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Testing partial memory with the British video lineup

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ABSTRACT

Levi has hypothesized that witnesses with poor memory discount some lineup members as not fitting their partial memory of the target, thereby picking him often. In a comparison between British 10-person video lineups and 48-person lineups, they did not differ in identifications. Perhaps sequential video lineups prevented witnesses from hitting upon the discounting strategy. Fifty were asked to count the number of lineup members that they could discount, and then were given the lineup. Others were given the lineup first. We expected that the former group would have more identifications No difference was found. Reasons for this were discussed.

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INTRODUCTION

A fair lineup is one in which each of the foils and the innocent or guilty suspect have an equal chance of being chosen by people who have never seen the suspect ("mock witnesses", Doob & Kirshenbaum, 1973), who have been given a description of the target]. The lineup is the safest eyewitness identification procedure, because the foils provide some protection to an innocent suspect. However, it is far from perfect. There is ample evidence that witnesses often choose someone who is not the culprit (Conners *et al*., 1996; Scheck, Neufeld, & Dwyer, 2001, Valentine, Pickering & Darling, 2003; Wells *et al.,* 1998). When they choose, and that person is not the suspect but a known innocent, the police know that they have erred. However, in a fair simultaneous lineup by chance these witnesses who choose "identify" a suspect who is innocent 1/N times, where N is the lineup size. With the common American lineup size of six, this will happen 1/6=0.167, or almost 17% of the time.

There is a second error that witnesses often make which goes undetected by the police: witnesses fail to identify guilty suspects (Levi, 1998). While a number of innovative lineup procedures have been developed to reduce mistaken identifications (Levi, 2006a; Levi, 2012; Lindsay & Wells, 1985; Pryke *et al*., 2004), there have been few procedures available to increase correct ones that do not simultaneously increase mistaken ones.

The danger of mistaken identifications has been considered so great that in the wake of research showing that we can reduce them if we warn witnesses that the culprit may not be in the lineup (Malpass & Devine, 1981), the warning has been included in one of four recommendations of a White Paper of the American Psychological Association (Wells *et al.,* 1998) to improve lineup identification evidence.

Yet experimental witnesses choose someone 57% of the time when the "culprit" is absent when shown a simultaneous lineup (Steblay, Dysart, and Wells, 2011), even with the warning. In a fair lineup, the innocent suspect will be chosen in the traditional six-person American lineup 57/6 = 9.5% of the time. This seems quite a large danger for an innocent suspect.

Lindsay and Wells (1985) introduced sequential lineups. Their data, and a meta-analysis (Steblay *et al.,* 2011), indicate that its chief advantage is in reduced mistaken identifications. Only 36% mistaken choices in culprit-absent lineups are made. Thus, in the traditional six-person American lineup the innocent suspect will be chosen 36/6 = 6% of the time. This remains too large a large danger for an innocent suspect (Dupuis & Lindsay, 2007).

Levi and Lindsay (2001) proposed exploring large lineups. They theorized that enlarging lineups could reduce false recognitions, if the rate by which witnesses chose someone in target-absent lineups increased less than the increased lineup size. Thus, if a 40-person lineup had the same rate of mistaken choices as the six-person lineup, the number of false identifications would be 57/40 = 1.04%. This is clearly a tremendous improvement.

Early research (Davies, Shepherd, & Ellis, 1979; Laughery, Alexander & Lane, 1971) seems to have discouraged exploring this approach. However, this research showed only one photo at a time. Levi (2006b, 2007, 2012) conducted a series of experiments to test the effects of showing more than one photo at a time.[1]

There remained a choice between "simultaneous" and "sequential" lineups. The little research on lineup size to date has been with the sequential lineup. It could also be adapted to grouping photos. Witnesses could view each page one after the other, announcing whether they had identified the culprit before moving on to the next page (Levi, 2006b). This would maintain the inability of witnesses to pick the person most similar to the culprit, since they would not know whether he or she might appear on the next page.

However, the "simultaneous" format was chosen. The sequential lineup's advantage is in decreasing incorrect recognition (Steblay *et al.,* 2011). However, enlarging lineups has the potential of decreasing mistaken identifications much more. If the number of mistaken choices in target-absent lineups remains constant with increase in size for simultaneous lineups, then 24-person lineups will have no more false recognitions than six-person sequential ones. If these mistaken choices continue to remain constant as lineup size continues to double, the sequential advantage could become marginal. It seemed best to attempt to maintain the larger number of culprit identifications of simultaneous lineups (Steblay *et al*., 2011), relying on increased lineup size to reduce mistaken identifications.

