### State anxiety

We analysed the children’s state anxiety scores, as obtained with the STAI-C, using a 2 (uniform: present vs. absent) \( \times 2 \) (target: present vs. absent) between-participants analysis of variance (ANOVA). This ANOVA revealed significant—and incidentally identical—main effects of both the uniform variable, \( F(1, 56) = 20.72, p < 0.001 \), partial \( \eta^2 = 0.27 \), and the target variable, \( F(1, 56) = 20.72, p < 0.001 \), partial \( \eta^2 = 0.27 \), reflecting that uniform presence and target absence were associated with more state anxiety. There was also a significant interaction between the uniform and target variables, \( F(1, 56) = 4.86, p = 0.03 \), partial \( \eta^2 = 0.08 \). Follow-up \( t \)-tests (see subscripts in Table 2) showed that the children were significantly more anxious in the uniform present/target-absent condition than in the remaining conditions.

### Time taken to make an identification decision

The same ANOVA as above with decision time as the dependent variable did not reveal a significant main effect of the uniform variable, \( F(1, 56) = 2.13, p = 0.15 \), partial \( \eta^2 = 0.04 \), but did reveal a significant main effect of the target variable \( F(1, 56) = 4.79, p = 0.03 \), partial \( \eta^2 = 0.08 \), reflecting faster decisions when the target was present in the line-up. Again, these results were qualified by a significant interaction between the uniform and target variables, \( F(1, 56) = 7.69, p = 0.008 \), partial \( \eta^2 = 0.12 \). The results of the follow-up \( t \)-tests indicated in Table 2 showed that the children in the uniform absent/target-absent condition took significantly longer to make an identification decision than in the other three conditions.

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Table 2. Means of variables associated with identification decisions in different conditions

<table>
<thead>
<tr>
<th></th>
<th>Target present</th>
<th>Target absent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Uniform present ((n = 15))</td>
<td>Uniform absent ((n = 15))</td>
</tr>
<tr>
<td>State Anxiety*</td>
<td>39.8a</td>
<td>37.6a</td>
</tr>
<tr>
<td>Time (seconds)†</td>
<td>62a</td>
<td>54a</td>
</tr>
<tr>
<td>Confidence‡</td>
<td>3.5a</td>
<td>3.7a</td>
</tr>
</tbody>
</table>

*Means not sharing a common subscript differ at \( p < 0.001 \) (\( t \)-tests, \( df = 28 \)).

†Means not sharing a common subscript differ at \( p < 0.05 \) or less (\( t \)-tests, \( df = 28 \)).

‡Means not sharing a common subscript differ at \( p < 0.01 \) or less (\( t \)-tests, \( df = 28 \)).
Identification decision confidence

The same ANOVA as above with confidence as the dependent variable revealed a significant main effect for the target variable, $F(1, 56) = 10.03, p = 0.002$, partial $\eta^2 = 0.15$, but only marginally so for the uniform variable, $F(1, 56) = 3.61, p = 0.06$, partial $\eta^2 = 0.06$. The children were more confident when the target was present in rather than absent from the line-up, and they were (or appeared) more confident if the line-up administrator wore a uniform. However, there was again a significant interaction between the two variables, $F(1, 56) = 7.08, p = 0.01$, partial $\eta^2 = 0.11$, showing that the children were least confident in the uniform absent/target-absent condition compared with the other three conditions, as revealed by follow-up $t$-tests (see Table 2).

Correlational evidence

To complete our analysis of the possible impact of decision-related variables on identification decisions, we computed within-condition correlations between these and the two main identification variables. These correlations are shown in Table 3. The only strong correlations to emerge were those involving the time taken to choose in the target-absent conditions. More specifically, in the uniform absent/target-absent condition, the association was indeed almost perfect. Basically, those who took longer did not choose and were correct, and those who were faster made a choice and were wrong (the correlations are actually mirror images of one another because in target-absent line-ups, choosing logically means being wrong). The same relationship was also present in the uniform present/target-absent condition but attenuated.

**DISCUSSION**

We found that children in the uniform present conditions made significantly more choices (*choosing*) but significantly fewer correct decisions (*accuracy*) compared with children in
the uniform absent conditions. This effect was most pronounced when the target was absent from the line-up.

Along the lines of arguments and research put forward in the introduction, these results may be interpreted as follows, starting with the observation that the statistically most remarkable findings emerged in the target-absent conditions. If, as suggested, the presence of the uniform promotes anxiety and puts additional pressure to make an identification on the children (in fact, both of these claims were borne out in our analysis), it would seem that the uniform absent condition reflects more faithfully the children’s spontaneous or natural identification processes. In this condition, the absence of the target led the children to take much longer to make an identification decision, and they were less confident in it. This makes sense, given some plausible process assumptions. Specifically, in a target-present line-up, the comparison process can be terminated once a match between one’s memory representation and one of the persons in the line-up (hopefully, the target) is established, resulting in faster overall decision times. This is not possible in a target-absent line-up, unless a false identification is made, because all of the persons in the line-up will have to be scrutinised, resulting in longer overall decision times. Similarly, the higher probability of establishing a positive match in target-present line-ups should lead to higher confidence, whereas non-matches as typically obtained in target-absent line-ups are not as diagnostic (for example, a non-match could also be due to memory deterioration—cf. Walther, Bless, Strack, Rachstraw, Wagner, & Werth, 2002, for the role of undiagnosticity in recognition—or an altered physical appearance of the target if he were present), resulting in lower confidence.

