

Running head: CAN YOU SEE ME NOW?

CAN YOU SEE ME NOW?
EXPLORING THE MAXIMUM DISTANCE OF
EYEWITNESS IDENTIFICATIONS
A THESIS
SUBMITTED TO THE GRADUATE SCHOOL
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BY
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ABSTRACT

THESIS: Can You See Me Now? Exploring the Maximum Distance of Eyewitness Identifications

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Little research has examined the effects of distance on eyewitnesses' abilities to identify strangers' faces. The purpose of the present study was to identify the maximum distance at which a facial identification is possible. In addition, witnesses' ability to provide descriptive information about a target from various distances was examined. In line with prior findings, lineup identification accuracy decreased as distance increased. Furthermore, witnesses who viewed the target from further distances reported fewer accurate details about the individual. Surprisingly, distance had a small effect on the amount of inaccurate information witnesses reported. Witnesses' performances on other diagnostic measures (e.g., willingness to testify and confidence) are also discussed.

Can You See Me Now? Exploring the Maximum Distance of Eyewitness Identifications

In the context of eyewitness identifications, knowing the maximum distance at which a perpetrator's facial or bodily features are recognizable would be very beneficial. For instance, in 1991 Jeffrey Levin was convicted of a burglary based on the description and identification provided by a witness who stood over 60 yards away (*Illinois v. Levin*, 1991; Lindsay, Semmler, Weber, Brewer, & Lindsay, 2008). Similarly, four boys in Alaska (The Fairbanks Four) were convicted for murdering a young boy and torturing a senior citizen based on the descriptions and identifications given by Arlo Wilson, who stood more than 150 yards away while the crimes were committed (Loftus & Harley, 2005). In these two cases alone, five individuals' freedom depended upon the accuracy of two eyewitness identifications. In the case involving Arlo Wilson, is 150 yards simply too far to make an accurate identification? If so, then what about the 67-yard identification made in the Jeffrey Levin case?

To date more than 300 people in the United States have been convicted and later exonerated for crimes they did not commit (Innocence Project, 2013). According to the Innocence Project, the primary organization recording these exonerations, 75% of these wrongful convictions are due to eyewitness misidentifications. This fact has led researchers to investigate the factors (e.g., weapons, lighting conditions, stress, retention time, race) surrounding criminal situations that hinder a witness's ability to make an accurate identification (Shapiro & Penrod, 1986; van Koppen & Lochun, 1997; Wagenaar & van der Schrier, 1996). However, despite a plethora of research on the topic, the relationship between eyewitness identification accuracy and distance has been understudied (Shapiro & Penrod, 1986; Wagenaar & van der Schrier, 1996). The present study will add to the knowledge surrounding the relationship between distance and eyewitness identification accuracy. More specifically, the study was designed to find the

maximum distance at which an eyewitness can accurately identify a perpetrator at better than chance performance.

Prior Research

Familiar Faces

Most research on eyewitness identification accuracy as a function of distance involves participants identifying photos of celebrities' faces that have been enlarged, reduced, or blurred to simulate what they would look like from various distances (Greene & Fraser, 2002; Loftus & Harley, 2005). Unfortunately, results found using this paradigm have been inconsistent, leading to discrepancies regarding what distance marks the upper limit of identification accuracy. For instance, Greene and Fraser (2002) had participants attempt to identify celebrities' faces in 8x10 photographs from 67 yards away. If an accurate identification was not made from this distance, the photograph was moved 7 yards closer and the participant received another opportunity to guess the celebrity portrayed. In light of the initial distance being 67 yards away, it was hard to understand how the researchers concluded "the top range (< 10%) score for men was 86 yards and for women 73 yards" (p. 643). This statement became more confusing when the authors later concluded that the "upper limit for recognition of celebrities' faces is approximately 107-114 yards" (p. 647), nearly 30 yards further than their previous claim.

To make sense of these results, both authors were contacted via email; however, their responses still seemed inconsistent. According to Greene, the distances were adjusted (normalized) to account for the size variation between the photo faces and actual human faces (E. Greene, personal communication, June 5, 2013). Using these adjusted distances, Greene said "107-114 yards brackets the maximum (normalized) distance at which a face was recognized."

Fraser, on the other hand, said the photos were originally shown from 100 yards away, but once it became clear an accurate identification could not be made from that distance the photos were brought closer for later witnesses (S. C. Fraser, personal communication, June 5, 2013).

According to Fraser, failing to explain this methodology was an error within the published article, another of which was a misprint that should have read, “the upper limit for recognition of celebrities’ faces is approximately 74-80 yards” rather than the 107-114 yards suggested by both the article and Greene.

Greene and Fraser (2002) are not the only ones to report inconsistent findings using the celebrity identification paradigm. Loftus and Harley (2005) exposed participants to photos of well-known celebrities’ faces that had been either reduced in size (Experiment 2) or blurred (Experiment 3) to simulate what they would look like from various distances. Using the arrow keys on the computer displaying the photos, participants could enhance the size (Experiment 2) or pixilation (Experiment 3) of the image until an accurate identification of the celebrity was made. Once the celebrity was identified, the size or pixilation was converted into the actual distance it represented. Consistent with the findings described by Fraser (personal communication, June 5, 2013), when the pixilation of the photo was altered participants (< 10%) identified celebrities’ faces at a maximum distance of 80 yards. However, when the size of the photo was altered, the maximum distance was only 43 yards.

Besides the inconsistent findings (107 yards vs. 74 yards vs. 43 yards), there are several other limitations to the celebrity identification paradigm that prevent the results from being utilized by those who work in the legal system. First, in each experiment participants identified well-known celebrities whom they had seen on multiple occasions and whose images were stored in long term memory. In fact, if the celebrity’s image was not stored in long term memory

and an accurate identification was not made from within 7 yards, the celebrity's photo was excluded from that participant's data (Greene & Fraser, 2002; Loftus & Harley, 2005). In some criminal cases a witness may know the perpetrator; however, the present study focuses on the common alternative situation in which a witness must identify a stranger. In these situations, witnesses may only have a small time frame during which the crime occurs to encode and store the facial and bodily details of the individual. This limited exposure time and unfamiliarity with the assailant would make any later identification relatively difficult, especially when compared to identifying a well-known face to which the witness has been repeatedly exposed (Pryor, 2006; Shapiro & Penrod, 1986; Wagenaar & van der Schrier, 1996).

Second, in the previously mentioned studies participants could make an unlimited number of guesses without incurring a penalty. If they guessed correctly, the trial ended; if not, the participant made another identification attempt utilizing a closer distance, better pixilation, or an enlarged photo size. In addition, an accurate identification did not require a celebrity's name to be produced. Instead, participants could provide any identifying information about him or her (e.g., spouse's name, the name of a character played by the celebrity, a famous line; Greene & Fraser, 2002; S. C. Fraser, personal communication, June 5, 2013). This identification procedure is significantly different from a lineup task in which a witness receives one opportunity to identify the perpetrator (S. C. Fraser, personal communication, June 5, 2013), a task that requires more deliberation and confidence than a random guess.

A final drawback to the celebrity identification paradigm is that it only attempts to locate the maximum distance at which a target's face can be recognized and does not allow researchers to test witnesses' ability to describe other important details that become distorted when viewed at different distances. For instance, law enforcement officers find it extremely beneficial within the

first few minutes after a crime occurs to obtain a description of the target's clothing (van Koppen & Lochun, 1997). This type of information and other descriptors (e.g., race, height, weight, tattoos) can be used to find the target while he or she is still in the immediate vicinity. However, in the celebrity identification paradigm witnesses are not questioned about these details because only the celebrities' faces are displayed.

Strangers' Faces

Some researchers have begun circumventing the methodological and ecological limitations of the celebrity identification paradigm by examining witnesses' abilities to identify strangers' faces. For instance, Wagenaar and van der Schrier (1996) had participants try to identify 48 people they never saw before at different distances (3, 5, 7, 12, 20, 30, and 40 meters) and under different illumination levels (5, 10, 30 lux etc.). Using one of these distances and illumination levels witnesses viewed 48 photos for 12 seconds each. Immediately following each photo, they were shown a six person target-present or target-absent lineup and attempted to select the photo of the person just viewed.