Using the term "simultaneous" with grouped photos can be misleading. All the photos were not shown simultaneously, but rather in groups over a number of pages. The term was nonetheless maintained, to emphasize the distinction between the inability of witnesses to pick the person most similar to the culprit in the sequential format and their ability to do so in the "simultaneous" lineup adopted: witnesses were informed that they could leaf back and forth between the pages before making their decision. This seems to be the critical element of the simultaneous lineup that enables more identifications, yet causes more mistaken ones (Wells, 1984).

The purpose of this research program was to discover approximately the largest lineup that was feasible using the grouping strategy. In order to do so, it was necessary to reach a lineup size that was too large. It seemed reasonable to double the lineup size each time, as a method to quickly reach a lineup too big. Clearly the critical question was how many photos witnesses could view before the sheer number would begin to confuse them and reduce identifications.

In all the cited studies one photo or video-clip had been shown at a time. The alternative was to group photos, showing each group at a time. Witnesses may be better at identifying culprits this way. The grouped format enables witnesses to reject all but the member most similar to the culprit relatively quickly. They need to make the more difficult decision of rejecting or accepting that final lineup member only once for each set of photos. The difference in effort may not be noticeable in six-person lineups, but as lineups grow in size (to 40, for example) the strain on witnesses might become substantial, decreasing the cognitive resources required for successful identification.

On the other hand, showing witnesses 40 or more photos simultaneously may create a different task difficulty, the task of comparing simultaneously so many photos. A balance of fewer photos per page over a number of pages may produce the best identification results.

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Clearly the critical question was how many photos it was possible to show witnesses before the sheer number of photos would begin to overwhelm them. Surprisingly, we did not manage to reach that number with a lineup of 120 members. There is however one important caveat. The number of photos on each page makes a tremendous difference: no more than twelve photos can be shown. Thus, the 120-photo lineup consists of ten pages.

Another relevant finding was that lineup size did not affect the number of mistaken choices. Thus, if we take the average of 57% mistaken choices in six-person lineups (Steblay *et al*., 2011) the rate of expected mistaken identifications in a 120-person lineup is 57/120= 0.475%. It seems that the large lineup has a tremendous advantage over even the sequential lineup with a 6% chance.

Levi had established clearly that large lineups are far superior than any other because of the far smaller rate of mistaken identifications. The research program now turned to finding ways of increasing correct identifications.

Levi (2015) tried to use the eye tracker, a device that photographs the movement and location of the eyes' gaze at some stimulus (Holmquist *et al.,* 2011). According to a popular conceptualization espoused by Wells (1984) (relative judgment), witnesses with poorer memory of the culprit compare between lineup members, and often simply choose the person who seems to look most like the culprit-often the innocent suspect. Translating this into gaze behavior, in comparing between lineup members the attention of these witnesses will be on some of them in addition to the time spent concentrating on the culprit. Perhaps more time will be spent gazing on the culprit, but not a tremendous more time. On the other hand, witnesses with relatively good memory of the culprit are expected to spend far less time gazing at the other lineup members. Indeed, witnesses using this "absolute" strategy tend to spend less time in making their identification (Sporer, 1993). This less time should be concentrated far more on the culprit. Translating this into gaze behavior, while they might be expected to at least glance at the other lineup members, a reasonable expectation would be that they spend much more time looking at the culprit than at any other lineup member.
The more important different behavior occurs when the culprit is not in the lineup, when the suspect is innocent. Witnesses with good memory should be able, after glancing at the lineup members, to decide that the culprit is absent. Other witnesses will compare between lineup members and choose the person most resembling their memory of the culprit, who all too often will be the innocent suspect (unless of course all the lineup members differ tremendously from the culprit, which should not happen in a fair lineup).

These conflicting predictions led to a promising outcome: witnesses who dwell a relatively long time on the suspect have identified the culprit. On the other hand, if the suspect who is chosen does not stand out as having been looked at so much longer than any other lineup member, he/she was most likely chosen using relative judgment, and therefore is likely innocent.

This analysis differs from that of Mansour *et al*. (2009). That paper states that if a witness looks at all the faces in a lineup, this is indicative of relative judgment. This position contrasts with this paper, which expects witnesses to at least glance at all the faces. Relative judgment is indicated only if the witness fails to focus much longer on the person chosen.

The relatively small 48-person large lineup was used primarily to make it easier to experimentally check the results of the experiment. It makes little difference to police forces whether they would use a 48-person compared to a 120-person lineup. They have at their disposal thousands of appropriate foils for almost any suspect. On the other hand, researchers do not. The smaller the lineup, the easier it is to acquire the photos.

