Comparing Corporeal Lineups to Photo Arrays

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Abstract

An eyewitness identification study of a simulated theft of a laptop in a lecture hall was conducted in a northeastern university. After five days, 148 subjects attempted to identify the suspect from either a lineup or a photo array. Corporeal lineups and video lineups were conducted in addition to traditional static photo arrays and a new “dynamic photo array” consisting of the use of front, left profile, and right profile images presented in an animated sequence within the standard six-pack photo array. No significant differences between correct identification, misidentification, and non-selection were found between any of the identification methods used. These findings suggest policy implications for the expansion of photo arrays for accepted identification in criminal courts, the use of dynamic photo arrays, and the use of centralized remotely administered video lineups by removing the concept that corporeal lineups are superior to other identification methods.

The identification process is keen to criminal prosecution of suspects and is considered a strong indication of guilt by jurors (Brewer & Wells, 2011). The two primary methods of suspect identification for person on person crimes such as assault or robbery used by investigators are corporeal lineups and photo arrays, which are described below. Both methods are used when the victim does not know the suspect as either an intimate, friend, workmate, colleague, or casual acquaintance. Jurisdictions vary based on state and local laws in addition to prosecutor policies on

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which method is accepted for admission into a trial court, but the vast majority of US jurisdictions use photo arrays (Police Executive Research Forum, 2013). Some jurisdictions that maintain the use of corporeal lineups do so because it is considered a more robust standard to practitioners (Bailey, 2020). The rationale is that the appearance of the actual suspect is superior to a two-dimensional image (Fitzgerald, Price, & Valentine, 2018).

The earliest reference to lineups can be found within the Metropolitan Police Department (of London) Police Order 24 of March 1860. The order referred to modification requested by the Assistant Judge of Middlesex Session of an already existing process (Devlin, 1976). Arrest photographs started as early as the 1840s but were not standardized until Alfonse Bertillon incorporated photographs into his anthropological identification system (Fosdick, 1915). Since standard arrest photographs would be a necessity for creating photographic arrays, it can be inferred that corporeal lineups preceded photo arrays.

Currently, most jurisdictions at the state, county and municipal levels in the United States have adopted photographic arrays for their primary identification method. Until recently, New York State still required corporeal lineups for identification of suspects based on the New York State Criminal Procedure Law (NYS CPL) sections 60.25 and 60.30 and interpreted as being distinct from photo arrays by the New York State Court of Appeals (*People v. Caserta*, 1966; *People v. Hagerdorny*, 1947; *People v. Cioffi*, 1956). NYS CPL 60.25 was amended effective July 1, 2017 to allow for the admission of photographic identification when conducted under a double-blind procedure as outlined in the new amendment to the existing law. While the legislative intent from both the NYS Senate and Assembly indicated the problems of misidentification as the primary source of wrongful convictions in New York State and provided justification for the administration of double-blind method for identification, the stated justifications do not reference or cite why photo arrays were chosen over corporeal lineups nor address any direct issues of existing case law (N.Y. Legis. Senate S1819.Reg. Sess. 2017-2018 (2017); NY. Legis. Assemb. A2852 Reg. Sess. 2017-2018 (2017)).

After the law allowing for the admission of photo arrays into criminal court was placed into effect, certain counties within New York State¹ still maintain policies of using corporeal lineups over photo arrays. The New York City Police Department (NYPD) is still conducting corporeal lineups under direction of the five District Attorney's Offices that cover the five counties of the City of New York. The prosecutors have concerns that the new law has not been challenged and may prove to be unconstitutional by the New York State Court of Appeals (Schneider, 2020). Currently, there are no case decisions in NYS Supreme Court or in the Appellate Division of NYS challenging the validity of photo arrays over lineups, but current appeals in 2020 address cases of convictions in 2016 or earlier.² Arrests after July 1, 2017 may have not made it to the conviction or first appeal stages yet.

¹ Prior to the enactment of the law in 2017 in New York State, Bronx, Kings, New York, Queens, and Richmond, Counties conducted lineups as standard policy and still maintain this policy. These counties are all part of the City of New York. All other counties in New York State conducted lineups upon review and request of the local county District Attorney's office prior to the law and most counties have migrated to photo arrays exclusively (Bailey, 2020).

² Migration of appeals of cases through New York state is a slow process. The most recent decision in the NYS Court of Appeals having lineups as one of the issues was *People v. Hemphill* decided in June 25, 2020. It is

Lineups are resource intensive and have operational issues in implementation. Obtaining five fillers of similar appearance can be difficult and has monetary costs.³ Additionally, the suspect will be placed in an environment that allows for greater flight risk since the lineup room must be in an area with public access and the suspect will not be restrained during the procedure. Photo arrays allow for flexible administration with a larger pool of filler photos to ensure for a fairer presentation of people similar to the suspect. To justify the use of corporeal lineups over photo arrays, there should be a compelling reason, such as better identification rates, to support its continued use. Prosecutors need to be convinced that photo arrays are either equal or superior to identification rates of corporeal lineups or methods can be incorporated into photo arrays to allow for a similar three-dimensional effect of the corporeal lineup, thus the dynamic photo array which will be described later.

To address the issues of lack of resources, safety and flight risks, and the lack of three-dimensional quality of photo arrays, the current research project was conducted to determine if corporeal lineups were superior to photo arrays at a medium sized university in the State of New York. Furthermore, the researchers sought to determine if the administration of video lineups and the use of a more dynamic photo array that has elements of three dimensions are comparable to corporeal lineups. The project tested existing identification processes as well as suggested improvements for both methods.

The primary researcher was assigned to the NYPD's Detective Bureau as the Executive Officer of the Central Investigation and Resource Division from 2006 to 2011. This division had the ultimate responsibility for all corporeal lineups and photo arrays in the City of New York and routinely conducted over 1,500 lineups and created over 30,000 photo arrays per year. During assignment the primary researcher found that within 2006 through 2011, lineups had a successful identification rate, that is, the person selected by the witness was the suspect under investigation by the detective, 37% of the time. Photo arrays, used far more often, had a successful identification rate of 27%.

The current study sought to be more specific, and the following hypotheses will be tested:

H1: Corporeal lineups will have a better identification rate of suspects than video lineups, photo arrays, and dynamic photo arrays.

H2: Dynamic photo arrays will have a better identification rate of suspect than static photo arrays.

Restating the null hypothesis:

currently listed as a 2020 NY Slip Op 03567 from 173 AD3d 471 originally from 35 NY3d 1035. This case involves the murder of two people in the Bronx that occurred in April of 2006 and the conviction was in 2015 after a DNA hit was obtained in 2011 (*People v. Hemphill*, 2020).

³ Current practices require two detectives to administer the lineup with a likely cost of a total of 8 hours and five fillers at a cost of \$20 per filler. Using current NYPD Detective combined hourly rates of \$50.00 per hour without fringe benefits, this cost would be \$400 in addition to the \$100 for the fillers for a total estimate of \$500 for a lineup. An estimated cost for a photo array costs one hour of labor for the investigating detective and an additional hour for another detective to administer for a total of two hours or \$100 (Luongo, 2020). This cost will vary from agency to agency based on salaries of investigators.

H0: There will be no significant difference between successful identification of suspects between corporeal lineups, video lineups, static photo arrays, and dynamic photo arrays.

Understanding that lineups are resource intensive, it seems logical to make lineups less burdensome to police agencies. Video lineups appear a logical compromise to corporeal lineups. The video lineup can be conducted remotely in a controlled environment that allows for ease of the victim to view the video lineup in a comfortable setting. Additionally, video lineups allow for live presentation, requests to perform actions, and instructions by victims and investigators. Another compelling reason for video lineups is to promote social isolation necessitated by the recent COVID-19 epidemic. Finally, video lineups conducted at a central location are more amenable to smaller police agencies (less than 50 sworn personnel) than conducting a lineup in their local facility.