Eyewitness identification accuracy in the Wagenaar and van der Schrier (1996) study was relatively consistent (> 50%) and accurate up to a distance of 15 meters and at any illumination level higher than 15 lux (equivalent lighting to an urban area at night with bright street lights). However, accuracy dropped drastically (\approx 14%) once the distance exceeded 15 meters or the illumination level dropped below 15 lux. Based on these findings, the authors proposed that 15 meters (about 16 yards) is the furthest distance at which an optimal (> 50 %) identification **should** be made, but they made no claims regarding the maximum distance at which identifications **could** be made. Their results show that at 40 yards (the maximum distance used in

the study) 25% of the witnesses made an accurate identification under an illumination level of 300 lux (brightly lit room), confirming that accurate identifications can be made (at higher than chance levels) from 40 yards. This result also suggests that accurate identifications can be made from further distances, assuming identification accuracy does not plummet after 40 yards.

Similar to the celebrity identification studies, Wagenaar and van der Schrier (1996) only exposed participants to targets' faces, meaning information regarding the maximum distance at which witnesses can accurately describe a target's clothing, ethnicity, weight and other characteristics could not be obtained.

Attempting to verify the "15 meter rule" suggested by Wagenaar and van der Schrier (1996), Lindsay et al. (2008) had participants observe strangers before attempting to identify them in either a target-present or target-absent lineup. In the first facial identification study to utilize human targets rather than photos, Lindsay et al. approached pedestrians in a local park and asked them to stare at specific landmarks (e.g., a tree or wall) located either "Short" (4-15 yards) or "Long" (20-50 yards) distances from where they stood. While witnesses focused on the landmark, a confederate was signaled to appear from behind it and look at the witnesses for 10 seconds before retreating. Immediately following, witnesses were asked to identify the confederate in a six-person target-present (target appears in the lineup with "fillers") or target-absent (lineup is comprised of "fillers" and the actual target is not present) lineup. In addition, witnesses answered questions regarding the confederates' age, sex, height, weight, and ethnicity.

The current study is interested in peoples' ability to identify targets at further distances; therefore, the "Short" distance in the Lindsay et al. (2008) study will not be discussed. At the "Long" distance (20-50 yards), approximately 36% of the witnesses made a correct identification

when presented with a target-present lineup and approximately 57% correctly stated that the confederate did not appear in the target-absent lineup. In addition, witnesses in the Long condition could identify the confederates' height within 2 centimeters (12%), weight within 5 pounds (17%), and age within 2 years (28%).

Lindsay et al.'s (2008) results suggest that identification accuracy, as well as the ability to provide descriptive information about a target, is possible at distances up to 50 yards. However, because witnesses in the Long condition observed the confederates from distances of 20 to 50 yards, it is impossible to know whether the accuracy rates reflect witnesses' ability to identify a target at 50 yards or whether a majority of these accurate identifications and descriptions occurred closer to the 20 yard range.

Summary

Overall, research seems to support the "15 meter rule" at which an optimal identification should take place (S. C. Fraser, personal communication, June 5, 2013; Wagenaar & van der Schrier, 1996). However, the maximum distance at which a stranger's face can be reliably identified is still unknown and debated (107 yards vs. 74 yards vs. 43 yards). In addition, there seems to be no useful research concerning the maximum distance at which descriptive information about a target can be reported.

Similar to Lindsay et al. (2008), participants in the current study identified a human target from various distances. However, unlike their study, the intervals at which the target appeared (20, 40, 60, and 80 yards) were precisely varied in an attempt to determine which marks the maximum distance at which eyewitnesses can accurately make an identification at better than chance performance.

In addition to a six person lineup, participants were given the option of saying the target was “not pictured”, providing a total of seven selection possibilities and marking chance performance at approximately 14%. Finally, witnesses provided descriptive information about the target and reported how willing they would be to testify in court to see how distance affects these measures.

Overview and Hypotheses

Witnesses in the current study viewed an unfamiliar target at distances ranging from 20 to 80 yards, in 20 yard intervals. Immediately following, they answered questions regarding the target’s appearance and clothing and then finally attempted to identify him in a six-person target-present or target-absent lineup. Lineup type was not expected to have a significant effect on any of the dependent variables; however, two lineups were utilized to enhance the realism of the study and to stay consistent with the literature.

Prior research shows accurate identification rates exceed 50% when made within 15 meters (about 16 yards), after which the ability to recognize faces decreases from 12-40%, depending on the study (S. C. Fraser, personal communication, June 5, 2013; Lindsay et al., 2008; Wagenaar & van der Schrier, 1996). Based on this information, 30-40% of witnesses were expected to accurately identify the target from 20 yards away. However, once the distance increased to 40 yards the number of accurate identifications should drop to approximately 25%, in accordance with the results of Wagenaar and van der Schrier (1996) and Loftus and Harley (2005).

To my knowledge, the current study was the first to have witnesses try to identify a **stranger’s** face from further than 50 yards, making it hard to speculate how accurate

identifications would be at these distances. However, based on the low accuracy rates recorded at 40 yards, it was expected that if any accurate identifications were made at 60 and 80 yards the number would be significantly fewer than those made at both 20 and 40 yards. Identification accuracy in both lineup conditions was also expected to decrease as distance increased. Lindsay et al. (2008) reported that witnesses in their target-absent conditions recorded higher accuracy ratings than those in the target-present conditions. These lineup differences were not tested for significance, so it is unclear whether a significant difference will emerge in the present study. In sum, a main effect of distance on identification accuracy should emerge. A main effect of lineup type may or may not emerge.

In addition to making an identification, witnesses rated how confident they were in their selection. A meta-analysis of the confidence-accuracy relationship shows that witnesses who make correct identifications are significantly more confident than those who make inaccurate identifications, for both target-present and target-absent lineups (Sporer, Penrod, Read, & Cutler, 1995). Based on these findings, a main effect of lineup accuracy on confidence is expected. Lineup type should not be a significant factor. A main effect of distance on confidence is also anticipated. Even though no relevant literature concerning how confidence varies as a function of distance could be found, witnesses should intuitively believe a target becomes harder to identify as distance increases. This perceived increase in difficulty should cause witnesses' confidence ratings to decrease as actual distance between the witness and the target increases.

As for witnesses' ability to describe the target, Lindsay et al. (2008) provided some information about performance at distances up to 50 yards. However, it is impossible to know whether their results reflect witnesses' abilities at 50 yards or 20 yards. With no literature to base an assumption on, it was speculated that similar to participants' ability to identify faces, the

ability to accurately describe a target would decrease as distance increased. Therefore, a main effect of distance on descriptive information was anticipated.

Witnesses in Lindsay et al.'s (2008) study also estimated how far the target stood from them during the experiment. Prior research on distance estimates shows that people are poor judges of distance and tend to underestimate the distance between objects by an average of 15% (Wiest & Bell, 1985; Witmer & Kline; 1998). However, Lindsay et al. (2008) is the only known study to have witnesses estimate the distance between themselves and a human target. Therefore, these findings were utilized to make predictions.

Lindsay et al.'s (2008) results supported prior findings when the target was viewed from within 30 yards, as witnesses underestimated their distance from the target; however, when the viewing distance exceeded 30 yards witnesses tended to provide overestimations. In addition, the distance estimates were larger when the actual distance was greater. Based on these findings, witnesses in the 20 yard condition were expected to underestimate the distance between themselves and the target, while witnesses in the 40, 60, and 80 yard conditions were expected to provide overestimations. Overall, actual distance is expected to have a main effect on the accuracy of witnesses' distance estimates. No predictions regarding the effects of lineup type and identification accuracy on distance estimates could be made, but there is no foreseeable reason why these factors would have an effect.

