Change blindness can cause mistaken eyewitness identification

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The current study investigated the effects of change blindness and crime severity on eyewitness identification accuracy. This research, involving 717 subjects, examined change blindness during a simulated criminal act and its effects on subjects’ accuracy for identifying the perpetrator in a photospread. Subjects who viewed videos designed to induce change blindness were more likely to falsely identify the innocent actor relative to those who viewed control videos. Crime severity did not influence detection of change; however, it did have an effect on eyewitness accuracy. Subjects who viewed a more severe crime ($500 theft) made fewer errors in perpetrator identification than those who viewed a less severe crime ($5 theft). This research has theoretical implications for our understanding of change blindness and practical implications for the real-world problem of faulty eyewitness testimony.

Since 1992, the Innocence Project has used DNA evidence to win the exoneration of 246 prisoners nationwide. Faulty eyewitness identification played a role in the wrongful convictions of approximately 75% of these individuals (www.innocenceproject.org). Because errors in eyewitness testimony are a major cause of wrongful convictions, an important goal of research in eyewitness testimony is to reduce these errors.

Cognitive psychologists have been conducting research since the early 1900s to determine the causes of inaccurate eyewitness identification and have found a number of reasons why eyewitnesses incorrectly identify innocent people (Wells & Olson, 2003). One cause of faulty eyewitness identification occurs when an eyewitness mistakenly identifies a person as having committed the crime, when in fact the eyewitness had actually encountered that person in a different context. This phenomenon is known as unconscious transference (Buckhout, 1974; Houts, 1956; Loftus, 1976; Read, Tollestrup, Hammersley, McFadzen, & Christensen, 1990; Williams, 1963). The misidentification of a

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person who is familiar because he or she was previously seen in mugshots, rather than at the scene of the crime, is one example of unconscious transference (Brigham & Cairns, 1988; Cutler, Penrod, & Martens, 1987; Dysart, Lindsay, Hammond, & Dupuis, 2001; Lindsay, Nosworthy, Martin, & Martynuck, 1994); the misidentification of an innocent bystander at the crime scene as the offender is another example (Brown, Deffenbacher, & Sturgill, 1977; Buckhout, 1974; Geiselman, Haghighi, & Stown, 1996; Geiselman, MacArthur, & Meirovitch, 1993; Phillips, Geiselman, Haghighi, & Lin, 1997; Read et al., 1990; Ross, Ceci, Dunning, & Toglia, 1994).

Ross et al. (1994) proposed a theory as to why eyewitnesses misidentify an innocent bystander at the crime scene. They suggested that the misidentification of an innocent bystander occurs because the eyewitness infers that the perpetrator and bystander are the same person. These instances of unconscious transference that take place may actually be the result of change blindness (Ross et al., 1994). Change blindness is the phenomenon that occurs when a person fails to detect large changes between one viewed scene and another (Simons & Levin, 1998).

In one of the first demonstrations of change blindness, an experimenter approached a pedestrian and asked for directions to a building on campus (Simons & Levin, 1998). While the pedestrian provided the directions to the experimenter, two confederates interrupted the conversation bypassing between the experimenter and the pedestrian carrying a large door. As the door passed between them, the first experimenter changed places with a second experimenter, who then emerged from behind the door. The second experimenter continued to talk to the pedestrian as if nothing unusual had happened. The second experimenter wore different clothing than the first experimenter, and he also differed from the first in height and voice. Even with these presumably noticeable differences in experimenters, half the pedestrians failed to notice the change.

To improve upon their methodology and to apply change blindness to a real-world paradigm, Levin, Simons, Angelone, and Chabris (2002) investigated the phenomenon of change blindness in another personal interaction. In this experiment, however, the events that took place involved direct, personal interactions. That is, subjects approached a confederate, who stood behind a counter, to participate in an experiment. After a brief interaction with the experimenter, the subject signed a consent form and handed it to the experimenter. The experimenter then ducked behind the counter to put the form away, and a second experimenter popped up from behind the counter to conclude the interaction. This time, 75% of subjects failed to detect the change in experimenters.