The researchers also explored if photo arrays can be improved. A two-dimensional photo array lacks the characteristics of viewing a three-dimensional live human being. Since most photo arrays are derived from mug shots and most agencies take a front face shot, a right profile, and a left profile of an arrestee, the creation of a "Dynamic Photo Array" that will display all three images was created and tested for effectiveness. The dynamic photo array is similar to a standard six-pack photo array, but will display the front face shot, the right profile, and the left profile in an animated set of alternating images for each suspect simultaneously.

To determine whether photo arrays, video lineups, and dynamic photo arrays are effective substitutes for corporeal lineups, the researchers conducted a study to determine if there was any difference between these four methods. Using a sample of 148 undergraduate students, the researchers simulated the theft of a laptop in a large lecture hall. After five days, the undergraduate students returned to identify the suspect using one of the four methods. The study determined that no particular method was significantly superior or inferior to lineups. This suggests that any method is just as effective. Limitations in the results will be discussed further. Following the discussion of the results and limitations, the researchers will suggest potential policy considerations for the use of video lineups and dynamic photo arrays in addition to future research directions.

LITERATURE REVIEW

The interchangeable use of the terms lineup and photo array by forensic psychologists in academia is inappropriate and frustrates law enforcement practitioners, prosecutors, and criminal defense attorneys. Forensic psychologists and practitioners should use the same terms when addressing lineup issues. Since it is the forensic psychologist who looks to impact policy decisions and observe the practices of law enforcement, the terms used by law enforcement practitioners should be used. The need to define these terms became evident when the literature review was done. Lineups and photo arrays were used interchangeably. This leads to confusion when conclusions of studies about photo arrays are taken to mean lineups cited elsewhere without the true knowledge of the exact identification technique. The authors suggest the following terms for identification procedures for lineups and photo arrays.

To avoid confusion between practitioners and academics, lineups should strictly mean corporeal lineups and should not refer to photo arrays or video lineups. The general method is to place an arrested suspect with five fillers similar in appearance, including similar clothing, simultaneously in a room with the suspects facing the victim/witness (V/W). The suspect determines a position and may suggest modifications in the lineup. The V/W is usually in a separate room divided by a one-way see-through mirror. Under some occasions, a lineup is performed on a suspect that is not under arrest if the suspect voluntarily consents to the procedure. Voice statements can be requested by the V/W. Each filler from positions 1 to 6 must repeat the statement in sequence. In New York State, there is no absolute right to counsel for lineups (*People v. Hawkins*, 1982). The agency must provide a reasonable period of time to allow the suspect's attorney to arrive. The reasonableness is determined by circumstances of the V/W, not the law enforcement agency.

A photo array is a fixed display of photos presented to a victim/witness. This is usually done when the suspect is not in custody and generally incorporates arrest photographs. In the event that arrest photographs are not available or inappropriate, other photographs are utilized. Commonly, these "other" photographs are obtained from driver license records but can be any photo if presented in a similar manner. The use of slide presentations and videotapes of fillers and suspects as presented in research articles will be considered photo arrays. These are presented with one target and five fillers.

There have been several studies examining the effectiveness of identification procedures to determine lack of identification or false identification rates involving sequential versus simultaneous presentation method, latency, exposure time, delay, cross race effect, own race bias, differences in ages, weapon focus, biased instructions, improper procedure, administrator influence and double blind procedures among several other factors. While not inclusive of all research, a high-level review of these factors is presented and discussed below and in the appendix of this article.

Looking at presentation methods has generally determined that sequential presentations have lower identification rates compared to simultaneous methods in target present conditions, less misidentifications were made in sequential target absent conditions in lab studies (Stebay, Dysart, & Wells, 2011). Field studies have reaffirmed that simultaneous presentation leads to higher identification rates than sequential found in lab studies (Amendola & Wixted, 2015). Additionally, sequential administration of photo arrays reduced the rates of filler identification while still maintaining the same rate of identification and non-identification to simultaneous presentation in field data (Wells, Stebay, & Dysart, 2016). Some field studies, while not practical to test for target absent conditions, had contrary results. In the Illinois field study, double blind methods did not demonstrate any difference in identifications or misidentifications compared to traditional administration and sequential lineups led to less correct identifications compared to simultaneous methods (Mecklenburg, Bailey, & Larson, 2008).

Looking at timing aspects, latency, the time from initial viewing to the decision to choose or not choose a subject at the identification procedure, has shown that accurate choosers take less time to make an identification decision (Sauer, Brewer, & Wells, 2008). In other words, shorter decision time is associated with more accurate identifications (Brewer, Caon, Todd, & Weber, 2006). The shorter the exposure time, that is the length of time in which the witness observed the suspect, the less likely for successful identification of the suspect or objects the suspect may be

holding. Participants misidentified the gender of a perpetrator and were unreliable at distinguishing a power screwdriver from a handgun when exposed for 0.5 seconds compared to 2 or 5 seconds (Sharps, Janigian, Hess, & Hayward, 2009). Also related to time, delay from crime incident to identification events leads to less accurate identifications (Sauer J., Brewer, Zweck, & Weber, 2010).

Several studies examined Cross Race Effect (CRE) or Own Race Bias (ORB). In general, CRE studies indicate that witnesses are better at identifying members of their own race and poorer at identifying members of other races. Most of these studies have found that whites are better at recognizing other whites than blacks (Bornstein, Laub, & Meissner, 2013), whites are better at identifying the same race when presented in groups and told the people in groups that have a friendly relationship to each other (McGuire & Pezdek, 2016), and Hispanics better identify other Hispanics than blacks (Evans, Marcon, & Meissner, 2009). Studying CRE among whites and Asians revealed a significant CRE among whites better identifying other whites, but no cross-race effect among Asians. (Pezdek & Stolzenberg, 2014). In Meissner's (2001) metaanalysis of ORB, thirty studies indicate that witnesses are better identifying suspects of their own race and whites had a significantly lower cross-race identification rate compared to blacks. In the same study, Meissner suggested that samples with more interracial contact might have less cross race bias (Meissner, 2001). Studies having less homogenous participant groups do not find this cross-race effect. When participants from different races (39.7% Hispanic, 24.9% white, 19.2% black, and 16.2% other) were studied, no race effect was found on show-ups and target present photo arrays and found own race bias only in target absent photo arrays. (Lawson & Dysart, 2014)

Studies on age have determined that participants were able to identify targets of the same age (Wright & Stroud, 2002). Adult participants had higher correct identification rates for child targets than adult targets and higher correct rejections for adult targets to child targets (Pozzulo & Dempsey, 2009). Child participants made more correct identifications and correct rejections of child targets than adult targets while adult participants made more correct identification of child targets over adult targets with no difference in correct rejections of either target. (Harvard C., Memon, Laybourn, & Cunningham, 2012). Within adults, there is no difference in correct identifications or correct rejections of young adults, middle aged adults, and senior adults in identifying a young adult target. (Key, et al., 2015), although old eyewitnesses are not as reliable as younger eyewitnesses in making correct identification decisions. (Erickson, Lampinen, & Moore, 2016).

In regard to weapons, the presence of a weapon reduced the accuracy of identification in both children and adults (Pickel, Narter, Jameson, & Lenhardt, 2008). With specific objects, the presence of a shotgun reduced successful identifications when no other distinctive characteristics are present (Carlson & Carlson, 2012) and the presence of a handgun reduced identification accuracy when compared with other objects (Carlson, Pleasant, Weatherford, Carlson, & Bednarz, 2016).