In addition to analyzing the accuracy of witnesses' distance estimates, the absolute estimates (which will be referred to as "perceived distances") were examined to see if they vary as a function of distance, lineup type, or identification accuracy. According to Lindsay et al.

(2008), as perceived distance increases, identification accuracy decreases, but this pattern is not linear for either target-absent or target-present lineups.

Witnesses who perceived the distance to be less than 10 yards (actual distances between 5-15 yards) made an accurate identification 60% of the time (Lindsay et al., 2008). This accuracy rate was significantly higher than for those who perceived the distance to be between 15 and 60 yards (actual distances between 21-35 yards), who made accurate identifications 38% of the time. Although accuracy rates in Lindsay et al. (2008) study decreased as perceived distance increased, the only significant decrease in identification accuracy was between witnesses who viewed the target from an actual distance of 5-15 yards and those who viewed the target from an actual distance of 20-50 yards.

In the present study, all participants viewed the target from distances of 20-80 yards. Referencing Lindsay et al.'s (2008) findings, participants in the 20 yard condition should perceive the distance between themselves and the target as shorter than those in the longer conditions; however, no main effect of identification accuracy or lineup type on perceived distance is expected. Overall, actual distance should have a main effect on perceived distance, while lineup type and identification accuracy are not expected to be significant factors.

Finally, witnesses in this study were asked to rate how willing they would be to testify in court about the information they reported on the questionnaire. At the beginning of this article, it was questioned whether the 150 yard identification made in the Fairbanks Four trials or the 67 yard identification in the Jeffrey Levin case was simply too far for an accurate identification to be made and testimony to be given. The identification accuracy rates obtained in the present study should provide information about what distance is simply too far for an accurate

identification to be made; however, history shows that witnesses who make inaccurate identifications still believe they can provide relevant information to the legal system (Innocence Project, 2013; Junkin, 2005; Thompson-Cannino, Cotton, & Torneo, 2009). Due to this fact, ratings of witnesses' willingness to testify will be compared in order to see if distance affects them.

No prior research on willingness to testify and distance has been found; however, if witnesses realize that accurate identifications are less likely at greater distances, then witnesses in the longer conditions (60 and 80 yards) should be less willing to testify than those in shorter conditions. Also, one would hope that if no accurate identifications are made in a condition then witnesses in that condition would display little to no willingness to testify. Overall, a main effect of distance on witnesses' willingness to testify is expected. In addition, witnesses who make accurate lineup identifications should be more willing to testify than those who do not, as previous researchers have found (Bradfield, Wells, & Olson, 2002). No main effect of lineup type on this measure is expected.

Method

Design

The current experiment employed a 4 (Distance: 20, 40, 60, 80 yards) x 2 (Lineup: target-present, target-absent) between-subjects factorial design. Thirty participants were randomly assigned to each of the eight conditions for a total of 240.

Participants

Introductory psychology students from the research participant pool at Ball State University (BSU) were utilized in this study. A total of 247 students participated; however, 7 were excluded because their view of the target was accidentally blocked or sections of their

questionnaire were incomplete. Overall, 240 participants' data were analyzed (30 in each condition). Participants ranged in age from 18 to 37 years ($M = 18.98$, $SD = 1.73$). Most were female (61%) and Caucasian (75%). In exchange for participating, students received an hour of course credit. All participants had 20/20 or corrected vision, which was required to view the visual materials.

Materials and Procedure

Groups of no more than five participants acted as witnesses by observing a target individual. They reported to a designated area located on the first floor of the BSU Student Recreation and Wellness Center (SRWC) where a research assistant waited. After the witnesses read and signed a consent form, the research assistant directed their attention down a long hallway (see Appendix A), which was utilized for various reasons. This hallway was utilized so the experiment could take place indoors, which prevented sessions from being cancelled due to inclement weather. In addition, this indoor location provided control over the lighting conditions under which witnesses viewed the target. According to Wagenaar and van der Schrier (1996), eyewitness identification accuracy varies minimally under any light source greater than 15 lux (an urban area with bright street lights); therefore, because the lighting conditions of the hallway consistently exceed 15 lux, the illumination level did not present a confound. Second, this corridor was chosen because it was the only accessible hallway on campus that exceeded 80 yards in length, which was necessary in order to test the maximum distance used in this study. Lastly, this hallway has minimal foot traffic, which was beneficial to guarantee witnesses' attention was focused solely on the target and no other stimuli that might have entered their field of vision.

When prepared, the research assistant ensured no one was in the corridor and used a cell phone (set to vibrate) to signal the target to appear from one of the various hiding spots in doorways located 20, 40, 60, and 80 yards away from where the witnesses stood. In each of the sessions the target wore white shoes, tan khaki shorts, a white top with bold blue lettering, and a wristwatch. These items were chosen specifically so that witnesses would have a somewhat easy yet rich target to identify. Once the target was in place, the research assistant instructed the witnesses to turn around and “look at the individual with their arm extended. Try to take in as much information about that individual as possible.” After 20 seconds elapsed on a stopwatch the assistant signaled the witnesses to turn back around and the target retreated to his hiding spot.

Prior studies on facial recognition have used shorter exposure times, (e.g., 12 and 15 seconds); however, to provide witnesses in this study with more optimal viewing conditions the exposure time was extended to 20 seconds. This exposure time was selected because it was substantially longer than the previous studies, yet not so much that the results would be difficult to compare with those of previous studies due to the time difference.

Once the target was out of sight, the witnesses immediately sat at one of two tables located near their observation point in the corridor and received a clipboard with a questionnaire attached (see Appendix B). These questionnaires were completed independently.

First, witnesses answered questions regarding the target’s face, body, and clothing. Next, they determined which individual out of a six person target-present or target-absent lineup matched the target. In addition to the six photos in the lineups, “I don’t know” and “Not Pictured” were also provided as response options.

Both target- present and target-absent lineups were used to enhance the ecological validity of the experiment, because in real police lineups the perpetrator may or may not be present. These lineups were created in accordance with experts' recommendations (U. S. Department of Justice, 1999). The photos were chosen by asking seven pilot participants to rate 17 mug-shots on a 7-point scale, with higher numbers representing greater similarity to a mug-shot of the target. All photos were formatted so the head sizes and backgrounds were the same. The target-present lineup consisted of target's photo accompanied by five "filler" photos rated as moderately similar (mean rating between 4 and 5). The target-absent lineup consisted of the same five filler photos and in place of the target's photo was the filler rated most similar.

After the identification task, witnesses rated how confident they were in their identification and how willing they would be to testify in court about the information they reported. Finally, witnesses completed a short demographic section before being debriefed and dismissed from the experiment.

Results

Unless otherwise stated, all dependent variables were analyzed using factorial ANOVAs with distance (20 vs. 40 vs. 60 vs. 80), lineup type (target-present vs. target-absent), and identification accuracy (accurate vs. inaccurate vs. "I don't know") as factors. When a significant main effect emerged, a post hoc Student-Newman-Keuls test was used to look for significant differences between groups.

Lineup Performance

The lineup identifications were classified as either accurate or inaccurate. For the target present condition, an accurate response entailed selecting the target. All other responses (e.g.,

identifying a filler, not pictured, or “I don’t know”) were classified as inaccurate. For the target absent condition, an accurate response entailed selecting the “not pictured” option. All other responses (e.g., selecting a filler or “I don’t know”) were classified as inaccurate. Hierarchical loglinear analyses were used to look for the effects of distance and lineup type on identification accuracy.

Accurate Identifications. There was a significant main effect of distance on accurate identifications, $\chi^2(3, N = 240) = 15.37, p < .01$ (see Table 1). Contrasts revealed that significantly more witnesses in the 20 yard condition (48%) accurately identified the target compared to those in the 60 (23%) and 80 (18%) yard conditions, which were not significantly different from one another. Witnesses in the 40 yard condition (37%) performed significantly better than those in the 80 yard condition but did not differ from those in the 20 or 60 yard groups. There was no main effect of lineup type on accurate identifications ($ps > .55$).

