Biases Created by Color and Size of Suspect Pool within Photo Lineups

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Abstract. Decisions of legal precedent often rely on the statements of eyewitnesses which inherently are subject to any and all personal perceptions of that individual. This study aimed to illustrate the possibility of discrepancies that might arise from eyewitness statements and the natural occurrence of selective attention. Selective attention is the understanding that naturally humans can only process a few pieces of information at once, and disregard the rest. The purpose of this study was to determine if seemingly minute characteristics, such as the color of clothing and number of suspects comprising a lineup, cause bias when identifying suspects of crime. The procedures carried out identify whether aspects of a lineup cause particular individuals to stand out. In this study, color and the amount of photos in a lineup were considered. Both factors were individually tested and the data found supported a difference in the amount of correct suspect identification compared to the control. With the data obtained through experimental trials, it was possible to determine that there is a likely potential bias induced by colors present and size of the lineup in suspect identification.

Key words: bias, selective attention, stereotype

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Often, eyewitnesses fail to provide accurate identification of suspects which can lead to incorrect convictions of innocent people. According to CBS News, the state of Texas leads the United States with the highest number of exonerations in 2013 with 13 in total (CBS, 2013). More specifically eyewitness misidentification is the single greatest cause of wrongful convictions nationwide, which is prominent in 72% of convictions overturned through DNA testing, (Innocence Project, 2014). Wrongful convictions unjustly deprive people of years of their life, and cost the United States close to $30,000 a year to incarcerate just one federal inmate (Federal Register, 2014). Whether unassociated tax-payers or potential suspects are considered, it is imperative to everyone that convictions are correct. Previous studies have investigated bias created by clothing, or more simply mental stereotypes that make people that give suspects a "criminal face" in the eyes of witnesses (Lindsay, C., et al, 1991; Mundell, E. J., 2000). These do not explore color alone or the paradox of choice associated with lineup size. Two variables of photo lineups were tested: the colors present in the photo and the number of suspects, or photos of suspects, in a lineup. Naturally, eyes are drawn to warm colors because they pop forward in contrast with cool colors. If a suspect is wearing a warm-colored piece of clothing while the others are not, this may draw attention to them. In theory, if this suspect is selected at a higher rate than others then it's plausible that color created bias. According to the paradox of choice, the more options there are, the easier it is to regret the option you choose (Lindsay, C., et al, 1991). Therefore with more options it is possible that witnesses second guess themselves at a much higher rate. Given that witnesses have a limited memory of a

suspect in the first place, hesitation can be very detrimental to selecting the correct suspect. If a particular suspect is selected at a high rate- regardless of the size of the lineup- then the size of the lineup has minimal effect on deciding a match to the suspect description. It is vital for investigators to understand the possibilities of error and bias in order to reach valid scientific conclusions which assist the investigative process.