Investigation of biased instructions, improper procedure, and administrator influence has led to support of double-blind methods. Administrator knowledge of the suspect has greater biasing influences under single blind, simultaneous presentation methods for photo arrays. (Greathouse & Kovera, 2009) and knowledge of the suspect by the photo array administrator increased the administrator's confidence in a positive identification, (Rodriguez & Berry, 2014). Viewing photo arrays of innocents prior to lineups increased the likelihood of misidentification (Pezdek & Blandon, 2005) and correct identification rates decrease when the culprit changes appearance

from incident to identification event, (Pozzulo & Balfour, 2006). False identifications were higher for high administrator contact versus low administrator contact in the simultaneous target absent condition, but there were no differences in administrator contact and method in the target present condition. (Haw & Fisher, 2004). Witnesses were more accurate at identifications with the first viewing of double blind sequential photo array than in those witnesses that made an identification on the second round or those witnesses that were forced to view the complete sequence once before choosing the target during the second round of sequential presentation. (Stebly, Dietrich, Ryan, Raczynski, & James, 2011). Administrator feedback after viewing can be mitigated through the use of double-blind administration (Dysart, Lawson, & Rainey, 2012). Eyewitnesses were more likely to choose the photo identified by a confederate when the same administrator administered both photo arrays, especially if the eyewitness has low confidence. (Douglass, Smith, & Fraser-Thill, 2005).

While the previous factors are all worthy of investigation, this study's focus will be on differences in identification medium while controlling for age, gender and race. From the previous research, double blind administration methods will be utilized with no administrator feedback. Additionally, time aspects and weapon focus will not vary in the experiment. The study's primary focus is identification medium, that is, between lineups and photo arrays. Below is a review of experiments that primarily focused on identification medium. For convenience, the appendix is presented below for summary.

IDENTIFICATION MEDIUM

Egan, Pittner, and Goldstein (1977) conducted a study in which 86 undergraduate students were told that they would witness two robbers that just shot a store proprietor walking past them on the other side of a one-way mirror. The participants did not observe the crime, but merely the two men walking past them. The participants were then divided into three groups which would have a 2, 21, and 56-day delay before being asked to identify the two men in either two separate live lineups or photo arrays. The researchers found a significant correct target identification rate of 98% for live lineups versus 85% for photographic arrays and false hits increased as the delay in days increased. (Egan, Pittner, & Goldstein, 1977).

In 1979, Dent and Stephenson conducted three experiments directly related to comparing live lineups to color photo arrays. The first experiment had 70 adult participants observe a video of an office theft and then returned a week later to identify the culprit by either a live simultaneous lineup or a sequential, projected, color, life-size photo array. While the participants were more successful with the color slides, no significant difference was found. In the second experiment, 222 children observed a workman inspecting doors and windows in a classroom. After a week, the children were asked to identify the workman from either a live lineup or photo array as described in the first experiment. The children were significantly more successful in identifying the workman from the photo array than from the live lineup. In their fourth experiment, (Experiment three did not compare identification medium.) photo arrays were compared to conventional live lineups and "stress reducing" lineups. Stress reducing lineups introduced a one-way mirror to afford the witness privacy from the potential culprit. One hundred fifty participants observed a male target and a woman interrupt lectures to solicit volunteers for a psychology experiment. The experimenters reported the stress reducing live lineup as the most successful compared to the photo array and the live lineup (Dent & Stephenson, 1979).

Peters (1991) conducted a study on the effects of event-stress involved during live lineups on 96 children participants. In one of his experiments, half of the children observed a stranger enter the room they were in and steal a box of money. The children were quickly shown either a live lineup or a photo array. The live lineup did not have any safeguards to shield the children from view and the suspects could directly view the child participants. Children selected the correct target 75% of the time from the photo arrays when the target was present versus 33% from the live corporeal lineup. In contrast, during the target absent condition, the children properly rejected making an identification 67% of the time in the live lineup versus 42% for the photo array. The children misidentified a filler 58% of the time from the live lineup. Peters concluded that the lack of performance for the live lineup was not a failure of memory, but anxiety by the children. Overall, photo arrays were less traumatic for children and produced better correct identification rates over live lineups (Peters, 1991).

Cutler and Fisher conducted a study in 1990 to compare live lineup and video lineups to photo arrays. Seventy-two undergraduate students observed a staged theft. A lecture was interrupted by a male and female student in which the male student informed the lecturer that he left some textbooks in the lecture hall last night and would like to look for them. The male student found the books and asked the female student to help carry them. The two students left the lecture hall. Another professor entered the lecture hall, informed the lecturer that he left his wallet in the lectern last night and wanted to look for it. Unable to find the wallet, the lecturer insinuated that the two students probably took it. The participants viewed either a simultaneous live lineup, simultaneous video lineup, or simultaneous photo array in target present and target absent conditions sixteen days after the staged theft. The researchers did not find a significant difference in identification rates between live lineups, video lineups, and photo arrays, but did find a significant difference in proper rejection in the target absent condition between photo arrays and the combination of live and video lineups. Live and video lineups produced fewer false identifications (Cutler & Fisher, 1990).

Cutler, Fisher, and Chicvara conducted a study in 1989 to determine differences between live and video lineups. Fifty-six undergraduate students observed a male enter a lecture hall to look for a textbook that he thinks he left from a previous class. Similar to the previous study, the lecturer invited the male onto the lectern area to look through a pile of books. The male took a book and left. Another professor came to the same lecture hall to find his wallet he left in the lectern area and could not find it. The lecturer insinuated that the male probably took the wallet. Participants returned five days later to identify the possible thief from either a simultaneous live lineup or simultaneous video lineup in target present and target absent conditions. The researchers did not find any significant differences in identification or misidentification between live and video lineups (Cutler, Fisher, & Chicvara, 1989).

Valentine, Darlin, and Memon (2007) conducted a double-blind study of 202 undergraduate students at an English university. The students observed a staged theft of a laptop by a male from a classroom while the participants were taking surveys. The experimenter discovered the thief, but the thief still removed the laptop. Four separate actors were used for multiple panels ranging from 2 to 14 students. Participants viewed either a still image of the suspect and fillers or videos using the Video Identity Parade Electronic Recording (VIPER) method established and commonly used in England and Wales. The VIPER method shows videos of the suspect and fillers in which the person in the image turned left, then right, and then returned to the center position. Both methods were

done sequentially in target present and target absent conditions under existing and “strict” procedures. The existing procedure had the participants review the lineup twice before selection while the strict procedure required the participant to make an identification decision upon display of each image or video. The researchers did not find any significant effect in image format when the target was present (Valentine, Darling, & Memon, 2007).

Beresford and Blades conducted a study with 523 children to determine if lineup instruction, procedure, and method had any effect on correct identification and misidentification. Participants viewed either a sequential video lineup using the VIPER method or a simultaneous photo array in target present and target absent conditions. The researchers did not report significant findings in identification accuracy between video and photo presentation in either target present or absent conditions (Beresford & Blades, 2006).

Brace, Pike, Kemp, and Turner focused primarily on stress and anxiety of the identification process between a video lineup using the VIPER method and a live lineup in their 2008 study. Twenty-nine undergraduate students observed two men struggling over a handbag and then attempted to identify the two men one month later in either a sequential live lineup or a sequential video lineup in target present and target absent conditions. No participants identified a target in the live lineup and two targets were selected from the video lineups leaving inconclusive results over the medium. Stress and arousal levels were not found to be significantly higher for live lineups over video lineups (Brace, Pike, Kemp, & Turner, 2008).

Kerstholt, Koster, and Amelsvoort conducted a study comparing live lineups, video lineups, and photo arrays using 337 members of choirs and music ensembles in sequential and simultaneous conditions (2014). The researchers staged an interaction between a research assistant and a target. The researchers did not find a significant difference between identification methods for target present conditions, but did find a significant difference with live lineups in correct rejections compared to video lineups and photographs (Kerstholt, Koster, & van Amelsvoort, 2004).

Harvard, Memon, Clifford, and Gabbert conducted a study comparing video versus static lineups on 114 children ages 7-9 years old and 101 children ages 13-15 years old. The researchers staged a person pretending to perform market research on shoes for 3 minutes. The participants were asked to identify the person two to three days later in which they were shown either video or static lineups in a sequential format with target present and target absent conditions. While the researchers found that participants were more accurate during target present conditions, they did not find any significant effects between the use of video or static photo lineups (Harvard C., Memon, Clifford, & Gabbert, 2010).