In short, it seems natural that eyewitnesses—in non-threatening situations—take longer to make decisions and are less confident in them if the target is absent from rather than present in the line-up. Compared with this ‘baseline’ of eyewitness behaviour, the question then arises why the same relationship did not hold in the uniform present conditions. A plausible interpretation would be that the children were trying to help the police, which for most people, not only children, means trying to positively identify someone from the line-up. Many witnesses assume that the police have already arrested the guilty party and just need some final confirmation to be able to convict them (informational influence; cf. Steblay, 1997). The children might also be motivated to make an identification in order to appear competent, as a non-identification might be interpreted as an inability to remember and reflect unfavourably upon them (i.e. creating social disapproval; normative influence sensu Steblay, 1997). For the same reasons (i.e. either because they relied on the police making no mistakes or because of the desire to appear competent), these identifications would be made quickly and with confidence. The heightened anxiety levels in the target-absent condition would then have to be interpreted as resulting from the perceived threat of ‘failing’ the identification task, as there was nobody who clearly matched their memory of the target. Trying to appear competent nonetheless, they would then have lowered their identification threshold and quickly identified one of the foils (this tendency towards increased foil recognition in the uniform present conditions is also found in the target-present line-up; see Table 1).

In summary, our interpretation of the obtained pattern of results is that in the uniform present conditions, the children’s desire to comply with the police and to appear competent has overridden their natural memory recognition processes. The clear relationship between identification time, confidence, and accuracy found in the uniform absent conditions was suppressed, at least to some degree, when the line-up administrator wore a uniform and replaced with a confident readiness to make an identification, perhaps helped by the
assumption that the police have made sure that the target is in the line-up. Hence, our findings support the concern that there is in fact a problem with children’s eyewitness performance in authority settings, not only in terms of recall accuracy as mentioned in the introduction (see Ceci & Bruck, 1995; Goodman, 1993; Tobey & Goodman, 1992) but also when it comes to line-up identification.

Practical implications

The effect size associated with our main finding is quite large: in target-absent line-ups, the chances of somebody being falsely identified as the perpetrator (vs. the line-up being rejected) were almost six times higher if the line-up was conducted by the uniformed administrator as opposed to the same person wearing casual clothing (the odds of a false identification vs. a correct rejection of the line-up were 13:2 or 6.5 in the uniform present condition and 8:7 or 1.14 in the uniform absent condition, resulting in an odds ratio of $6.5/1.14 = 5.69$). Although the size of this effect may not perfectly generalise to real-world line-ups (it could be smaller or even larger under real-world conditions), it is sufficiently disturbing to warrant serious attention.

In general, the evidence from previous research that children are more likely to choose from a line-up is relatively strong, although the underlying mechanisms are not yet fully understood. Compared with adults, children may be more vulnerable to any perceived social and environmental demands to choose, or they may have a less sophisticated understanding of the purposes of an identification test and the potential consequences of their decision (Brewer, Weber, & Semmler, 2005). In any case, our study has shown that these difficulties are exacerbated in the presence of a uniformed line-up administrator. It is important that such mechanisms are limited in order to improve the accuracy of child eyewitnesses and increase confidence that the identifications made are correct.

An obvious implication of our findings would be to avoid conducting child eyewitness line-ups through uniformed officers. Our survey of police procedures in England showed that having non-uniformed line-up administrators is already current practice in many constabularies. Our findings support this practice and recommend that it be extended to other constabularies and indeed to police forces in other countries as well.

Additionally, accompanying research can evaluate its effectiveness under different circumstances, for instance, line-up procedures other than the simultaneous one used in our study. Although simultaneous line-ups seem to be widespread (e.g. 90% of line-ups as reported in a survey of US Police were simultaneous, most of them being conducted as photo spreads; Wogalter, Malpass, & McQuiston, 2004), it would be interesting to see if sequential line-ups are less sensitive to authority/uniform effects, as they seem to be more resistant to line-up biases in general (Lindsay, Lea, Nosworthy, Fulford, Hector, LeVan, & Seabrook, 1991). It would also be useful to know to what degree hybrid procedures, which contain both sequential and simultaneous elements (such as the one commonly followed in the UK; see Wright & Skagerberg, 2007 or Valentine & Heaton, 1999 for descriptions), are vulnerable to such effects. Thus, there is clear applied merit in investigating this effect using varied presentation methods. Moreover, it would be interesting to assess the effectiveness of non-uniformed line-up administration in combination with different types of line-up instructions (fair vs. biased; see Steblay, 1997); it is easy to imagine that biased instructions would exacerbate the effect of uniformed administration.
A related question is whether authority/uniform effects would differ in strength as a function of using live vs. photo line-ups. As a matter of fact, photo line-ups seem to be the rule rather than the exception (see Wells, Memon, & Penrod, 2006; Wogalter, Malpass, & McQuiston, 2004; for overviews of US practice; the typical UK procedure is also photo based, cf. Wright & Skagerberg, 2007 or Valentine & Heaton, 1999)—which also implies some ecological validity of the procedure used in our study. Generally, witness performance and error rates do not seem to differ systematically between the two modes of line-up presentation (see Brewer & Palmer, in press; Cutler, Berman, Penrod, & Fisher, 1994 for reviews), and we are not aware of any evidence to support the idea that the present manipulation of authority would exert differential effects for live vs. photo line-ups.

Finally, further research could also examine whether the gender, ethnicity or age of the line-up administrator in uniform affects children’s identification performance. Lamb and Garretson (2003), for example, found that girls of all ages provided more information in response to directive questions posed by a female rather than male interviewer, whereas boys did not respond differently to male and female interviewers. It is currently unclear whether an administrator’s gender also affects witness behaviour in the line-up setting.

In general, it seems likely that authority is one important aspect of the administrator-witness relationship, but other aspects (e.g., gender, ethnicity or age) might play a role in themselves or might interact with the authority/uniform aspect. This is a relatively neglected area of research on eyewitness line-up identification practice, but one that may be of considerable practical importance.

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REFERENCES