Given the frequency with which observers fail to detect changes in the people with whom they are directly interacting, it is surprising that minimal research has been conducted that has integrated the two concepts of change blindness and eyewitness identification. In two such studies (Davis, Loftus, Vanous, & Cucciare, 2008), a woman was seen walking down a supermarket aisle (the continuous innocent – one seen in an apparently continuous action sequence). She passed behind a stack of boxes, whereupon a second woman emerged to steal a bottle of liquor. The scene then switched to the vegetable aisle, where yet a third woman (the discontinuous innocent – seen in an apparently different sequence) was seen shopping. The majority of subjects (67% in Expt 1 and 60% in Expt 2) failed to notice the change of shoppers behind the boxes, mistakenly believing that the two different women they had seen shopping in the liquor aisle were one and the same. Any innocent in the video was at enhanced risk of misidentification. However, of subjects who failed to notice the change, more misidentified the ‘continuous innocent’ who had been seen in the same aisle as the perpetrator than the ‘discontinuous innocent’ (who had been seen in the vegetable
The reverse was true of those who did notice the change behind the box. These patterns were found when the two innocents were both in the (perpetrator absent) lineup, and when only one innocent was present. Further, the authors demonstrated in one study that increased distraction (an instruction to memorize as many products per aisle as possible) would result in less change detection relative to no distraction (no memorization instructions).

Davies and Hine (2007) also integrated the concepts of change blindness and eyewitness identification by showing subjects a video of a burglary in which the actor playing the burglar was replaced halfway through the video (and also halfway through the crime) with a second, different-looking man. Overall, 61% of subjects failed to notice the change. In an intentional memory condition (where subjects were warned that there would be a memory test), a smaller proportion of subjects (35%) failed to notice the change. Subjects who failed to notice the change either attributed the full crime to just one of the two men (69%) or did not correctly identify anyone (31%) from the subsequent photo lineup. But of those who noticed the change, 65% correctly identified both actors from the lineup.

Together, these two studies, as well as the broader literatures on change blindness and unconscious transference, suggest several conclusions. First, the majority of participants in these two studies (Davies & Hine, 2007; Davis et al., 2008), as well as many studies in the change blindness and unconscious transference literature, have failed to notice differences between one or more actors in live interactions and video scenes and have assumed continuity where it did not exist. Second, consistent with the body of research on unconscious transference, innocent bystanders are often misidentified as the perpetrator of a crime. Third, failure to detect the difference between a perpetrator and an innocent results in increased risk of misidentification of the innocent. Fourth, as indicated by the Davis et al. (2008) studies, innocents are not equally at risk. As argued by the authors, an innocent seen in an apparently continuous action sequence with the perpetrator—where expectancies that the person would be the same are relatively high—is more likely to be confused with the perpetrator than an innocent in an apparently unrelated location or action sequence.

In other words, change detection between criminal perpetrators and innocent bystanders can be poor and can result in misidentification of the innocent bystander. Further, change detection can be impaired (e.g. by distraction or illusory continuity of action) or enhanced (e.g. by a change of location or action type). Therefore, it is of substantial interest to establish the nature of influences on the likelihood of change detection versus change blindness—put differently, on the likelihood of successful identity discrimination between criminal perpetrators and innocent bystanders seen at the scene of the crime.

The specific focus of the present study was to examine the potential influence of ‘attentional capture’ that may be produced by the crime itself. In the Davis et al. (2008) study, the change of actors occurred immediately before the crime in all conditions. Therefore, participants may have focused more attention on the perpetrator as a result of the crime, and as a consequence may have been more likely to detect the difference between the perpetrator and the discontinuous innocent seen in the vegetable aisle immediately after. Such logic would suggest that change detection would have been maximized in the Davies and Hine (2007) study, as the change occurred halfway through the crime. However, neither study provided a test of the proposition that greater focus on the perpetrator would facilitate change detection. The present study was designed to provide such a test.
To test the attentional capture hypothesis, we chose to vary the severity of the crime. Leippe, Wells, and Ostrom (1978) found that high crime seriousness was associated with better identification accuracy, suggesting that the more severe crime may have elicited greater attention to the perpetrator during encoding. Specifically, they found that when subjects believed a stolen object to be more expensive and the crime to be a serious one (a stolen calculator, which was a serious crime at the time), 56% of the subjects made an accurate identification of the thief. When the crime was not serious (a stolen pack of cigarettes), only 19% made an accurate identification. Therefore, to test our hypothesis that a more severe crime elicits greater attention to the perpetrator during encoding, subjects were randomly assigned to view one of four 2-min videos of a confederate committing a crime. In two of the videos (the ‘no change’ conditions), Actor A steals a sum of money (either $5 or $500), while Actor B is not in the video. In the other two videos, Actor A steals a sum of money (again, either $5 or $500) and then is replaced (during a quick turn around the corner) by the innocent Actor B, creating the ‘actor change’ videos.