Fitzgerald, Price, and Valentine wrote a summary of policy and research in reference to medium type focusing on live lineups, photo arrays and video lineups in England, Wales, the United States, South Africa, Canada, and Australia. The researchers define the “live superiority hypothesis” as merely a belief because they could not find any support for it. The researchers reviewed several studies including the studies mentioned above and determined that no study has shown superiority of live lineups over photo arrays or video lineups (Fitzgerald, Price, & Valentine, 2018).

Of the twelve studies that directly looked at the identification medium, most involve live staged events that are either arguments, casual observations, or thefts. No violent crimes were directly observed. All researchers made attempts to ensure that the participants were observing

the target either by conversation or interaction. The median sample size was 123 and the average sample size is 173. In fact, if you remove the 4 children studies, the median drops to 79 participants and the average drops to 125 participants. Nine of the twelve studies used Chi-squared as their primary method of analysis with an additional 2 studies incorporating Chi-squared in their analyses. Only one study used a student t-test. Chi-squared analysis is extremely sensitive when compared to other continuous analysis methods and can produce rejections in small sample sizes that other methods may not. With the exception of studies involving children, the sample sizes for the studies are small leading to potential Type II errors. As more factors within the studies were examined, the number of participants in each cell became smaller, making small effect sizes more difficult to detect. Therefore, a study involving similar numbers of participants will necessitate analyzing a limited number of factors based on the total number of participants.

While the movement toward the use of photo arrays seems logical due to the resources required for a live lineup, only three review papers focused on identification medium generally concluding there are no significant differences in identification rates between live lineups, video lineups, and photo arrays (Cutler, B., Berman, Penrod, & Fisher, 1994) (Brewer & Palmer, 2010) (Clark, Moreland, & Rush, 2015). In other words, existing research has not found a corporeal lineup superiority. Overall, the literature review on identification medium does not support any medium being superior to another and produces a need for further research into which, if any, identification medium may be better at correct identifications with low filler identifications.

STUDY DESIGN

The current study utilizes lineup and photo array procedures that has one target and five fillers due to standard New York State procedure and consistent with NIJ guidelines (National Institute of Justice, 1999). The identification methods will allow the results to be acceptable in New York State as well as adaptable to other jurisdictions that practice NIJ guidelines for photo arrays and lineups. While every jurisdiction may have slightly different nuances to identification procedures and is not necessarily consistent between and within administrations, NIJ guidelines are recognized nationally.

The study had two phases: a witness phase and an identification phase. The witness phase involved the observation of a staged theft. The identification phase occurred five days later in which participants were divided into one of four experiment conditions.

METHOD

Participants

Undergraduate students from a northeastern university located within New York State were recruited through fliers and internal advertising of the university's electronic announcement boards announcing a lecture on crime scene investigations during the students' free hour. The first session, the witnessing phase, occurred on a Thursday and 167 students consented to participate in the second phase of the experiment. (No demographic data was collected at the first session for the entire audience.) The following Tuesday, 155 students participated in the identification phase. (The median number of participants for previous studies was 123 and the mean was 173.) The design randomly assigned the students into viewing either a live corporeal lineup, a video lineup, a traditional simultaneous photo array, or a dynamic simultaneous photo array. No personal

identifying information was captured that could identify a participant and the study was approved by the Institution Review Board of the college.

Witness Phase

Undergraduate students were recruited by advertising a guest lecture during the students' free hour about crime scene investigations specifically involving corrupt police officers and known crime figures that were arrested by the NYPD. (Free hour occurs on Tuesdays and Thursdays from 12:30 PM to 1:50 PM. There are no scheduled classes during these time periods allowing for students to participate in extracurricular activities.) The guest lecturers were former police officers from the NYPD's Crime Scene Unit who actually conducted the investigations of two NYPD detectives that were performing contract murders for a known Italian crime family. The particular subject was sensational enough to attract 200 students.

At the start of the lecture, a ruse of a simulated theft of a laptop was performed. The coordinator and guest lecturer simulated having a problem with getting the presentation to display on the main screens from the guest lecturer's laptop. The coordinator simulated calling the university's help desk to provide support for the presentation. A college age male white confederate, hired from another university's drama department, pretended to be a technical support person, approached the lectern on the stage of the auditorium, and attempted to assist in getting the presentation on the screen. The confederate walked around the audience of student participants to inspect four monitors located throughout the auditorium providing ample observation time for the student participants and did some verbal cues to interact with the audience.

After inspecting all of the monitors and allowing for close observation from the entire group of students, the confederate returned to the lectern. The confederate had difficulty with the presentation and asked the guest lecturer to help. The guest lecturer noted an issue with an external video that required special software. The confederate said he would take the laptop to the lab for a software install. The confederate removed the laptop and left the auditorium. The guest lecturer continued with the presentation.

Approximately ten minutes after the confederate left, another actor pretending to be the real technician responded to the auditorium to assist the guest lecturer. The guest lecturer informed the technician that someone had already responded to assist him and the technician took the guest lecturer's laptop to install some software so the guest lecturer could have access to external video. The technician appeared confused and said he would look into the laptop. The technician left the auditorium.

The technician returned shortly after, caused a slight interruption of the lecture and informed the guest lecturer that no one besides himself responded to the technical call, no one in the technology department was familiar with the name of the technician that assisted the guest lecturer, and that removal of a laptop for software installs was not standard procedure. According to the technician, this meant the guest lecturer's laptop was probably stolen. The coordinator made a call to security. A security officer from the university arrived ten minutes later and took an incident report over a five-minute period. This action reinforced the ruse of the larceny theft. The guest lecturer continued the crime scene investigation lecture.

At the end of the lecture, the coordinator informed the audience that the theft of the laptop was a ruse and asked if the students would like to participate in the identification phase of the

experiment on the following Tuesday. After explaining the procedure for the following Tuesday, 167 students signed consent forms and were randomly assigned to one of four rooms. No demographic information was taken at this time.

Identification Phase

After five days, students reported to their assigned rooms where they were met by administrators. The five-day delay was selected for convenience for the student participants and was considered reasonable by the primary researcher's experience in criminal investigations and is similar to experiment by both Cutler (1989) and Dent (1979). The administrators removed the cell phones from the student participants to ensure that students who might text information after leaving their identification session would not prejudice student participants. Students were divided into four groups for each identification procedure. Students for the static photo array, dynamic photo array, and video lineup were escorted eight at a time to a computer lab that was configured to separate the eight student participants so that they would not communicate with each other or see each other's computer monitors. Student participants accessed a web-based questionnaire made in Qualtrics for their specific identification procedure.

Static Photo Array

Participants in the static lineup condition were brought to a room with computer workstations free of distractions with adequate lighting. The workstations were set up to access the web base survey and provided for separation between participants. Administrators ensured that no conversations occurred between participants. The students placed their participant number in the first field and were shown a photo array of two rows of three photos that contained five fillers and one suspect. The participants had the option to select any of the photos by selecting a radio button next to each photo or not select any photo by selecting a radio button on the bottom of the screen. There was no time limit for the selection process.⁴

Dynamic Photo Array

Participants in the dynamic photo array condition were brought to a room with computer workstations free of distractions with adequate lighting. The workstations were set up to access the web base survey and provided for separation between participants. Administrators ensured that no conversations occurred between participants. Students placed their participant number in the first field of the survey. The dynamic photo array showed six animated jpeg images in two rows of three images which cycled between the suspect and fillers front face shot, right profile and left profile every 3.5 seconds and then repeated. The participant could select any image by selecting a radio button indicating the participant's choice or selecting a radio button indicating no selection. There was no time limit for the process.

⁴ There was an issue with the software that did not allow for the accurate recording of time of viewing to decision for both static photo arrays, dynamic photo arrays, and video lineups.