This experiment began using a somewhat more realistic eyewitness event in the past. Up to now, the experimenter visited offices with a young assistant. If the potential participant expressed willingness to be in the experiment, the young assistant found a mutually acceptable time and asked for their name and phone number. When the experimenter returned to conduct the experiment, the participant was informed that they were to view a lineup, the "culprit" being the young assistant.

Thus, the recruitment stage was also the eyewitness event, and a very difficult one at that. Participants had no idea that such an event was taking place. Moreover, they hardly paid attention to the "assistant", who seemed to merely performing a clerical function for the experimenter. Indeed, quite low rates of identification were achieved in all experimental conditions.

The new eyewitness event was quite different. At the time of recruitment, participants were shown a two-minute video, a family scene featuring four adults, a baby, and numerous other items. The one advantage for participants of this event over the previous one is that they knew that they were supposed to remember something. However, the event was short and they had no idea that they were supposed to remember one of the adults.

The results strongly negated the relative judgment conceptualization: witnesses most often focused on some foil when they did not identify the target in target-present lineups, or could not do so in target absent ones. Adding up the two cases, 52 of 62 cases failed to act according to the relative judgment conceptualization. By the binomial, the probability that so many cases would be contrary to the theory is $p< 0.0001$ (two-tailed). This experiment did not merely fail to reject the null hypothesis. If found results exactly the opposite of the research hypothesis, very significant statistically. Our "culprit" was identified 30.5% of the time.

We now turn to another attempt to increase identifications in 48-person lineups. We have noted that the danger of mistaken identifications has been considered so great that in the wake of research showing that we can reduce them if we warn witnesses that the culprit may not be in the lineup (Malpass & Devine, 1981), the warning has been included in one of four recommendations of a White Paper of the American Psychological Association (Wells et al., 1998) to improve lineup identification evidence.

With a typical rate of 50% mistaken choices in the traditional six-person target –absent simultaneous lineup, if the lineup is fair the expected rate of mistaken identifications is 50/6 = 8.3%. With a lineup of 48, the same percentage of mistaken choices leads to 50/48 = 1% mistaken identifications.

What might happen, then, if the warning was omitted before a 48-person lineup? We might expect an increase in mistaken choices, perhaps to about 75% (Malpass & Devine, 1981) in target-absent lineups, and therefore mistaken identifications would be 75/48 = 1.56%. We would thus be paying the price of about half a percent more mistaken identifications by omitting the warning. The empirical question was what the gain in target identifications will be if the warning is omitted.

Therefore, an experiment was conducted (Levi, in press) which included the 48-person lineups with or without the warning and with the target present or absent. The results were as disappointing as they were clear-cut. While the expected increase in mistaken choices occurred when the warning was omitted in target- absent lineup, there was no difference whatsoever in target-present ones. This contrasts with the evidence from six-person lineups (Clark, 2005).

In a further experiment Levi (in press) posited another advantage of large lineups. He suggested the possibility that in small simultaneous lineups witnesses were able to use partial memory of the target to discount some of the lineup members. Then, simply by guessing between the remaining ones, they increased their chances greatly of picking the target. He noted that this would not be a true identification of the target, only an educated guess. On the other hand, in a large lineup, even after discounting some lineup members many more would be left. An educated guess would still be between a fairly large number of lineup members. Thus, when witnesses chose the target, there would be a far greater chance that they actually had identified him than in a small lineup.

Levi (in press) asked witnesses who viewed either a six-person or 48-person lineup to count the number of lineup members that they could discount, and found indeed that the remaining ones were a lot less in the six-person lineup. Levi then tentatively concluded that an additional advantage of the 48-person lineup was that we could be a lot more certain that when the target

was picked the witness truly identified him, and had not made an educated guess.

The British lineup is unique. Rather than taking photographs of suspects, the police take short video-clips of them. Each person looks straight at the camera, turns his head to one side, then the other, before returning to look straight at the camera. For the lineup, they choose nine appropriate video-clips to show along with the suspect. The video-clips are shown one at a time, and then they are shown a second time, before the witness makes a decision.

We have reason to believe that this lineup is inferior to the 48-person lineup because it is a lot smaller. If witnesses choose and the suspect is innocent, they have a one out ten chance of mistakenly choosing him. This compares to a one out of 48 chance of choosing him in the 48-person lineup. On the other hand, there is a possibility that witnesses will choose the target more often in the British lineup, just as they do in the six-person simultaneous lineup. The reason for this is the fact that witnesses view the lineup twice before deciding. This gives them some chance of comparing between lineup members (relative judgment) and discounting any of them.

The experiment (Levi, 2017) compared the British video lineup with the 48-persopn lineup. The results found no difference between the two lineups in either identifications or false choices. The latter finding meant that, because of the difference in lineup size, the British lineup would have far more mistaken identifications.