A significant interaction between distance and lineup type emerged, $\chi^2(3, N = 240) = 13.15, p < .01$. After viewing the target from 20 yards, a greater proportion of witnesses presented with a target-present lineup made an accurate decision (63%) compared to those presented with a target-absent lineup (33%). However, at 40 and 80 yards, a greater proportion of witnesses in the target-absent conditions made an accurate decision (40 yards: 47%; 80 yards: 30%) compared to those in the target-present conditions (40 yards: 27%; 80 yards: 07%). Lineup type did not affect witnesses in the 60 yard condition, as the same proportion of witnesses in the target-absent (23%) and target-present (23%) condition made an accurate decision.

Misidentifications. Misidentifications refer to the selection of an individual other than the target; therefore, when a filler was selected in the target present condition it was classified as

a misidentification. For target absent lineups, a misidentification involved selecting any of the photos.

Lineup type had a significant effect on misidentifications, $\chi^2(3, N = 240) = 22.10, p < .01$ (see Table 1). More witnesses (53%) in the target absent condition made a misidentification than those in the target present condition (32%). There was no main effect of distance ($p = .59$).

A significant interaction between distance and lineup type on misidentifications emerged $\chi^2(3, N = 240) = 22.10, p < .01$. When viewing the target from 80 yards, a greater percentage of witnesses presented with a target-present lineup made a misidentification (57%) compared to those presented with a target-absent lineup (37%). However, when the distance was shorter than 80 yards, a greater percentage of participants viewing a target- absent lineup made a misidentification (59%) compared to those viewing a target-present lineup (23%).

Diagnosticity. The previous analysis showed that at each distance at least 18% of the witnesses were able to accurately identify the target at better than chance performance ($\approx 14\%$). As expected, witnesses in some conditions were better at identifying the target than others.

This information sheds light on the central question posed at the beginning of the paper (At what distance can an accurate identification be made?). However, misidentifications also occurred frequently, with at least 37% of the witnesses at each of distance choosing the wrong lineup member. In light of these results, another interesting question raised is, at what distance should police investigators, legal officials, and jurors become skeptical of an eyewitness's identification? To answer this question, the diagnosticity ratio in each distance condition was calculated.

Diagnosticity refers to the proportion of accurate identifications to misidentifications; therefore, a diagnosticity of one denotes that an accurate identification and misidentification are equally likely to occur. To find the diagnosticity ratio for a given distance, the percentage of accurate identifications made from each distance was multiplied by 60 (number of participants in each condition). The same was done for misidentifications. The number of accurate identifications made in each condition was then divided by the number of misidentifications to reveal the diagnosticity ratio of each distance condition (see Table 1).

There is an ongoing debate concerning what diagnosticity ratio should act as a distinguisher between accurate and inaccurate witnesses (Mikulak, 2012; J. Wixted, personal communication, March 8, 2014). This debate will be explained further in the discussion. For now, readers simply need to understand that higher diagnosticity ratios represent more accurate identifications to misidentifications at that distance.

Confidence

There was a significant main effect of distance on witnesses' confidence ratings, $F(3, 190) = 3.25, p < .05, \eta^2 = .05$. Witnesses in the 20 ($M = 7.09, SD = 1.88$) and 40 ($M = 6.89, SD = 1.85$) yard conditions were significantly more confident in their lineup identifications than those in the 60 ($M = 5.84, SD = 1.77$) and 80 ($M = 6.16, SD = 1.85$) yard groups, which did not differ from one another.

A main effect of identification accuracy also emerged, $F(3, 190) = 5.10, p < .05, \eta^2 = .03$. Witnesses who made an accurate identification were more confident in their decision ($M = 7.08, SD = 2.05$) than those who made an inaccurate identification ($M = 6.24, SD = 1.74$). Witnesses

who responded “I don’t know” were instructed not to report a confidence rating, so they were not included in this analysis. Lineup type had no significant effect on confidence ratings ($p = .25$).

There was a marginally significant interaction between lineup type and identification accuracy on witnesses’ confidence ratings, $F(1, 190) = 3.66, p = .057, \eta^2 = .02$.

Identification accuracy had little effect on witnesses in the target present condition, as those who made a correct identification ($M = 6.65, SD = 1.73$) were approximately as confident as those who made an inaccurate identification ($M = 6.54, SD = 1.81$). However, those who made an accurate identification in the target-absent condition were more confident ($M = 7.37, SD = 1.64$) than those who made an inaccurate identification ($M = 6.10, SD = 1.87$).

Descriptive Information

Thirty questionnaires were randomly selected (four from each condition) and scored independently by two coders for the number of accurate, inaccurate, and “I don’t know” responses made by each witness. Interrater reliability for this subset of questionnaires was high for accurate information ($r = .99$), inaccurate information ($r = 1.0$), and “I don’t know” responses ($r = 1.0$). All 240 witnesses’ responses were then analyzed using simple one-way ANOVAs with distance as a factor. Significant results were followed up with post hoc Student-Newman-Keuls tests.

Accurate information. A main effect of distance was found on the number of accurate details witnesses reported, $F(3, 236) = 33.89, p < .001, \eta^2 = .43$ (see Table 2). Witnesses in the 20 yard condition reported more accurate information than those in the 40 and 60 yard conditions, which did not differ from one another. Witnesses in the 80 yard condition reported significantly less accurate information than all others.

Inaccurate information. A main effect of distance was also found on the number of inaccurate details witnesses reported, $F(3, 236) = 6.00, p = .001, \eta^2 = .08$ (see Table 2).

Witnesses in in the 80 yard condition reported significantly more inaccurate information about the target than those in the 20, 40, and 60 yard conditions. No other groups differed from one another.

“I don’t know” responses. A main effect of distance was also found for “I don’t know” responses, $F(3, 236) = 12.68, p < .001, \eta^2 = .16$ (see Table 2). Witnesses in the 20 yard condition were less likely than all others to respond in this manner. Witnesses in the 80 yard condition were the most likely to respond in this manner. Witnesses in the 40 and 60 yard conditions fell between the two and were significantly different from both.

Distance Judgments

Perceived Distance. Perceived distance refers to the distance witnesses reported when asked how far away they thought the target was. There was a significant main effect of distance on perceived distance $F(3, 209) = 5.72, p \leq .001, \eta^2 = .08$ (see Table 3). As actual distance increased, witnesses perceived their distance from the target to be greater. Witnesses in the 60 ($M = 37.95, SD = 47.34$) and 80 ($M = 40.41, SD = 29.60$) yard conditions perceived the distance to be significantly further than those in the 20 ($M = 14.29, SD = 9.53$) and 40 ($M = 24.17, SD = 17.27$) yard conditions. There was no main effect of lineup type or identification accuracy, and there were no significant interactions ($ps > .31$).

Difference Scores. To measure the extent to which a witness overestimated or underestimated his or her distance from the target, the perceived distance was subtracted from the actual distance between the witness and the target. For example, if a witness in the 40 yard

condition reported a distance of 30 yards between herself and the target, then her difference score would be -10 yards (Perceived [30] – Actual [40] = Difference [- 10]). These difference scores were analyzed using a factorial ANOVA with distance, lineup type, and identification accuracy as factors. When a significant main effect emerged, post hoc Student-Newman-Keuls tests were used to look for significant differences between groups.

Actual distance had a significant effect on witnesses' difference scores, $F(3, 209) = 3.23$, $p < .05$, $\eta^2 = .05$ (see Table 3). Witnesses in every condition underestimated the distance between themselves and the target; however, underestimations in the 80 yard condition ($M = -39.59$, $SD = 29.60$) were significantly larger than in any other group. Participants in the 60 yard condition reported the next largest underestimation ($M = -22.05$, $SD = 47.34$), significantly more than those in the 20 yard condition ($M = -5.70$, $SD = 9.53$). Witnesses in the 40 yard condition ($M = -15.83$, $SD = 17.27$) fell between the 20 and 60 yard groups and differed from neither. There was no main effect of lineup type or identification accuracy and there were no significant interactions ($ps > .31$).