Video Lineup

Student participants in the video lineup condition were brought to a room with computer workstations free of distractions with adequate lighting. The workstations were set up to access the web based survey and provided for separation between participants. Administrators ensured that no conversations occurred between participants. Students placed their participant number in the first field of the survey. Student participants in the video lineup condition were shown a ten second video of a corporeal lineup on the web-based questionnaire. The video showed the suspect and fillers start from a front faced position, then turn left, followed by turning right, and finally facing front. The video only played once as per NIJ guidelines for simultaneous presentation. Upon completion of the video, participants were asked to identify the suspect by observing the static start image of the video lineup in which all six people are facing forward. Under each person is a radio button. In addition, a radio button stating "I do not recognize anybody" was also available. Participants would indicate their selection by selecting a radio button.

Corporeal Lineup

The corporeal lineup was administered in a classroom that was converted into a lineup setting by using PVC framing and curtains to simulate a blind. The suspects were placed simultaneously along the front of the room on adjustable seats in order to have each suspect appear to have the same height. Additionally, a leg blind was placed in front of the suspects so only their upper torso and face were viewable. Three student participants at a time were staged in a restricted queue area outside of the lineup room to promote flow. One student participant at a time was brought into the lineup room. The administrator gave verbal instructions to the student participant prior to viewing the lineup. A blind was raised and the student participant could directly view the suspects. The administrator instructed the participants to turn right, face front, turn left, then face front. The student participant was asked by the lineup administrator to identify the suspect and was asked were they recognize the person from with no time limitation. An additional administrator recorded the response of the participant and the time the participant made the decision on a paper form. Student participants for the corporeal lineup were then taken to a room adjacent to the lineup room and completed an online survey similar to the other three conditions asking who they identified in addition to demographic information and social desirability questions.

Demographic and other information

After the students completed their identifications, participants from all four conditions were asked how confident they were of their choice based on a 5-point Likert scale from very sure to not very sure. In addition, demographic questions followed for all three identification conditions. Specifically, gender, age, race, Hispanic origin, income, type of community the participant lived in, what year in college, highest education level achieved, religion, and political leaning were also collected.

Results

The study was designed to determine whether a participant correctly selected the proper target in a target present identification method with the inclusion of some control variables. Since the selection of a target is a multinomial variable, a Chi-squared analysis using Bonferroni

correction was chosen for simplicity of presentation supplemented by multinomial logistic regression. The outcome of the identification is either proper identification, misidentification, or no identification. For the Chi-squared analysis, target selection was compared against four methods allowing for a 3X2 analysis for directly comparing lineups to photo arrays and 3X4 analysis for comparing corporeal lineups, video lineups, static photo arrays, and dynamic photo arrays. The multinomial logistic regression analyses were performed by placing the control variables as independent variables and comparing lineups to photo arrays and also corporeal lineups, video lineups, static photo arrays, and dynamic photo arrays. These methods are appropriate for dependent variables that are nominal and is consistent with methods used in previous research.

Table 1: Descriptive Statistics of Participants

	Number	Percent
Gender		
Female	74	50.0
Male	67	45.3
No Answer	7	4.7
Age		
No Answer	7	4.7
17 or younger	1	0.7
18-20	122	82.4
21-29	17	11.5
30-39	1	.7
Race		
White	47	31.8
Asian other than Southeast Asian or Middle Eastern	40	27.0
Southeast Asian	34	23.0
Other Race	8	5.4
No Answer	7	4.7
Black or African American	4	2.7
Middle Eastern	4	2.7
Native Hawaiian or Pacific Islander	2	1.4
American Indian or Alaskan Native	1	0.7
Multiple race	1	0.7
Hispanic Origin		
No, not Hispanic or Latino	132	89.2
Yes, Hispanic or Latino	8	5.4
No Answer	8	5.4

Determining whether a particular method is significantly different to another was determined by comparing the correct identification rate, the incorrect identification rate, and no identification rate among all four methods. If a method proved to have a significantly higher correct identification rate or significantly lower incorrect selection or no identification rate compared to the other methods, the particular method would be considered superior to the others. No methods proved to be statistically different from each other.

Of the 155 participants that participated in the identification phase, 3 participants did not indicate any selection and 4 participants recognized persons within the lineup or photo array from a location other than the crime scene. These participants were removed leaving a pool of 148 participants consisting of 74 (50%) females, 67 (45.3%) males, and 7 (4.7%) participants who chose not to select a gender. The majority (82.4%) of the participants were 18-20 years of age. The next largest age group was 20-29 years of age at 17, or 11.5%. One person was between 30-to 39 years of age and one participant was 17 years of age. Consent to participate for the 17-year-old in the survey was obtained from the student's parent. Seven participants did not state their age. In regards to race, there were 47 whites (31.8%), 40 Asian (27%), 34 Southeast Asian (23%), 8 another race (5.4%), 7 who did not identify (4.7%), 4 black (2.7%), 4 Middle Eastern (2.7%), 2 Native Hawaiian or Pacific Islanders (1.4%), and 1 from multiple races (0.7%). Eight (5.4%) participants identified as Hispanic.

Figure 1 - Lineups vs. Photo Arrays by Primary Identification

Of the 148 participants, 28 (18.9%) participated in the corporeal lineup, 50 (33.8%) participated in the video lineup, 34 (23.0%) participated in the static photo array and 36 (24.3%) participated in the dynamic photo array. The original design was an even number of participants across all methods with emphasis on an even number of participants between lineup viewing and photo array viewing. The 78 valid participants viewed lineups versus 70 valid participants viewing

photo arrays is consistent with even sampling between methods. The 7 invalid cases involved viewing photo arrays.

There were no significant differences in correct identification, incorrect identification, and non-selection between lineup and photo arrays ($\chi^2(2, N=148) = 2.352, p=.309$) and without power (Cramer's $V = 0.126, p=.309$). Although the chart above (Figure 1) indicates an 8% difference in correct identifications using lineups and a 4% decrease in misidentifications compared to photo arrays, these results proved to be insignificant.

Consistently, there were no significant differences in correct identification, incorrect identification, and non-selection between corporeal lineups, video lineups, static photo arrays, and dynamic photo arrays ($\chi^2(6, N=148) = 3.348, p=.764$) and without power (Cramer's $V=.150, p=.764$). The chart below (Figure 2) compares the selection rates of all four methods by percent of identification within the same method.

Figure 2- Method by Specific Identification

Data was collected on several demographic factors such as gender, race, age, Hispanic origin, neighborhood environment, and political affiliation to determine the effect, if any, using a multinomial logistic regression model with selection as the dependent variable and identification method as the primary factor. While research indicates differences in identification rates based on gender, race, and Hispanic origin generally having lower successful identification rates when identifying someone of the opposite gender, race, or ethnicity, none were found in the experiment. This may be explained by the diversity of the student body at the institution. No significant relationships were found in the primary identification method lineup vs. photo array ($\chi^2(44, N=148) = 55.262, p = 0.119$) and no significant relationships were found in the specific identification method ($\chi^2(48, N=148) = 58.054, p = 0.152$) when controlling for such variables.

DISCUSSION

The lack of significant findings indicates that any method could be useful and does not negate any method from being used. Specifically, the use of photo arrays as a substitute for corporeal lineups will not impact identifications. Since photo arrays do not significantly reduce correct identifications and require less resources, municipalities that admit identification of suspects by witnesses in criminal courts should utilize photo arrays. Photo arrays are simpler to implement and do not have as many logistical complexities as live corporeal lineups with no loss in efficiency.

While no results were significant, the following trends are consistent with previous research. Video lineups had a greater correct identification success rate than live lineups. Also, photo arrays had lower misidentification rates. Although not significantly different, this might suggest future directions of implementation and research. While several studies had fillers and suspects display right and left profiles during corporeal or video lineups, there is no previous study utilizing profile images in photo arrays. Therefore, while dynamic photo arrays outperformed static photo arrays in both a higher correct identification and a lower misidentification with the same non-identification rates, there is no comparison for dynamic photo arrays with previous research.

