THE EFFECT OF THE INSTRUCTIONS ON FACE RECOGNITION: ACCURACY AND EYE MOVEMENTS

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Abstract

The present experiment examines how instructions (*absolute judgement* vs. *relative judgement*) affect the performance in simultaneous lineups (*present perpetrator* and *absent perpetrator*). To find out whether the participants really followed the instructions, their eye movements were recorded when they faced the photo lineup. Sixty participants (44 women and 16 men) took part in the experiment. Overall, the results showed that participants with *absolute judgement* instructions made significantly less inter-photograph comparisons than those with *relative judgement* instructions. In the *present perpetrator* lineup, hit rate was lower for participants with *absolute judgement* instructions than with *relative judgement* instructions. In the *absent perpetrator* lineup, no differences were between both instruction conditions. Furthermore, as was expected, no relationship was found between "pre" and "post" confidence and accuracy in the lineups. Moreover, we examined participants' metamemory evaluations about their examination pattern of the photographs in the lineup. Our results did not show high incongruity between the own participants' judgment and their visual behavior.

Keywords: Eye movements, present perpetrator lineup, absent perpetrator lineup, relative instructions, absolute instructions.

1. Introduction

Memory of witnesses facing a lineup is fragile and inconsistent, leading to a large number of judicial errors (Wells, 2018). Therefore, a main research objective has been to examine the witnesses' decision-making strategies when they face a lineup. In a seminal article, Wells (1984) proposes the existence of two decision strategies: *relative judgment* and *absolute judgment*. A *relative judgement* consists of comparing photographs of a lineup one by one and select the photograph that best fits to the witness' memory representation of the person sought. However, an *absolute judgement* consists of comparing each photograph in the lineup with the witness' memory representation of the wanted person, and select a photograph basing only on the similarity between that person´s photograph on the lineup and the witness' memory. Furthermore, in *absent perpetrator* lineups, a *relative judgement* produces a higher rate of false identifications than an *absolute judgment*, hence increasing the probability of choosing an innocent suspect (Kneller, Memon, & Steventage, 2001; Lindsay & Bellinger, 1999).

Mansour, Lindsay, Brewer, and Munhall (2009) recorded the eye movements of their participants when they were faced the photo lineup. They used two criteria (inter-photo comparison pattern and exhaustiveness search) to determinate the underlying eye behavior of each type of judgment (*relative* vs. *absolute*). The participants' eye fixation pattern showed that they mostly employed a *relative judgment*, although Mansour et al. (2009) found that the scarce non-exhaustive searches performed and a lower number of inter-photograph comparisons were associated with fewer errors. Moreover, participants' meta-memory evaluations of their own performance on the lineup have shown that an *absolute judgment* is associated with a higher accuracy in the lineup (Kneller, Memon, & Stevenage, 2001; Lindsay & Bellinger, 1999); although there has been a lack of correspondence between own participants' meta-memory evaluations and their actual visual behavior (e.g., Mansour et al., 2009).

Taking into account all of the above, the present research explored whether giving explicit instructions (*relative* vs. *absolute judgment*) could affect participants' performance on lineups, their eye movements were recorded when they faced the photo lineup, and they were asked for meta-memory evaluations. It is proposed that two situations could occur. On the one hand, if participants were able to implement the specific instructions given to them, in the *present perpetrator* lineup, we would expect slightly more hits with *relative* than with *absolute* judgment instructions. In addition, in the *absent perpetrator* lineup, we would expect significantly fewer errors with *absolute* than with *relative* judgment instructions. On the other hand, if participants were not be able to implement the instructions, it would be expected that most of the participants based their decisions in a *relative judgment* on the lineup; so no differences between the two instructions (*absolute* vs. *relative*) would be expected on both types of lineup (*present* and *absent perpetrator*).

2. Method

Participants and design. Sixty students of the Degree in Psychology (44 women and 16 men) participated in the experiment[1]. They received course credit for their participation. All participants had a correct visual ability.

The independent between-participant variable was "Type of instruction" (*absolute* vs. *relative judgment*). Participants were randomly assigned to one of the four experimental conditions (Table 1). Half of the participants in each instruction condition faced a *present perpetrator* lineup, and the other half of them faced an *absent perpetrator* lineup. The dependent variables were *accuracy* on the lineups, *pattern of eye movements*, pre and *post lineup confidence,* and *participants' meta-memory evaluations*.

Table 1. Description of the four experimental conditions in the experiment.

Absolute judgment instruction	
Present perpetrator lineup (n=15)	*Absent perpetrator* lineup (n=15)
Relative judgment instruction	
Present perpetrator lineup (n=15)	*Absent perpetrator* lineup (n=15)

Procedure. First, each participant was assigned a computer with an eye movement recorder (Tobii X2-30), and it was told that he/she would be shown an event[2]. They had to pay as much attention as possible to the event. After the event, participants performed a 15-minute filler task (playing the computer game "Pacman"). Then, they were given an answer booklet where wrote confidence pre-lineup. Next, they were presented with a photo lineup, and they had to try to identify the woman protagonist of the event. Before showing the lineup, the specific instructions were given to them (*relative* vs. *absolute judgment*). They were told that in previous research had been found that following that specific instructions they would be more likely to be correct on the lineup. Each participant only saw one of the lineups *(present* or *absent perpetrator*). While participants were examining the lineup and making their decision on the lineup, the ocular behaviour was recorded. Finally, they estimated their post-lineup confidence and answered an open-ended question[3] about how they had made their decision on the lineup (i.e., choice a component or reject the lineup).