Willingness to Testify

At the end of the questionnaire witnesses were asked to rate on a 0 – 10 scale how willing they were to testify in court that the information they provided was accurate. For this scale, low numbers reflect less willingness to testify (0 = Not at all willing) and high numbers reflect a strong willingness to testify (10 = Totally willing).

Distance had a significant effect on witnesses' willingness to testify, $F(3, 217) = 5.55$, $p < .01$, $\eta^2 = .07$. Witnesses in the 20 ($M = 6.29$, $SD = 2.66$) and 40 ($M = 6.00$, $SD = 2.39$) yard conditions, which did not differ from one another, displayed a stronger willingness to testify than

those in the 60 ($M = 4.48, SD = 2.35$) and 80 ($M = 4.09, SD = 2.75$) yard conditions, which also did not differ from one another.

A significant main effect of identification accuracy also emerged $F(2, 217) = 3.87, p < .05, \eta^2 = .03$. Witnesses who responded “I don’t know” to the identification task were less willing ($M = 3.72, SD = 2.97$) to testify than those who made an inaccurate identification ($M = 5.06, SD = 2.53$). Those who made an accurate identification were the most willing to testify ($M = 6.06, SD = 2.62$). All three of these groups were significantly different from one another. Lineup type had no main effect on willingness to testify, and there were no other significant two-way interactions ($p > .13$).

Discussion

Lineup Performance

In this study, witnesses viewed a target from different distances to examine how the change in proximity affected their ability to make a facial identification. It was hypothesized that as the distance between the witness and target increased, the chance of making an accurate identification would decrease. This hypothesis was supported.

Although the pattern of responding was in line with the prediction, the number of accurate identifications made at each distance exceeded previous studies. For example, it was expected that 30-40% of the witnesses in the 20 yard condition would accurately identify the target, and approximately 25% of the witnesses in the 40 yard condition would make an accurate identification. However, in this study 48% of the witnesses in the 20 yard condition made an accurate identification and 37% of the witnesses in the 40 yard condition accurately identified the target.

The inflated identification rates may be attributed to several causes. First, there is very little research on how distance affects peoples' ability to identify a stranger's face. In addition, studies that have examined this variable (e.g., Lindsay et. al, 2008; Wagenaar, & van der Schrier, 1996) have utilized different paradigms and identification procedures, leading to different conclusions regarding performance rates at distances exceeding 20 yards. To make predictions in this study, results from these various experiments were compared and averaged when possible to gauge what performance might look like in this experiment. The combining and averaging of these similar, yet very different, approaches may have resulted in an underestimation of witnesses' abilities to perform the identification task.

One of the goals of the experiment, which was to create the "most optimal" viewing conditions for witnesses to make an identification, could also explain the inflated identification rates. In this study, the lighting conditions were held constant at a level exceeding 300 lux and the viewing time was extended past those previously utilized. Each of these manipulations has been shown to facilitate accurate identifications; therefore, if either manipulation created a more optimal viewing environment, as intended, then more accurate identifications would be expected.

Diagnosticity. The diagnosticity ratios produced in this study suggest that law enforcement should utilize witnesses' identifications only if they stood within 40 yards of the crime, because from that distance the witness is more likely to make an accurate identification than a misidentification. Once the distance exceeds 40 yards, this probability shifts and witnesses are more likely to make a misidentification rather than an accurate one.

If witnesses' chances of falsely identifying the suspect are greater than their chances of making an accurate identification, then it seems logical these witnesses' lineup selections should

not be utilized by law enforcement. However, some legal officials and researchers disagree with this assumption, because even though many recommended procedural changes reduce the number of misidentifications made they also reduce the number of accurate identifications (Gronlund, Wixted, & Mickes, 2014; Mikulak, 2012; J. Wixted, personal communication, March 8, 2014). For instance, Gronlund et al. (2014) show that eliminating witnesses who were less confident in their identification from a variety of previous studies increases the diagnosticity ratio; however, eliminating these less-confident individuals also reduces the total number of correct identifications made.

The tradeoff between inaccurate and accurate identifications has led to a debate regarding how the legal system should use procedural changes suggested by researchers, if they should be used at all. Looking at diagnosticity, conservative researchers and many defense attorneys feel that the courts should utilize a strict diagnosticity ratio (no specific number has been suggested) in which witnesses who have a less than substantial chance of making an accurate identification should not be permitted to testify in court. More liberal researchers and prosecutors, on the other hand, feel that if there is any chance an accurate identification can be made, then the witness's testimony should be permissible in court. Ultimately, the decision regarding how diagnosticity should be utilized by legal officials comes down to whether one believes it is worth letting a few criminals free to spare an innocent person from going to jail (high diagnosticity camp) or better to ensure all criminals have their day in court, regardless of whether a few innocent individuals get convicted along the way (low diagnosticity camp).

Confidence

Despite no prior research examining the effects of distance on confidence, it was hypothesized that witnesses in the longer conditions would intuitively believe they had a poorer view of the target, resulting in less confidence. In addition, it was expected that witnesses who made an accurate identification would be more confident than those who made a misidentification. Both of these hypotheses were supported. Also, in line with prior research, witnesses were overconfident in their abilities' to identify the target.

Ultimately, because there were more accurate identifications made in the shorter conditions, it is hard to say whether it was the accuracy of the identification or the shorter proximity to the target that caused witnesses in these conditions to report higher confidence levels. The effect sizes (distance: $\eta^2 = .05$; identifications: $\eta^2 = .030$) for each of these factors are small, suggesting that neither had a large impact on confidence. Therefore, it may be an unmeasured third variable that affected witnesses' confidence ratings.

Another interesting finding regarding confidence is that witnesses in the 80 yard condition were more confident than those in the 60 yard condition. When compared to those in the 60 yard condition, fewer witnesses in the 80 yard condition made accurate identifications; hence, the inflated confidence levels cannot be attributed to more accurate identifications. Witnesses in the 80 yard condition were also not proximally closer to the target than those in the 60 yard condition, nor did they perceive the distance between themselves and the target to be closer than witnesses in the 60 yard condition, making actual and perceived distance invalid explanations for these higher confidence ratings. Ruling out these two explanations, it could be that once the distance exceeds a certain range (perhaps 60 yards) confidence ratings becomes

arbitrary or affected by an unidentified variable. For instance, witnesses in longer conditions are confident enough to make an identification, but at the same time realize their distance hinders their ability to make an accurate identification. As a result, these witnesses may arbitrarily pick a low number to assign to their feelings of confidence.

Descriptive Information

Outside of Lindsay et al.'s (2008) investigation, the present study is the only one known to have witnesses provide descriptive information about a target's clothing and appearance. It was expected that the number of accurate details recalled would follow the same pattern as facial recognitions, meaning that as distance increased the number of accurate details provided would decrease. This main hypothesis was supported.

As the distance between the target and witness increased fewer accurate details were recalled. In addition, the larger the distance between the witness and target, the more likely the individual was to report inaccurate information. These results clearly show that witnesses who view crimes at closer ranges are more resourceful to law enforcement. However, the small effect sizes obtained for the inaccurate responses combined with the high number of "I don't know responses" in the longer conditions suggests that witnesses who view a crime from further distances may not be harmful when it comes to providing information about a target's clothing and appearance.

On average, witnesses in the 80 yard condition, who reported the most inaccurate information, reported only about one more inaccurate detail ($M = 4.42$) than those in the 20 yard condition ($M = 3.13$) who reported the least amount of inaccurate information. Although this difference is statistically significant, from a practical standpoint the amount of beneficial

information these witnesses can provide may outweigh the potential dangers of having one additional piece of erroneous information introduced. This assumption is further supported by the small effect size ($\eta^2 = .08$) of the relationship between distance and inaccurate information.

In addition to the small variability in inaccurate responses, the higher number of “I don’t know responses” reported by witnesses in the longer conditions is interesting. This response pattern suggests one of two things. First, from these distances witnesses simply could not discern or remember the information in question about the target. A second alternative is that witnesses who viewed the target from longer distances wanted to be more certain before reporting details.