We hypothesized the following: first, consistent with previous research, we expected many participants in the actor change conditions to fail to notice the change between the perpetrator and the innocent actor. Second, because many participants in the actor change conditions will not notice the change (or difference) between the perpetrator and the innocent actor, (a) the overall rate of identification error will be greater in the actor change conditions than in the no change conditions and (b) the specific rate of misidentification of the innocent actor will be greater in the actor change than the no change conditions. Third, because we expected the more severe crime to create greater attentional capture, we in turn expected that (a) change detection would be greater in the more severe conditions and, therefore, (b) identification accuracy would be greater (leading to more correct identifications of the true perpetrator and fewer misidentifications of the innocent actor). Finally, in line with the results of Davis et al. (2008), we expected that within the actor change conditions, those who accurately detected the change would be more likely to accurately identify the perpetrator and less likely to misidentify the innocent actor compared to those who failed to detect the change.

**Method**

**Subjects**

Subjects were 779 undergraduate students at the University of California, Irvine, who received extra credit for their participation. From this total, the data from 62 participants were removed because they failed to answer critical questions (N = 18), knew one or more of the lineup members (N = 26), or reported that there were less than two or more than three actors in the video (N = 18). This left a functional N of 717. Of these, 180 were randomly assigned to the low severity no change condition, 163 to the high severity no change condition, 180 to the low severity actor change condition, and 194 to the high severity actor change condition.

The average age of those who completed the experiment was 20.4 (range = 18–52), and their average number of years at the University of California, Irvine was 2.8. The majority was female (77%), with diverse ethnicity: Asian (52%), Caucasian (20%), African-American (1%), Hispanic (12%), and other or multiple ethnic groups (16%).
Design
In a 2 (crime seriousness) × 2 (no change vs. actor change) design, subjects were randomly assigned to view one of four different 2-min videos of a confederate committing a crime. Half the videos depicted a relatively more serious crime (theft of $500), and half a relatively less serious crime (theft of $5). Further, half (the two ‘no change’ videos) depicted only one actor (Actor A) in the vicinity of the crime, whereas the other half (the two ‘actor change’ videos) depicted two actors. In the actor change videos, Actor A turns a corner after stealing the money and is out of sight for 1 s, whereupon Actor B replaces Actor A. In the no change videos, Actor A turns a corner after stealing the money and is also out of sight for 1 s.

Materials and procedure
Subjects individually watched the videos in a computer laboratory, seated approximately 16 in. (40 cm) from a 17-in. (43 cm) computer monitor. Each video begins with a student studying at a table in an empty student lounge. The student reaches for her drink only to find that she has already finished it. In the low severity crime conditions, the student reaches into her backpack and pulls out her wallet. She searches for some money ostensibly to purchase another drink. She finds $2 and a five-dollar bill. She bookmarks her textbook with the five-dollar bill and leaves the room with the $2 to purchase a drink. In the high severity crime conditions, the student opens an envelope next to her textbook labelled ‘Fundraiser-$500’ and takes out five $100 bills. She then puts the bills back into the envelope and bookmarks her textbook with the envelope. The student reaches for her wallet and pulls out $2. She leaves the room with the $2 to purchase a drink.

In every condition, 2 s after the student leaves, Actor A enters the room. Actor A walks by the student’s table to a bookshelf in the back of the lounge. She picks up a book and walks back to the door. When Actor A passes by the student’s table, she stops. Actor A looks around to make certain that no one sees her. In the low severity crime conditions, Actor A takes the five-dollar bill out of the student’s textbook and puts it in the book she is carrying. In the high severity crime conditions, Actor A takes the envelope out of the student’s textbook and puts the five $100 bills in the book she is carrying. She then places the empty envelope back in the student’s textbook where it was.