The ideal sample size for the model was approximately 150 for a medium effect size (0.3) and a power of .80. This effect size would be approximately a 10% difference in correct identification rates between methods and is consistent with field results (Schneider, 2020) and previous studies (Dent and Stephenson, 1979; Peters, 1991; Sporer, 1991). If the effect size is smaller, a larger sample size would be needed to show any effect. Assuming the same ratio of correct identifications, misidentifications, and no identifications, a sample size of 370, or 2.5 times the current sample size would be needed to have a significant outcome. This sample size was outside the resources of the experiment site. Future experiments must consider larger sample sizes.

A small effect size, in this circumstance, has real world impact. If a method can increase correct identification rates by 3% to 5%, this may lead to more convictions of criminals that generally have high recidivism rates. A successful identification is one of the first steps toward a conviction. By increasing correct identifications of these recidivist suspects, potential future crimes committed by these suspects may be prevented. These convictions could have a large impact on future reported crimes.

LIMITATIONS

The use of undergraduate students as a convenience sample is problematic. While undergraduate students are representative of the age of crime victims, they are not representative general demographics of the 18 to 24 year old population that is a large segment of victims of crime. Also, the racial demographics of the sample is inconsistent with national representation. Future studies should consider expanding samples to other groups outside of universities.

Recruitment of actors to play the roles of the suspect and the fillers from outside of the university was necessary to prevent participants from recognizing the suspect and fillers. Even with this safeguard, four participants were familiar with people in the lineup. A more thorough search for actors that did not attend any of the surrounding high schools of the university should be considered.

A larger sample size is always desirable to alleviate the fear of a Type II error. With larger sample sizes comes the problem of ensuring that all participants are actively observing the staged criminal act. To ensure that the participants are observing the staged crime while obtaining the

larger sample size, more panels of smaller groups should be considered. For example, instead of having one large group of 200 participants observing one staged crime, ten panels of 20 students should observe the staged crime to allow the actors to ensure they are observed. Smaller, more manageable panels that can be easily supervised should be considered for future research.

While the theft of a laptop was an easy crime to simulate, the crime may not have the same impact as a more violent crime such as a robbery or an assault. In all likelihood, an identification procedure for a stolen laptop is unlikely. Future research should consider crimes that are more violent and are the likely crimes for which an identification procedure would occur. Violent crime scenarios, such as an armed robbery, could be filmed for exposure to participants while allowing for ethical considerations that may prevent the reenactment of an armed robbery for live participant observation.

The administrator for the corporeal lineup reported fear of participants making identification with actual human beings present in a room. The administrator also observed several participants identify the suspect correctly with non-verbal indicators such as eye glance or finger pointing, but they would not verbally commit to the identification. All the participants knew the crime was staged at the point they were making an identification, but some participants were still uncomfortable in making an identification. Future studies should consider the use of a one-way mirror to provide anonymity to the witness.

Due to time constraints, student participants that were originally assigned to the corporeal lineup condition were reassigned to one of the other three identification procedures resulting in 28 student participants viewing the corporeal lineup, 41 student participants viewing the dynamic photo array, 36 students viewing the static photo array, and 50 students viewing the video lineup.

POLICY IMPLICATIONS

Those jurisdictions that allow for the use of photo arrays in criminal trials should consider the use of dynamic photo arrays. Since the availability of profile images is readily available with the front face image of arrest photographs available to most police agencies and the cost of incorporating the animated rotating image into existing software is small, this addition may help stimulate some recollection in witnesses. Although the differences between the static photo array and the dynamic photo array were not significant, the dynamic photo arrays had 4% more correct identifications and 2% less incorrect identifications. Some jurisdictions already implement front and profile photo arrays with still photos as seen in current state case law (*People v. Fowler*, 2012; *State v. Alwin*, 2018) and federal review of state law (*Watson v. Artuz*, 2019). While more evaluation research should be done with the use of dynamic photo arrays, implementing dynamic photo arrays should not place any legal or procedural issues and is not an extreme diversion in current state law enforcement policy.

For jurisdictions where a photo array is considered insufficient and a lineup for identification is necessary as part of their criminal proceeding, the use of video lineups should be considered. Corporeal lineups are resource intensive. Investigators must obtain five fillers in addition to arresting the suspect. A lineup room must be available and extra law enforcement personnel must be available to assist in the lineup process. Travel accommodations for the victims and witnesses must also be taken into consideration. Since video lineups are functionally equivalent to corporeal lineups, they can be easily substituted for corporeal lineups.

Since 85% of police agencies have 50 sworn employees or less (Bureau of Justice Statistics, 2016), a more centralized model for the use of video lineups should be considered. An ideal location for centralized lineups would be county correctional facilities. County agencies, such as sheriff's departments, should have working relationships with smaller agencies within their respective counties and procedures already in place to overcome interjurisdictional issues. After the suspect is arrested, the county facility could provide the remote viewing room and obtain fillers from the local jail inmate population. Local jail populations should reflect the demographics of the county and should be able to supply the fillers needed through payment to the inmates' commissary funds provided by the investigating agency. This new video lineup process would reduce potential escape risks and allow investigators to allow for lineup viewing with witnesses outside of a law enforcement facility. As mentioned earlier, even witnesses of simulated crimes are intimidated with a face-to-face confrontation with a suspect. (See appendix) This problem can be alleviated by remote viewing by victims and witnesses.

Video lineups are equivalent to corporeal lineups and can be administered with less resources. While not statistically significant, video lineups outperformed corporeal lineups in correct identification and incorrect identification. Expecting smaller agencies to conduct corporeal lineups correctly when they may be performed so infrequently is a tall expectation. Training personnel at a centralized county facility that in all likelihood already has the investigators and facilities to conduct lineups is a better use of resources.

CONCLUSION

While more research into identification procedures is necessary, the fear that identifications of people suspected of crimes being lost by the lack of corporeal lineups is unwarranted. The lack of significance between methods demonstrates that any method may be used without impacting the objective of appropriately identifying individuals suspected of crimes. In addition, the validity of previous research using the convenience of photo arrays has been supported from the lack of significantly different identification rates between corporeal lineups, video lineups, static photo arrays, and dynamic photo arrays. Photo arrays save time, money and avoid identification of witnesses to those suspected of a crime. Police agencies working in jurisdictions forced to employ lineups may consider using video lineups for safety, flight risk, and convenience of application.

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Sources Cited

Articles

Amendola, K., & Wixted, J. (2015). Comparing the diagnostic accuracy of suspect identifications made by actual eyewitnesses from simultaneous and sequential lineups in a randomized field trial. *Journal of Experimental Criminology*, 11(2), 263-284.