There are several models of reasoning and decision making currently available, many of which deal with decisions made under time constraints and less than 100% certainty (Gigerenzer & Goldstein, 1996; Goldstein & Gigerenzer, 2000). Although each of these models is unique, a majority involve assigning weights to various pieces of encoded information regarding the object, or decision, in question. Ultimately, the goal of assigning weights to the information is to reach a certain threshold at which point the individual feels a decision or answer can be provided. In this study, witnesses in the longer conditions may have encoded information about the target yet responded “I don’t know” because they did not assign enough weight to the cue to reach the decision making threshold. This lack of weight could be attributed to the witness trying to discern other features of the target or the witnesses’ proximity to the target causing them to question the strength of their encoding abilities. This reduction in strength could have caused witnesses at these distances to refrain from reporting as much accurate information as those in the shorter conditions and elicit the “I don’t know” response more often. Either way, witnesses at these longer distances don’t seem to be providing much more irrelevant information about the target.

Distance Estimates

Based on the Lindsay et al. (2008) article, it was expected that witnesses who were closer to the target would report shorter distance estimates than those in the longer conditions. This hypothesis was generally supported. As the distance between the target and witness increased, distance estimates got larger, but these differences were not significant between every condition. Witnesses in the 20 and 40 yard conditions did not differ from one another; neither did those in the 60 and 80 yard condition. In fact, on average witnesses in the 80 yard condition only perceived the distance to be three yards further than those in the 60 yard condition. This minute difference in perceived distance suggests that at longer distances people are very poor predictors of proximity.

It was also hypothesized that witnesses in the 20 yard condition would underestimate their distance to the target while those in the further conditions would overestimate the distance. This hypothesis was not supported as all witnesses underestimated the distance between themselves and the target.

Lindsay et al. (2008) were the first to ask participants to estimate the distance they stood from a human target; therefore, those findings were used to predict witnesses distance estimates in the current study. However, other researchers (e.g., Stevens, 1957; Wiest & Bell, 1985; Witmer & Kline, 1998) have examined peoples' abilities to estimate the distance between objects and concluded that people commonly underestimate the distance between objects by an average of 15% (Lindsay et al., 2008). As shown in Table 3, even after taking into account the fact that people underestimate the distance between objects by 15%, witnesses in this study still provided large underestimates, closer to 55% of the actual distance rather than 15.

An alternative explanation for these underestimates is that there were no markers, or objects, between the witnesses and target that could be used to help judge distance. According to Wiest and Bell (1985), as the number of markers, or objects, between a viewer and a target increases, so should distance estimates. In this study, to give witnesses a more optimal viewing environment, it was ensured that no attention-grabbing stimuli or objects would be in view to distract witnesses from focusing on the target. This lack of markers to help witnesses gauge the distance to the target, combined with the fact that people naturally underestimate the distance between objects, may explain why witnesses in this study produced large underestimates.

Lastly, the large standard deviations for each of the conditions show that participants' responses were very scattered. Therefore, one could argue, like Witmer and Kline (1998), that people are simply bad at judging distances, so that a precise equation or percentage cannot be used to predict or explain performance.

Willingness to Testify

It was hypothesized that witnesses in the longer conditions would feel they had a less than optimal view of the target and as a result be less willing to testify than those in the shorter distances. In addition, those who made a correct identification were expected to show more willingness to testify than those who misidentified the target. Both of these hypotheses were supported.

Although results show that witnesses with a poorer view of the target and those who make a misidentification are hesitant to testify in court does not mean these individuals will actually refrain from testifying. In addition, it does not prohibit legal officials from summoning

these witnesses into the courtroom to provide testimony. Under these circumstances, even witnesses who are hesitant to testify may feel, or legally be, obligated to provide testimony.

Limitations

Two of the major limiting factors of this study were the use of only one setting and target, which restrict the generalizability of the results because they could be idiosyncratic to either of the two factors. In addition, the exposure time (20 seconds) and interval between viewing the target and responding to the questionnaire could have also affected the results because each of these variables was fixed. Varying either of these time periods could produce differences in identification rates and the amount of information reported.

Also, despite the fact that four distance conditions were justified in the introduction, the difference between 20 and 40 yards, 40 and 60 yards, and 60 and 80 yards is substantial. In the future, researchers should consider utilizing shorter intervals to see if the relationship between distance and accuracy is less linear than suggested in this study.

Lastly, the hallway in which the experiment was run had a minimal amount of foot traffic, but some witnesses' view of the target was temporarily obstructed by one, or a group, of bystanders. Witnesses whose view was obstructed for more than five seconds were excluded from the data analysis; however, the data of witnesses whose view was obstructed for less than five seconds was utilized. In these cases, the minor intrusion could have diverted witnesses' attention away from the target long enough to affect encoding. Furthermore, witnesses could have misattributed the clothing or features of a bystander to the target. In the future, researchers can control for this by utilizing a space entirely void of bystanders or eliminating witnesses whose view is obstructed regardless of the duration.

Future Directions

In addition to the suggestions made above, future researchers could examine whether distance affects witnesses' ability to identify a target's clothing differently than information regarding a target's appearance. In the present study, all questions regarding the target were analyzed together, but when the two categories of questions were split (see Figure 1), the response patterns to the target's appearance varied from those regarding the target's clothes. It is not meaningful to compare the two categories of descriptive information because of the way they were measured. Witnesses could report an unlimited amount of information regarding the clothing because the clothing items on the questionnaire were open-ended, but there were a finite number of possible responses regarding the target's appearance because those questionnaire items were multiple choice. These uneven measures would have created discrepancies among the means beyond the effect of distance. In the future, researchers can attempt to devise a scale that would allow these features to be compared.

Also, in this study a single target stood in view of the witnesses for 20 seconds before retreating to a hiding spot. In addition to viewing only one target, this viewing experience was not very stimulating. In the future, researchers might consider having witnesses view additional targets, perhaps with other non-target individuals present within the scene, to examine how additional stimuli affect witnesses' ability to accurately encode information about an intended target. More arousing situations could also be utilized. Exact replications using different targets and settings are also encouraged.

Conclusion

The main goal of this experiment was to examine how distance affects witnesses' ability to identify and describe a target. When it comes to facial identifications, it seems as if distance severely impairs witnesses' abilities after 20 yards, enough so that witnesses are likely to make a misidentification rather than an accurate one. Although many debate how law enforcement should utilize this information, I believe law enforcement officers should consider these diagnosticity ratios when showing a lineup to a witness and dismiss the identifications made by those who viewed the target from a distance at which misidentifications are more likely to occur. This will reduce the number of correct identifications admitted into the courtroom; however, if there is substantial evidence available to convict a suspect, then I do not think a dismissed identification should prevent the incarceration of a true criminal.

When it comes to information regarding the target's clothing and appearance, distance does not seem to be a major factor. Despite the amount of accurate information decreasing as distance increases, witnesses who viewed the crime from further distances did not report a practically significant amount of more inaccurate information. That being said, law enforcement can benefit from the testimonies of these witnesses regarding the perpetrators' clothing and appearance, because although they do not provide as much accurate information, their testimonies are not riddled with inaccurate information either.

Lastly, it seems witnesses who make an inaccurate identification are less confident in their selection than those who make an accurate one and less willing to testify in court. The margins between the two groups' levels in this study are too small to utilize as a predictor of

inaccurate and accurate identifications. However, future studies could look into using these two variables as a predictor of whether an identification is accurate.