In the no change conditions, Actor A leaves the room after having stolen the money and turns around a corner. She then walks through another door to exit the building. In the actor change conditions, Actor A leaves the room after having stolen the money and turns around a corner. When Actor A turns around the corner, she is replaced with Actor B who is similar in appearance and wearing similar clothing. Actor B walks through another door to exit the building. Actor A does not appear again after she is replaced with Actor B.

After watching the video, subjects completed three filler questionnaires on the topics of eyewitness testimony issues, interpersonal reactivity, and the need for cognition. Data from these measures did not lead to any significant findings, so they will not be discussed further. Subjects were also asked for their age, year in school, ethnicity, and anticipated ultimate level of education.

Next, the subjects were instructed to type everything they could remember about the video and were allowed 2 min to complete this free recall task. After 2 min had passed, the computer screen advanced to the next screen that displayed the following prompt:
how many different people were in the video (1, 2, 3, or 4)? They were then instructed by computer text to describe (by typing a short description) what each of those people did in the video.

The average time delay between watching the video and identifying the perpetrator was 15 min. The next screen displayed a photospread of six photos that included the pictures of both Actors A and B, as well as four other people who were not in any of the videos (see Figure 1). Subjects were then asked a series of questions that were typed on the computer screen. Subjects were asked, ‘Is the person who stole the money in this lineup?’ (with a choice of yes or no) and ‘If the person who stole the money is pictured above, which person is the perpetrator?’ (with choices of: Person A, Person B, Person C, Person D, Person E, Person F, or I Don’t Know). Then to gauge the subject’s confidence level and familiarity with the actors in the video and lineup, three questions were asked. First, subjects were asked, ‘If you identified a person in the lineup, how confident are you that your identification is correct?’ (with answer choices on a scale from 1 = guessing to 7 = extremely confident). Next, subjects were asked, ‘Did you recognize anyone in the photospread or video that you are familiar with from outside this study (i.e. from a class, an extracurricular activity, etc.)?’ (with a choice of yes or no). Finally, subjects were asked to type in an answer to the questions, ‘If yes, whom did you recognize and from where?’

On a new screen, subjects were asked two questions designed to probe whether they had noticed the change of actors: ‘Did you notice anything unusual or odd about the video you saw at the beginning of this study?’ (yes or no) and ‘If yes, what did you think was unusual or odd?’ On the following screen, subjects were probed for awareness of the change blindness phenomenon in two final questions: ‘Have you learned anything about or are you familiar with the phenomenon of change blindness?’ (yes or no) and ‘If yes, what have you learned, and where did you learn about it?’

Subjects were then fully debriefed and excused. Subjects took, on average, 25 min to complete all procedures.

Figure 1. Photospread lineup with six photos including Actor A, Actor B, and the four foils.
**Results**

**Manipulation check**
We first examined whether subjects had noticed the amount of money that was stolen. To determine this, the free recall protocols were coded. In the low severity conditions ($5 theft), 88% of subjects mentioned the exact dollar amount of the money that was stolen during the free recall task. In the high severity conditions ($500 theft), 80% of subjects spontaneously recalled that $500 was stolen. Taken together, a total of 84% mentioned the exact dollar amount of the money that was stolen by the thief in the video; thus, the crime severity manipulation was effective.

**Identification accuracy**
All subjects were first asked whether the perpetrator was in the (target present) lineup, and then which member of the lineup was the perpetrator. A total of 201 subjects (28%) responded that the perpetrator was absent from the lineup. Most of these subjects did not make a selection from the subsequent lineup ($N = 116$) or responded that they did not know which member of the lineup was the perpetrator ($N = 76$).

The data from the remaining 516 subjects (i.e. those who initially said that the perpetrator was in the lineup) are the primary focus of our analyses. In the no change conditions, 64% of subjects correctly identified Actor A as the perpetrator (see Table 1). In the actor change conditions (Actor B replaced Actor A), just 36% of subjects correctly identified Actor A as the perpetrator. When correct identifications are compared to misidentifications (including ‘I don’t know’ responses), the accuracy of subjects in the no change conditions and subjects in the actor change conditions was significantly different, $\chi^2(1, N = 516) = 40.76, p < .001$.