3. Results

Results are described in three sections: Firstly, analyses of the identification *accuracy* on the lineups; secondly, analyses of the visual behaviour on the lineups; and thirdly, the relationship between *confidence* and *accuracy* on the lineups, and the *meta-memory evaluations*. For all sections, firstly the *present perpetrator* lineup results are described, followed by those for the *absent perpetrator* lineup. The level of significance for all analyses was set at alpha $\leq 0,05$.

Lineup accuracy as a function of Type of instruction. In the *present perpetrator* lineup, the relationship between Type of instruction and hit rate was significant *[X^2 (1) = 8,89, p =0,03]*. The participants with *absolute judgment* instructions had a significantly lower *hit rate* than those with *relative judgment* instructions (.13 and .67, respectively). However, there was no significant relationship between Type of instruction and *false alarms* or *omissions, $Xs^2 \leq 2,78$ ps $\geq 0,09$*.

In the *absent perpetrator* lineup, the relationship between Type of instruction and *correct rejections*, *false alarms*, or *false identifications* was not significant, $Xs^2 \leq 0,19$, ps $\geq 0,67$. The proportions of *correct rejections* were similar in the *absolute* and *relative judgment* condition (.47 and .40, respectively).

Eye movements as a function of Type of instruction. In the *present perpetrator* lineup, it was found a marginally significant effect of the Type of instruction on the *total number of visits* (i.e., total number of inter-photograph comparisons), $F(1,59) = 3,31$, $p = 0,07$, $\eta2 = 0,11$, with a moderate effect size. Thus, participants were more likely to make fewer visits to all photographs of the lineup in the *absolute judgment* condition (*M= 27,07, SD= 28,19*) than in the *relative judgment* condition (*M= 47,13, SD= 32,04*). However, the effect of Type of instruction on the *total visit time* (i.e., total time required to examine the photographs) was not obtained, *F<1,59*.

In the *absent perpetrator* lineup, the effect of Type of instruction on the *total number of visits* to photographs was found, $F(1,59) = 6,97$, $p = 0,01$, $\eta2 = 0,20$, with a high effect size. Participants made significantly fewer visits to all photographs of the lineup with *absolute judgment* instructions (*M=23,20;*

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[1]This experiment was approved by the Ethics Subcommittee of the Faculty of Psychology at the Universidad Autónoma of Madrid.
[2]The 60 seconds event depicted a woman stealing a wallet and a mobile phone in a pub. The woman's face was exposed for 20 seconds.
[3]"Please, detail what process you have followed to complete the task".

SD=21,16) than *relative judgment* instructions (*M=39,60; SD=11,45*). Finally, the effect of Type of instruction on the *total visit time* was not found, *F<1*.

   Pre-post lineup confidence and meta-memory evaluations. No significant correlation was found between *confidence* and *accuracy* measures on either lineup (*rbp$_s$* ≤ *.21)*. Related to meta-memory evaluations, two judges assigned each participants' response to a single category (*absolute self-report* or *relative self-report)*. The Kappa index was calculated for the 20% of the responses (κ= 0,75). In the *present perpetrator* lineup with *absolute judgment* instructions, there were the same number of *absolute* as *relative* self-reports. Moreover, with *relative judgment* instructions, only one participant gave an *absolute* self-report, and the remaining participants had to be assigned to the *relative* self-report category. In the *absent perpetrator* lineup with *absolute judgment* instructions, the number of *absolute* self-reports was lower than the number of *relative* self-reports (4 and 10, respectively). Finally, in the *relative judgment* instructions, all participants had to be assigned to the *relative* self-report category.

4. Discussion and conclusion

   The aim of the present study was to examine if participants were able to take advantage of receiving a very explicit *absolute judgment* instruction in a lineup.

   Regarding the identification *accuracy*, in the *present perpetrator* lineup, participants in the *absolute judgment* condition, compared to those in the *relative judgment* condition, were significantly more inaccurate. However, in the *absent perpetrator* lineup, no differences were found between the two *judgment* conditions, indicating that the way in which participants followed *absolute judgment* instructions was not sufficient to help them to be more accurate on the lineup.

   Results of eye movement measures for both lineups showed that participants in the *absolute judgment* condition did fewer inter-photo comparisons than in the *relative judgment* condition. Therefore, it seems that the participants were able to partially follow the instructions given.

   Furthermore, with regard to the meta-memory evaluations, in contrast to the Mansour's et al. work (2009), our results showed a correspondence between the participants' self-reports and their visual behaviour recorded. This could be because our participants, aware of the manner in which they had to face the lineup thanks to the instructions, were more conscious of what they should have done, but were unable to do it. Finally, as in previous research (e.g., Cutler and Penrod, 1989; Leippe and Eisenstadt, 2007), we did not find any relationship between confidence and accuracy measures.

   The main question to test in the present experiment was whether the participants in the *absolute judgment* condition would be able to follow the instructions. If they had been able to follow them, in the present perpetrator lineup, we would have expected slightly fewer hits with the *absolute* than *relative judgement* instructions. Moreover, in the *absent perpetrator* lineup, with *absolute judgment* instructions there would have significantly been more correct rejections than with *relative* judgment instructions. However, the results obtained did not show this pattern. Findings could be because participants with *absolute judgment* instructions found extremely difficult to implement them. Therefore, instead of simply using all their cognitive resources to identify the woman who committed the theft, they were simultaneously using them to avoid comparing the photographs one by one.

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