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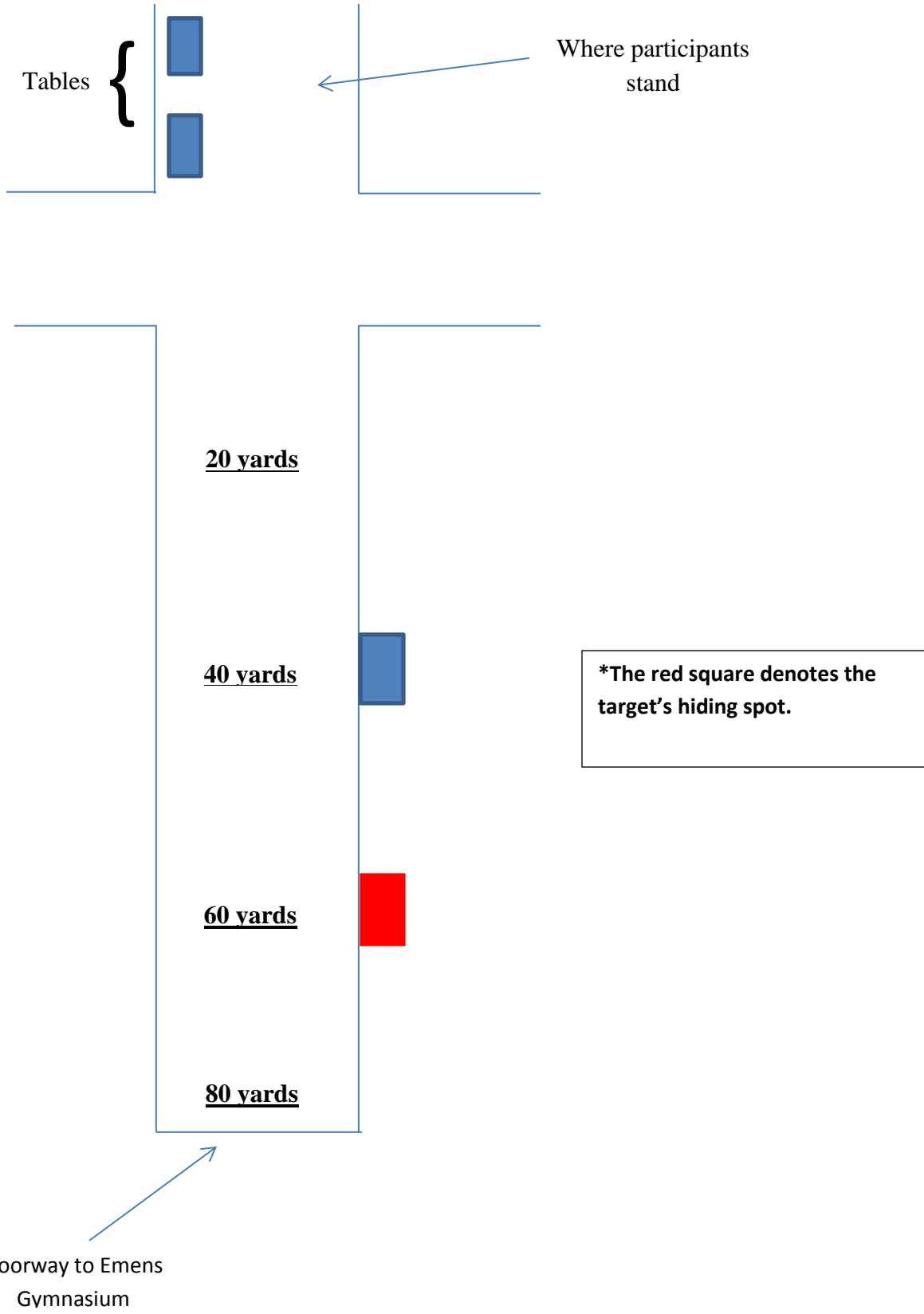
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Appendix A



Appendix B
Questionnaire

Yards
Target Absent/ Target Present
Date/Time- RA Initials

Do Not Turn This Page and begin answering the following questions until after the researcher instructs you to do so !!!

The following questions will ask you to provide details about the man you just viewed and his clothing. **Answer each question** as accurately as possible. After you've finished with a question, move on to the next one and **do not go back** and change your response. Please think carefully about the man before answering and report only details you remember. **Do not guess**; if you do not know the answer to a question, simply **write in or circle "I Don't Know."** Thank You!!

Think about the top the man was wearing.

1) What kind of top was the man wearing? If he was wearing more than one top, please circle each.

- Short Sleeve T- Shirt
- Long Sleeve T-Shirt
- Sweater
- Hooded Sweater/ Hoody
- I Don't Know
- Short Sleeve Button-Up
- Long Sleeve Button-Up
- Jacket
- Tank-top

2) What color(s) was the man's top?

3) What were the words, if any, written on the top?

4) What were the objects, if any, written on the top?

Think about the pants/shorts the man was wearing.

5) What kind of pants/shorts was the man wearing? (please circle one)

- Pants
- Shorts
- Capris
- I Don't Know

6) What color(s) were the man's pants or shorts?

7) What kind of footwear was the man wearing? (please circle one)

- Athletic shoes/Tennis shoes
- Dress shoes
- House Shoes/Slippers
- Boots
- Sandals
- I Don't Know

8) Can you describe the color(s) of the man's footwear?

9) Was the man wearing a hat or any kind of headgear? (please circle one)

- Yes
- No
- I Don't Know

If yes, what color(s) was the hat or headgear?

If yes, how would you describe the type? (please circle one)

- Visor
- Baseball Cap
- Bandana
- Fedora
- I Don't Know
- Beanie/ Winter Cap
- Cowboy Hat
- Beret
- Headband

10) Did the man have any jewelry or facial wear, such as a wristwatch, earring, a necklace, a bracelet, rings, or a nose ring? (please circle one)

- Yes
- No
- I Don't Know

If yes, circle all that apply:

- Earring(s)
- Necklace
- Ring(s)
- Glasses
- Wristwatch
- Bracelet(s)
- Facial Piercings

11) What was the man's ethnicity? (please circle one)

- White
- Hispanic/Latino
- Middle Eastern
- I Don't Know
- Black/African American
- Asian
- Biracial

12) About how tall was the man? Please write down a specific height in feet and inches.

_____ ft. _____ inches

13) How much did the man weigh, please write in a specific weight?

_____ lbs.

14) Compared to the average man, how would you describe the man's body type? (please circle one)

- Thin
- Overweight
- I Don't Know
- Medium build
- Muscular

15) What color was the man's hair? (please circle one)

- Brown
- Red
- Gray
- Black
- Blonde
- I Don't Know

16) How long was his hair? (please circle one)

- | | |
|-----------------------|-----------------------------|
| - Shaved
collar) | - Short (above the ears and |
| - About collar-length | - Long (over the shoulders) |
| - I Don't Know | |

17) How old do you think the man is? Please write down a specific number of years.

_____ years old

18) Did the man have any tattoos you could see?

- | | | |
|-------|------|----------------|
| - Yes | - No | - I Don't Know |
|-------|------|----------------|

19) Did the man have any facial hair?

- | | | |
|-------|------|----------------|
| - Yes | - No | - I Don't Know |
|-------|------|----------------|

If yes to 19, what type of facial hair? (circle all that apply)

- | | |
|---|----------------|
| - Short Beard/ 5 o'clock Shadow | - Long Beard |
| - Mustache | - Chin-Strap |
| - Soul Patch (small patch under bottom lip) | - Goatee |
| - Handle Bar Mustache | - I Don't Know |

On the next page you will see a photo lineup. The man you just viewed at the end of the hallway may or may not be pictured. Please decide whether the man is pictured in one of the photos and, if so, which one. You will record your response on the page that follows the photos.