In the high severity conditions (where $500 was stolen, collapsed across the actor change and no change conditions), 51% of subjects correctly identified Actor A as the perpetrator. In the low severity conditions (where just $5 was stolen), fewer subjects (46%) accurately identified Actor A as the perpetrator. But these differences did not reach statistical significance when compared to misidentifications (including ‘I don’t know’ responses), $\chi^2(1, N = 516) = 1.14, p = .29$.

When all four conditions were compared, subjects in the high severity no change condition were the most accurate (65% chose Actor A from the photospread), while those in the low severity actor change condition were the least accurate (just 31%)

<table>
<thead>
<tr>
<th>Group</th>
<th>Correct (Actor A)</th>
<th>Distracter (Actor B)</th>
<th>Misidentifications (all foils)</th>
<th>I don’t know</th>
<th>Total</th>
<th>Perp. not in lineup</th>
</tr>
</thead>
<tbody>
<tr>
<td>No change</td>
<td>148 (64%)</td>
<td>21 (9%)</td>
<td>68 (29%)</td>
<td>16 (7%)</td>
<td>232</td>
<td>111</td>
</tr>
<tr>
<td>Low severity</td>
<td>75 (63%)</td>
<td>12 (10%)</td>
<td>38 (32%)</td>
<td>6 (5%)</td>
<td>119</td>
<td>61</td>
</tr>
<tr>
<td>High severity</td>
<td>73 (65%)</td>
<td>9 (8%)</td>
<td>30 (27%)</td>
<td>10 (9%)</td>
<td>113</td>
<td>50</td>
</tr>
<tr>
<td>Actor change</td>
<td>101 (36%)</td>
<td>99 (35%)</td>
<td>165 (58%)</td>
<td>18 (6%)</td>
<td>284</td>
<td>90</td>
</tr>
<tr>
<td>Low severity</td>
<td>42 (31%)</td>
<td>53 (39%)</td>
<td>88 (65%)</td>
<td>6 (4%)</td>
<td>136</td>
<td>44</td>
</tr>
<tr>
<td>High severity</td>
<td>59 (40%)</td>
<td>46 (31%)</td>
<td>77 (52%)</td>
<td>12 (8%)</td>
<td>148</td>
<td>46</td>
</tr>
</tbody>
</table>

Table 1. Subjects who made a correct identification, misidentification, and no identification.
chose Actor A). The differences in accuracy across the four conditions were statistically significant, $\chi^2(3, N = 516) = 43.10$, $p < .001$.

**Confidence and accuracy**

These data provided a statistically significant relationship between confidence and accuracy. The mean rating of confidence for those who were inaccurate was 4.24 ($SD = 1.68$), while those who were accurate had a mean confidence rating of 5.01 ($SD = 1.38$). Subjects who were more accurate were significantly more confident in their identifications, $t(496.59) = 5.64^1$, $p < .001$, $r_{pb} = .07$.

**Change detection**

Of the 374 people in the actor change conditions, only 17 (4.5%) detected a change when Actor B took the place of Actor A (a much smaller proportion than that found in previous studies of change blindness). Therefore, 95% of the subjects in the actor change conditions did not detect the change in actors. Although 17 subjects is too few to carry out many of the statistical comparisons used in previous change blindness research, we note that six of these subjects said that the perpetrator was not in the lineup, nine (82%) of the remaining subjects accurately identified the perpetrator (Actor A), and just one (9%) incorrectly identified the distracter (Actor B). If we compare the accuracy (correct or not, which includes ‘I don’t know’ responses) of the 11 participants who noticed the change (and made a selection from the lineup) to the 505 who did not, then, as expected those participants who noticed the change were more likely to select the perpetrator from the lineup, $\chi^2(1, N = 516) = 5.07$, $p = .02$.

A total of 150 subjects claimed to know about the phenomenon of change blindness, mostly from discussions in their psychology classes. The truth of these claims was variable. For example, one subject wrote, ‘The human eye can detected\(^2\) the greatest changes in the color green’ as a definition of change blindness. Other subjects were closer to the mark: ‘Sometimes when we are so focused on one task, we fail to notice something that can be obvious’.