Methods: An individual was selected to imitate the actions of an eyewitness in a crime investigation regarding accurately identifying a suspect from a lineup of photos. They were given a photo of the guilty offender for 10 seconds. The eyewitness then verbally provided all details they remembered pertaining to the identification of the suspect. Any details of the description were noted and used to create three sets of separate similar photos for a photo lineup. These additional photos of other suspects – not the offender – varied from one another but carried the primary details listed by the eyewitness. Many suspects were made to match the primary details of the eyewitness description, this allowed for the bias to be more definitive if one photo were to be selected at a significantly higher rate than others.
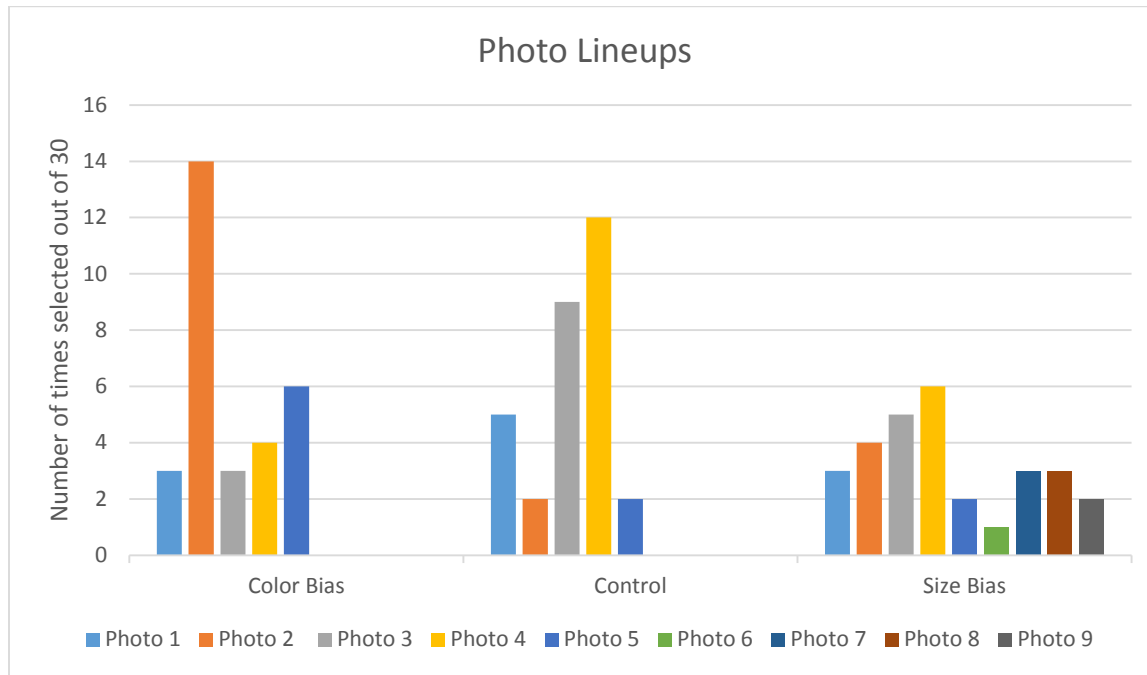
There were at least 30 trials conducted for each set of filler images in order to maximize the reliability of findings. Trials began by finding subjects to participate, and making sure that each subject completed the trial without outside interference. If there were multiple participants, they were isolated to avoid creating bias amongst themselves. Each participant received a typed copy of the eyewitness description for 10 seconds. Participants then choose a photo out of the photo lineup which they felt best fits the description. The number of times each photo was selected indicated whether the bias was effective.

The lineups consisted of a pool of 5 photos, except for the larger line up which consisted of 9 photos. One photo lineup was prepared with the goal to explore whether colors do or do not impact the choices made to identify suspects. This was introduced via presence of warm colors in some photos and not in others. A larger lineup of photos was selected to determine whether the size of the lineup impacts the choices made to identify suspects. A third photo lineup was created specifically to avoid the two potential biases of color and size. This lineup served as a control and was compared to the other two lineups which contain potential bias.

Results: After running 30 trials for each of the three photo lineups, each trial of potential bias for clothing color and lineup size was recorded and visualized in Figure 1. When color bias was introduced in a photo lineup, photo 2 was selected at a rate of 46.67% while the second most commonly selected photo was only chosen 20% of the time. Only 2 of the photos within the control lineup (containing neither bias) were selected at a rate higher than 17%. Additionally, when the size of the photo lineup was increased from 5 photos to 9, the participants selected a single photo no more than 20% of the time. The least selected photo in the larger lineup was selected at 3.33%, making the range of the results only 16.67%.

Figures

Figure 1. The amount of times photos were selected per lineup group.

Color Lineup	Photo 1	Photo 2	Photo 3	Photo 4	Photo 5
Times selected	3	14	3	4	6
Rate of selection	.1000	.4667	.1000	.1333	.2000

Figure 2. Color bias lineup photo selection.

Control Lineup	Photo 1	Photo 2	Photo 3	Photo 4	Photo 5
Times selected	5	2	9	12	2
Rate of selection	.1667	0.0667	.3000	.4000	0.0667

Figure 3. Control lineup photo selection.

Size Lineup	Photo 1	Photo 2	Photo 3	Photo 4	Photo 5	Photo 6	Photo 7	Photo 8	Photo 9
Times selected	3	4	5	6	3	1	3	3	2
Rate of selection	.1000	.1333	.1667	.2000	0.1000	0.0333	.1000	.1000	0.0667

Figure 4. Variable sized lineup photo selection.

Discussion: Based on the 30 trial results for each potential bias, it is supported clothing color and the size of the photo lineup both impact the decisions made by participants to match suspects with the eyewitness description. Due to the large possibility of error for an experiment containing so much human action, more trials should be repeated to ensure the reliability of the results. Correlation does not equal causation, but the data provided indicates definitive impacts on the choices of participants. The control trials resulted in 2 out of 5 photos being selected more often than others. Meanwhile, only the photo containing warm colors was selected significantly more often than the others within the color trials. The trials analyzing the impacts of lineup size reflected the impacts of the paradox of choice, creating a more widespread array of choices from participants. Knowing this, it's plausible that subtle characteristics such as the ones tested can make significant and life-changing differences within the current justice system that often fails to identify criminals.

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