A



B



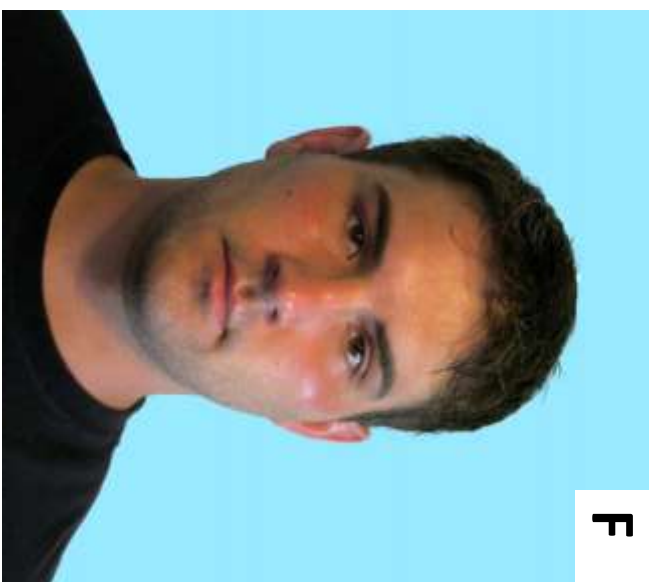
C



D



E



F



20) I believe the man at the end of the hallway was (please circle one): PLEASE DO NOT GUESS

A B C D E F Not Pictured I Don't Know

If you responded "I Don't Know" to question 20, skip question 21 and move to number 22.

21) How confident are you that your response to the previous question was accurate (please circle one)?

0 1 2 3 4 5 6 7 8 9 10

Very Low
Confidence

Very
Confident

22) How far away was the man standing from you? Please write down a specific number of yards.
(there are 3 ft. in a yard)

_____ yards

23) How willing would you be to testify in court that the information you provided about the man is accurate?

0 1 2 3 4 5 6 7 8 9 10

↑
Not at
all willing

↑
Totally
willing

24) Do you know or have you ever seen the man before this experiment? (please circle one)

Yes

No

If yes, where have you seen this man before?

Demographics

Please provide some general information about yourself.

25) How old are you?

26) Are you male or female? ___ male ___ female

27) What is your race? For example, are you white, black/African-American, Latino/Latina, Asian-American, biracial,...?

You are finished with the questionnaire. Please wait quietly. Thank you!

Table 1. *Percentage of accurate and misidentifications made in each distance condition*

Distance	% of Accurate IDs	# of Accurate IDs	% of MisIDs	# of MisIDs	Diagnosticity
20 yards	48% _a	28.8	37%	22.2	1.3
40 yards	37% _{ab}	22.2	40%	24	0.93
60 yards	23% _{bc}	13.8	47%	28.2	0.49
80 yards	18% _c	10.8	47%	28.2	0.38

Note: Percentages (rounded) were multiplied by 60 (number of people in each condition) to find how many in each condition made an accurate identification or a misidentification. The accurate identifications were then divided by the misidentifications to obtain a diagnosticity ratio for each distance condition.

Table 2. Average number of accurate details, inaccurate details, and “I don’t know” responses in each distance condition

Distance	Accurate Information	Inaccurate Information	I Don't Know
20 yards	18.78 (3.00)a	3.13 (1.58)a	.85 (1.64)a
40 yards	15.93 (1.98)b	3.52 (1.35)a	1.67 (1.52)b
60 yards	15.48 (2.75)b	3.63 (1.730)a	1.98 (1.48)b
80 yards	14.10 (2.62)c	4.42 (2.07)b	2.65 (1.85)c

Note. Standard deviations are reported inside the parentheses. In each column, significant differences are marked with different subscripts.

Table 3. *Distance witnesses stood from the target and the estimates they reported*

Actual Distance	Perceived Distance	Difference Scores	Perceived Distance (Weist & Bell)
20	14.29 (9.53)a	-5.7 a	17
40	24.17 (17.27)a	-15.83 ab	34
60	37.95 (47.34)b	-22.05 b	51
80	40.41 (29.60)b	-39.59 c	68

Note. Yards is the unit of measurement for all distances in the table. The numbers in the far left column reflect the distances witnesses stood from the target. The second column illustrates the average perceived distances reported. The third column shows how much the perceived distances deviated from the actual distances (negative values indicate underestimations), and the last column displays the estimates that should have been reported according to Wiest and Bell's (1985) assumption that people frequently underestimate the distance between objects by 15%.

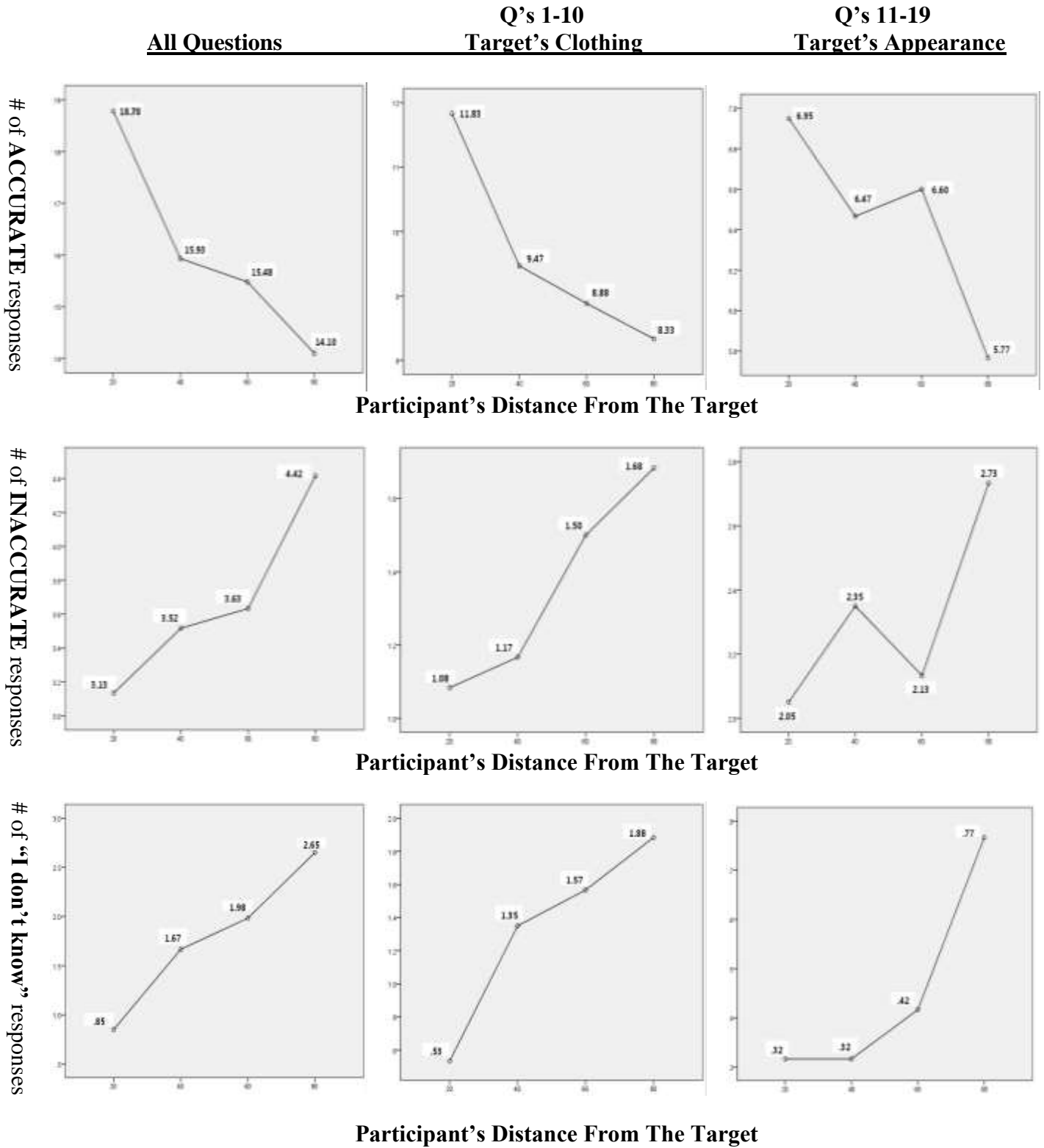


Figure 1. These graphs illustrate the amount of accurate (first row), inaccurate (second row), and "I don't know" (third row) responses for each distance condition for all questions (first column), questions regarding the target's clothing (second column), and questions regarding the target's appearance (third column).