Subjects who claimed to know about change blindness (regardless of the accuracy of their definitions) were no more likely to notice the change than those who claimed ignorance. Specifically, 3.3% of familiar subjects detected the change, compared to 2.1% of unfamiliar subjects, $\chi^2(1, N = 710) = 0.72$, $p = .40$. Some of the ‘knowing’ subjects’ open-ended responses to the question of what they knew about change blindness were particularly revealing. For example, ‘I’m really good at catching the details, I think i have a photographic memory and can remember alot of the images in the video clip’ and ‘my psych teacher talked about it in class yesterday’ were both responses from subjects who had failed to detect the change of actors moments before in the study.

Crime severity did not affect whether or not subjects noticed the change. Six percent of participants in the low severity actor change conditions noticed the change, while 3% in the high severity actor change conditions noticed the change, $\chi^2(1, N = 374) = 1.96$, $p = .16$.

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1. Adjustments have been made to the degrees of freedom because of unequal variance in this and other calculations throughout this paper.
2. We note that all quotes represent the exact text entered by subjects, including spelling and grammar mistakes.
Misidentification
In the no change conditions, 29% of subjects misidentified someone in the lineup and a further 7% selected ‘I don’t know if the perpetrator is pictured in the lineup’ (see Table 1). In the actor change conditions, the misidentification rate rose to 58%, and a further 6% stated that they didn’t know who the perpetrator was. In the no change conditions, the proportion of subjects who misidentified each foil varied, from just 0.4% (N = 1) to 13% (N = 30), but the distracter (Actor B) was not the most popular foil (selected by 9% of participants; N = 21).3

In the actor change conditions, subjects were as likely to identify the innocent actor (Actor B; 35%) as the actual perpetrator (Actor A; 36%). Subjects in the actor change conditions were also more likely to pick Actor B (the distracter) from the lineup than any other foil, by more than two to one (35% of subjects chose Actor B, 15% chose the next most common foil). Crime severity did not contribute significantly to whether those in the actor change condition picked the innocent Actor B: 21% versus 25% for the high and low severity conditions, respectively, χ²(1, N = 516) = 1.41, p = .24.

Discussion
Misidentification and identification accuracy
Although only 17 people detected a change in actors in the actor change conditions (about 5% of people who were exposed to this change), more than a third of subjects in the actor change conditions identified the second actor (which was equivalent to the proportion of subjects who correctly identified the perpetrator). It is clear that unconscious transference, as a result of change blindness, is a problem when identifying perpetrators of a crime. In situations where a witness does not notice that an innocent person has replaced a perpetrator in a visual scene, he or she is likely to (incorrectly) identify that innocent person. Because Actor B was not the foil most often chosen by subjects in the no change conditions, we conclude that the higher misidentification rate for Actor B in the actor change conditions was not the result of Actors A and B appearing too similar.

Another critical finding is that while more than half of subjects in the no change condition were accurate in their identifications of the perpetrator (64%), when Actor B replaced Actor A in the actor change conditions, this accuracy rate dropped significantly (to 36%). Subjects in the no change conditions were exposed to Actor A for a longer period of time than the subjects in the actor change conditions (40 s compared to 30 s). This might be one reason why more people correctly identified the perpetrator in the no change conditions. Another possible explanation is that the phenomenon of unconscious transference was in play. Subjects in the actor change conditions were exposed to an innocent actor (Actor B) immediately after they witnessed a crime committed by a guilty actor (Actor A). Because these subjects subsequently claimed that there were only two individuals in the video that actually contained three people (the victim, the guilty Actor A, and the innocent Actor B), there is evidence that they likely inferred that the perpetrator and the innocent actor were the same person, and as a result, identified the innocent actor rather than the actual perpetrator.

3Foil 1 was the most popular foil as she was chosen by 13% of subjects in the no change condition. Foil 2 was chosen by 0.4%; Foil 3 by 1%; Foil 4 by 6%.
Just 9% of subjects in the no change conditions (who did not see Actor B at all until the lineup) chose Actor B in the lineup. This proportion increased dramatically to 35% when Actor B made a small and entirely innocent appearance in the video. This may be another reason why the identification accuracy in the actor change conditions was significantly lower than that in the no change conditions; this also explains why Actor B was more often misidentified than any other foil in the actor change conditions.