The former finding is significant. Despite the British lineup's considerably smaller size, it did not produce more identifications. This puts to rest the explanation of the larger number of identifications in six-person lineups as resulting from witnesses getting confused by the large number of photos in the 48-person lineup.

Despite the fact that the British lineup was left with far fewer members than the 48-person lineup after discounting, witnesses did not use this as a strategy to guess the identity of the target from those members left after discounting some.

Discounting some members and guessing from amongst the remaining ones is likely a conscious strategy. It seems that the strategy did not occur to the British lineup witnesses. This contrasts with six-person lineup witnesses. The six-person simultaneous lineup may encourage witnesses much more to compare between the lineup members, and note that the discounting strategy is effective, than the sequential presentation of the British one

In the British lineup experiment, when witnesses were asked to count the number of lineup members that they could discount, they were asked to do so after viewing the lineup. What would happen if witnesses were asked to do so before viewing the lineup? We might expect that having been warned in advance' when viewing the lineup that they can discount lineup members, these witnesses would choose the target more often than witnesses who are asked after viewing the lineup. This experiment tested this assumption.

Method

Participants: The participants were graduate medical or science students at the Ein Kerem campus of the Hebrew University of Jerusalem and Bar Ilan University who agreed to participate in an interesting experiment which would require them to watch a two- minute video immediately and at least an hour later participate in the five minute experiment which would take place in their office/lab. Of the 100 participants, 56 were female and 44 were male. Their average age was 35.5.

Design: The design was a one way between subject comparison between witnesses asked to discount lineup members before or after viewing the lineup. The dependent variable was the lineup decision.

Recruitment and eyewitness event: The author visited offices and labs at the university. He introduced himself, and asked the occupants whether they would participate in an interesting

experiment in their office/lab that involved viewing a 2- minute video immediately, and participating at a later time in the experiment that would last about five minutes. If a person agreed, he showed the video in their office in which the target was seen for 37 seconds, another young-looking male for 22 seconds. Two women also appeared in the lineup, along with a baby who was being diapered. He arranged a mutual acceptable time for the experiment, at least an hour later. The video and the lineup were shown on Lenovo TAB4 10 Tablet.

The lineup: Ten video-clips for the British lineup were taken of students, following the British method of each person looking straight at the camera, moving his head to one side, then the other, before returning to look straight at the camera. A similar video-clip of the target was taken.

All lineup members were young adult males who had dark and short hair, dark eyes, no beard or moustache, and were of medium build. The target also fit this description. The photos and videos were thus chosen to fit the match-to-description criterion (Wells et al., 1998), and there is thus no danger that any of the them could be discounted because they did not fit that description.

Procedure: Witnesses were told: "I am now going to conduct a lineup. You are to find the person who moved from one room to another in the video-clip. He may not be in the lineup". The lineup is the British video lineup, which consists of ten short videoclips.

Those witnesses who were to do the discounting before the lineup were now told. But first, I want you to view the videoclips and count the number of persons that you are certain are not the person you are to identify." After the witnesses had completed the task, they were told:

"I will now show videos of ten people one after the other, twice."

Those witnesses who were to do the discounting after the lineup were of course given the instructions in the reverse order.

Results and Discussion

Table 1 gives the results for the two conditions. It can be seen that the number of identifications, mistaken choices of foils, and mistaken decisions that the target was not presently are nearly identical in the two conditions. Contrary to the research hypothesis, discounting the lineup members before the lineup did not result in more identifications.

Table 1 ***Results for the two experimental conditions***

	Discounting before	Discounting after
Identifications	21 38.6%	19 40.4%
Choices of foils	28 52.8%	23 48.9%
Choice of no one	4 7.5%	4 8.5%
	53	47

We must therefore conclude, that there was some fault in our assumptions regarding partial memory. Witnesses gained no advantage in discounting lineup members before viewing the lineup. In retrospect this is not too surprising. Even without prior discounting, witnesses have plenty of opportunity to do the discounting during the lineup. This contrasts with the sequential lineup, where witnesses must make their decision prior to even seeing all the lineup members.

WE were forced to assume that witnesses to the British lineup required prior discounting to account for the fact that identifications in that lineup were no more than in the 48-person lineup. However, the results of this experiment give a different reason. We had noted that the experiment comparing the British video lineup (Levi, 2017) to the 48-person lineup yielded very low identification rates of the target, for the British lineup 29%, for the 48-person lineup 19%. Suspicion falls on the video and photo of the target. This compares to 40% identifications in this experiment for the British lineup.

Thus, it is possible that witnesses do use partial memory in the British lineup. This needs to be tested in another experiment which will compare again the British video lineup with the 8-person lineup. Such an experiment is being contemplated.

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