- Bailey, P. (2020, November 9). Current identification Procedures in New York State. (A. Costello, Interviewer).
- Beaudry, J. L., Lindsay, R. C., Leach, A., Mansour, J. K., Bertrand, M. I., & Kalmet, N. (2015). The effect of evidence type, identification accuracy, line-up presentation, and line-up administration on observers' perceptions of eyewitnesses. *Legal & Criminological Psychology*, 20(2), 343-364.
- Beresford, J., & Blades, M. (2006). Children's identification of faces from lineups: The effects of lineup presentation and instructions on accuracy. *Journal of Applied Psychology*, 91(5), 1102-1113.
- Bornstein, B. H., Laub, C. E., & Meissner, C. (2013). The cross-race effect: Resistant to instructions. *Journal of Criminology*, 1-6.
- Brace, N., Pike, G., Kemp, R., & Turner, J. (2008). Eye-witness identification procedures and stress: a comparison of live and video identification parades. *International Journal of Police Science & Management*, 11(2), 183-192.
- Brewer, N., & Palmer, M. (2010). Eyewitness identification tests. *Legal and Criminological Psychology*, 15, 77-96.
- Brewer, N., & Wells, G. (2011). Eyewitness Identification. *Current Directions in Psychological Science*, 20(1), 24-27.
- Brewer, N., Caon, A., Todd, C., & Weber, N. (2006). Eyewitness identification accuracy and response latency. *Law & Human Behavior*, 30(1), 31-50.
- Bureau of Justice Statistics. (2016). *National sources of law enforcement employment data*. Washington, DC: US Department of Justice.
- Carlson, C. A., & Carlson, M. A. (2012). A distinctiveness-driven reversal of the weapon-focus effect. *Applied Psychology in Criminal Justice*, 8(1), 36-53.
- Carlson, C. A., Pleasant, W. E., Weatherford, D. R., Carlson, M. A., & Bednarz, J. (2016). The weapon focus effect: Testing an extension of the unusualness hypothesis. *Applied Psychology in Criminal Justice*, 12(2), 87-100.
- Charman, S. D., & Quiroz, V. (2016). Blind sequential lineup administration reduces both false identifications and confidence in those false identifications. *Law & Human Behavior*, 40(5), 477-487.
- Clark, S., Moreland, M., & Rush, R. (2015). Lineup composition. In T. Valentine, & J. Davis, *Theory and practice of identification from eyewitnesses* (pp. 127-157). Winchester: Wiley and Sons.
- Cutler, B., & Fisher, R. (1990). Live lineups, videotaped lineups, and photo-arrays. *Forensic Reports*, 3, 439-448.
- Cutler, B., Berman, G., Penrod, S., & Fisher, R. (1994). Conceptual, practical, and empirical issues associated with eyewitness. In D. Ross, J. Read, & M. Toglia, *Adult eyewitness testimony: Current trends and developments* (pp. 163-181). New York: Cambridge University Press.
- Cutler, B., Fisher, R., & Chicvara, C. (1989). Eyewitness identification from live versus videotaped lineups. *Forensic Reports*, 2, 93-106.
- Dempsey, J. L., & Pozzulo, J. D. (2008). Identification accuracy of eyewitnesses for a multiple perpetrator crime: Examining the simultaneous and elimination lineup procedures. *American Journal of Forensic Psychology*, 26(4), 67-82.

- Dent, H., & Stephenson, G. (1979). Identification evidence: Experimental investigations of factors affecting the reliability of juvenile and adult witnesses. In D. Fingleton, K. Hawkins, & S. M. Lloyd-Bostock, *Psychology, law and legal processes* (pp. 195-206). Atlantic Highlands, New Jersey: Humanities Press.
- Devlin, L. (1976). *Report to Secretary of State for the Home Department of the Departmental Committee on Evidence of Identification in Criminal Cases*. London: Her Majesty's Stationary Office.
- Douglass, A. B., Smith, C., & Fraser-Thill, R. (2005). Problem with double-blind photospread procedures: Photospread administrators use one eyewitness's confidence to influence the identification of another eyewitness. *Law & Human Behavior*, 29(5), 543-562.
- Dysart, J. E., Lawson, V. Z., & Rainey, A. (2012). Blind lineup administration as a prophylactic against the post-identification feedback effect. *Law & Human Behavior*, 36(4), 312-319.
- Egan, D., Pittner, M., & Goldstein, A. (1977). Eyewitness identification: Photographs vs. live models. *Law and Human Behavior*, 1(2), 199-206.
- Erickson, W., Lampinen, J., & Moore, K. (2016). Eyewitness identifications by older and younger adults: A meta-analysis and discussion. *Journal of Police & Criminal Psychology*, 31(2), 108-121.
- Evans, J., Marcon, J., & Meissner, C. (2009). Cross-racial lineup identification: assessing the potential benefits of context reinstatement. *Psychology, Crime & Law*, 15(1), 19-28.
- Fitzgerald, R., Price, H., & Valentine, T. (2018). Eyewitness identification: Live, photo, and video lineups. *Psychology, Public Policy, and Law*, 24(3), 307-325.
- Fosdick, R. (1915). Passing of the Bertillon System of Identification. *Journal of Criminal Law and Criminology*, 6(3), 363-369.
- Greathouse, S. M., & Kovera, M. B. (2009). Instruction bias and lineup presentation moderate the effects of administrator knowledge on eyewitness identification. *Law & Human Behavior*, 33(1), 70-82.
- Harvard, C., Memon, A., Clifford, B., & Gabbert, F. (2010). A comparison of video and static photo lineups with child and adolescent witnesses. *Applied Cognitive Psychology*, 24, 1209-1221.
- Harvard, C., Memon, A., Laybourn, P., & Cunningham, C. (2012). Own-age bias in video lineups: a comparison between children and adults. *Psychology, Crime & Law*, 18(10), 929-944.
- Haw, R. M., & Fisher, R. P. (2004). Effects of administrator-witness contact on eyewitness identification accuracy. *Journal of Applied Psychology*, 89(6), 1106-1112.
- Horry, R., Memon, A., Wright, D. B., & Milne, R. (2012). Predictors of eyewitness identification decisions from video lineups in England: A field study. *Law & Human Behavior*, 36(4), 257-265.
- Kerstholt, J., Koster, E., & van Amelsvoort, A. (2004). Eyewitnesses: A comparison of live, video, and photo line-ups. *Journal of Police and Criminal Psychology*, 19(2), 15-22.
- Key, K. N., Cash, D. K., Neuschatz, J. S., Price, J., Wetmore, S. A., & Gronlund, S. D. (2015). Age differences (or lack thereof) in discriminability for lineups and show-ups. *Psychology, Crime & Law*, 21(9), 871-889.
- Lawson, V. Z., & Dysart, J. E. (2014). The show-up identification procedure: An exploration of systematic biases. *Legal & Criminological Psychology*, 19(1), 54-68.
- Luongo, J. (2020, October 23). NYPD costs for lineups and photo arrays FY 2021. (A. Costello, Interviewer).

- McGuire, M., & Pezdek, K. (2016). Birds of a feather get misidentified together: High entitativity decreases recognition accuracy for groups of other-race faces. *Legal & Criminological Psychology*, 21(1), 202-211.
- Mecklenburg, S. H., Bailey, P. J., & Larson, M. R. (2008). The Illinois Field Study: A significant contribution to understanding real world eyewitness identification issues. *Law & Human Behavior*, 31(2), 22-27.
- National Institute of Justice. (1999). *Eyewitness evidence: A guide for law enforcement*. Washington, DC: National Institute of Justice.
- Peters, D. (1991). The influence of stress and arousal on the child witness. In J. Doris, *The suggestibility of children's recollections* (pp. 60-76). Washington, D.C.: American Psychological Association.
- Pezdek, K., & Blandon, G. I. (2005). When is an intervening line-up most likely to affect eyewitness identification accuracy? *Legal & Criminological Psychology*, 10(2), 247-263.
- Pezdek, K., & Stolzenberg, S. (2014). Are individuals' familiarity judgments diagnostic of prior contact? *Psychology, Crime & Law*, 20(4), 302-314.
- Pickel, K., Narter, D., Jameson, M., & Lenhardt, T. (2008). The weapon focus effect in child eyewitnesses. *Psychology, Crime & Law*, 14(1), 61-72.
- Police Executive Research Forum. (2013). *A national survey of eyewitness identification procedures in law enforcement agencies*. Washington, DC: Police Executive Research Forum.
- Pozzulo, J. D., & Balfour, J. (2006). Children's and adults' eyewitness identification accuracy when a culprit changes his appearance: Comparing simultaneous and elimination lineup procedures. *Legal & Criminological Psychology*, 11(1), 25-34.
- Pozzulo, J., & Dempsey, J. (2009). Could target age explain identification accuracy differences between child and adult eyewitnesses? *Psychiatry, Psychology & Law*, 16, 137-144.
- Pozzulo, J., Dempsey, J., & Gascoigne, E. (2009). Eyewitness accuracy when making multiple identifications using the elimination line-up. *Psychiatry, Psychology & Law*, 16, 101-111.
- Rodriguez, D. N., & Berry, M. A. (2014). The effect of line-up administrator blindness on the recording of eyewitness identification decisions. *Legal & Criminological Psychology*, 19(1), 69-79.
- Sauer, J. D., Brewer, N., & Wells, G. L. (2008). Is there a magical time boundary for diagnosing eyewitness identification accuracy in sequential line-ups? *Legal & Criminological Psychology*, 13(1), 123-135.
- Sauer, J., Brewer, N., Zweck, T., & Weber, N. (2010). The effect of retention interval on the confidence-accuracy relationship for eyewitness identification. *Law & Human Behavior*, 34(4), 337-347.
- Schneider, J. (2020, 2 15). Lieutenant Detective Commander. (A. Costello, Interviewer).
- Sharps, M. J., Janigian, J., Hess, A. B., & Hayward, B. (2009). Eyewitness memory in context: Toward a taxonomy of eyewitness error. *Journal of Police & Criminal Psychology*, 24(1), 36-44.
- Sporer, S. L. (1991). Personenidentifizierungen bei Wahlgegenüberstellungen und Lichtbildvorlagen. [Person identifications in live lineups and photospreads]. In R. Egg, *Brennpunkte der Rechtspsychologie*: (pp. 83-110). Bonn, Germany: Forum.
- Stebay, N. (2011). What we know now: The Evanston Illinois field lineups. *Law & Human Behavior*, 35(1), 1-12.