Crime severity
Previous research has demonstrated that high crime seriousness is associated with better identification accuracy (Leippe et al., 1978). In line with these results, subjects in the current study who viewed a more severe crime ($500 theft) made fewer errors in perpetrator identification than those who viewed a less severe crime ($5 theft). These results suggest that the more severe crime may have elicited greater attention to the perpetrator during encoding, which lends support to the attentional capture hypothesis. That is, due to the higher severity of the $500 theft, subjects likely paid greater attention to the perpetrator when compared to subjects who viewed the $5 theft. As a result of the heightened attention these subjects gave to the perpetrator in the more severe crime conditions, subjects in the more severe crime conditions had better memory for the perpetrator and were more accurate in their identifications. Due to the greater attention given to the perpetrator in the severe crime actor change condition, one may expect that these subjects would be more likely to notice the change in actors; however, given the low rate of change blindness in our study, we cannot conclude this hypothesis to be true. Further research is necessary to determine whether our attentional capture hypothesis for more severe crimes holds true in a change blindness paradigm.

Confidence and accuracy
Much of the research conducted on the relationship between confidence and accuracy of eyewitness identifications has shown that there are relatively low correlations between the two (e.g. Neisser & Harsch, 1992; Wells & Murray, 1984). This may be attributable to the fact that accuracy and confidence are separate features of memory that can be affected by separate forces (e.g. Chua, Rand-Giovannetti, Schacter, Albert, & Sperling, 2004; Shaw & Zerr, 2003). Yet, there is certainly precedence for finding a significant correlation between confidence and accuracy (e.g. Odinot & Wolters, 2006; Read, Lindsay, & Nicholls, 1998). In the present study, subjects who were more confident were also more accurate in their identifications.

Change detection
In the actor change conditions, almost no one detected the change in actors; only 5% did, so this means that 95% of the subjects experienced change blindness. Thus, almost all the subjects in the actor change conditions thought the perpetrator and the innocent actor were the same person. This was not because Actors A and B were too similar in appearance; in the no change conditions, Actor B was not the most popular incorrect choice. This high rate exceeds that demonstrated in other studies. In the two experiments conducted by Davis et al. (2008), on average, 64% of subjects failed to detect a change in actors. In the experiment conducted by Davies and Hine (2007), 61% of subjects failed to detect a similar change. It is conceivable that our actors were
more similar to each other than the actors used in prior studies, but further research is needed to ascertain all the factors relevant to the degree to which subjects display change blindness in forensically-relevant settings.

**Limitations and future research**

One question for future research is what would happen if subjects were permitted to discuss their memories with others. In some real-world situations, witnesses talk to one another to discuss what they had seen from their own perspective (Paterson & Kemp, 2006; Skagerberg & Wright, 2008; Yarmey & Morris, 1998). Yarmey and Morris (1998) found that discussion between two eyewitnesses improved eyewitness recall and minimized inaccurate identifications in some circumstances. Other findings, however, have shown that post-event information, including conversations between co-witnesses, can alter the details of the original memory (e.g. Gabbert, Memon, & Allan, 2003; Loftus, 1979; Skagerberg & Wright, 2008; Wright, Self, & Justice, 2000). Thus, future studies are necessary to determine what role, if any, conversation with co-witnesses plays in recall in a change blindness paradigm.

In addition, the photospread lineup in the current study did not utilize all possible variations of the perpetrator and the innocent actor (in the change blindness condition). The current study had only one condition for the lineup: both Actors A and B were in the photospread. Future research is necessary to examine the extent to which the lineup combinations affect correct identification of the perpetrator in a change blindness paradigm.

**Conclusion**

Our results illustrate that change blindness can cause mistaken eyewitness identification, which is the single greatest cause of wrongful convictions. By examining the cognitive errors that lead to misidentification, we can further understand, and someday reduce, the factors that cause faulty identification. This study also lends further support to the theoretical connection between the eyewitness identification and change blindness literatures (Davies & Hine, 2007; Davis et al., 2008).

**References**


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