- Stebly, N., Dietrich, H., Ryan, S., Raczynski, J., & James, K. (2011). Sequential lineup laps and eyewitness accuracy. *Law & Human Behavior*, 35(4), 262-274.
- Stebly, N., Dysart, J., & Wells, G. (2011). Seventy-two tests of the sequential lineup superiority effect: A meta-analysis and policy discussion. *Psychology, Public Policy, and Law*, 17(1), 99-139.
- Thompson, W. B. (2018). Eyewitness memory: A field study of viewing angle, pose, and eyewitness age. *Applied Psychology in Criminal Justice*, 14(2), 102-118.
- Valentine, T., Darling, S., & Memon, A. (2007). Do strict rules and moving images increase the reliability of sequential identification procedures? *Applied Cognitive Psychology*, 21, 933-949.
- Wells, G. L., Stebly, N. K., & Dysart, J. E. (2016). Double-blind photo lineups using actual eyewitnesses: An experimental test of a sequential versus simultaneous lineup procedure. *Law & Human Behavior*, 39(1), 477-487.
- Wright, D. B., & Stroud, J. N. (2002). Age differences in lineup identification accuracy: People are better with their own age. *Law & Human Behavior*, 26(6), 641-654.

Cases

- People v. Caserta, 19 N.Y.2d 18 (Court of Appeals of the State of New York, December 30, 1966).
- People v. Cioffi, 1 N.Y.2d 70 (Court of Appeals of the State of New York, Mar 23, 1956).
- People v. Fowler, 101 A.D.3d 898 (Supreme Court of New York, Appellate Division, Second Department, December 12, 2012).
- People v. Hagerdorny, 272 App. Div 830 (Appellate Division of the Supreme Court of New York, Second Department, May 19, 1947).
- People v. Hawkins, 435 N.E.2d 376 (1982).
- People v. Hemphill, 2020 N.Y. Slip Op 03567 (NYS Court of Appeals, June 25, 2020).
- State v. Alwin, 164 Idaho 160 (Supreme Court of Idaho, September 21, 2018).
- Watson v. Artuz, 2019 U.S. Dist. LEXIS 27774 (United States District Court for the Southern District of New York, February 21, 2019).

Legislation

- Senate, N. Y. (2017). Senate Bill S1819. New York, USA: N.Y. Senate.

Authors' Biographies

Andrew J. Costello, PhD, is a retired Deputy Inspector of Police, having served over 26 years with the NYPD. He has worked for the NYPD's Patrol Bureau, Transit Bureau, the Police Commissioner's Office, and the Chief of Detectives. Of Dr. Costello's more notable achievements in the NYPD was the development the Enterprise Case Management System (ECMS) in which he received the 2008 Excellence in Achievement award. Additionally, he developed the database to track all DNA exemplar of victims and comparator submissions of family members from the 9/11 World Trade Center attack. He conducts research in the area of criminal investigations and forensics. His research and interests start from the collection and analysis of physical evidence to identification procedures and interrogations. Costello has a bachelor of Engineering in Mechanical Engineering

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Blair Hoplight

Maria Lombardo

Appendix: Summary of Research

Authors	Year	Research Question	Methodology	Number of Participants	Sample Type	Incident	Primary Conclusion	Secondary Conclusion
Egan, Pittner, and Goldstein	1977	Are corporeal lineups better than photo arrays?	ANOVA and Chi-Squared	86	Under-graduate students	Observed two males through one-way mirror; no actual crime observed	Photos produced less identifications than lineups. $F(1,71) = 4.31, p < .05$	Longer delay in viewing time resulted in higher false identifications. $\chi^2=11.46, P<0.05$
Dent and Stephenson	1979	Are corporeal lineups better than photo arrays?	Chi-squared	70	Adults	Video burglary of office	Performance better in photo arrays (28%) than corporeal lineups (14%), but not significant.	
Dent and Stephenson	1979	Are corporeal lineups better than photo arrays?	Chi-squared	242	Children	Live workman inspecting doors in a classroom	Performance better in photo arrays (28%) than corporeal lineups (14%), significant but no p value.	No significant differences between stimulating memory recollection by asking children to describe the man prior to the identification.
Dent and Stephenson	1979	Corporeal lineups behind a mirror were compared to stand and corporeal lineups and photo arrays	Chi-squared	150	Adults	Live observ. of man asking for volunteers	Live corporeal lineup condition behind mirror (40%) superior to photo array (33%) and standard corporeal lineup (18%). Statistically reliable, no p value supplied.	Women more accurate than men.

Authors	Year	Research Question	Methodology	Number of Participants	Sample Type	Incident	Primary Conclusion	Secondary Conclusion
Peters	1991	Are photo arrays superior to corporeal lineups when accounting for stress levels?	Chi-squared	96	Children	Live simulated theft of a money box	Best performance was photo array with target present under low stress condition (83%) and the least accurate was the corporeal lineup under stress (33%). $P < 0.1$	Non-identification was highest in the stressed, corporeal lineup condition (58%). $p < 0.01$
Cutler, Fisher, and Chicvara	1989	Are live lineups superior to video lineups?	Chi-squared	56	Under-graduate students	Live simulated theft of wallet from lectern	No significant difference between live versus video lineups.	No difference in false identification between live and video lineups.
Cutler and Fisher	1990	Are live lineups superior to video lineups and photo arrays?	Student t	72	Under-graduate students	Live simulated theft of wallet from lectern with a male and female targets	No significant difference between live lineups, video lineups, and photo arrays.	
Valentine, Darlin, and Memon	2007	Are moving image video lineups superior to still image Photo arrays?	Chi-squared	202	Under-graduate students	Live simulated theft of laptop	No difference between moving images and still images in correct identification or incorrect rejection. ($X^2 = 1.27$, $p > 0.1$)	Significant difference in correct rejection of target absent condition for moving images over still images. ($X^2 = 5.41$, $P < 0.05$)

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Beresford and Blades	2006	Are video lineups comparable to still images and is the elimination lineup more effective?	Logistic Regression	523	Children	Video: Theft of birthday cake	No difference in correct identification among methods with target present. ($\chi^2(5, N = 255) = 4.502, p = .480$)	
Brace, Pike, Kemp, and Turner	2009	Are video lineups superior to live lineups	Chi-squared	29	Under-graduates students	Live two males fighting over a bag	No difference between methods. Test not fully conducted as several cells had less than 5 obser.	
Kerstholt, Koster, and Amelsvoort	2004	Are corporeal lineups superior to video lineups or photo arrays?	Chi-squared	337	Adults from choir and musical ensemble	Live 30 second interaction between target and a research assistant	No difference between methods.	Live lineups reduced false identifications in target absent condition. ($\chi^2(2) = 8.6, p > .01$)
Harvard, Memon, Clifford, and Gabbert	2010	Are video lineups superior to static lineups?	Chi-squared	215	7-9 year old Children and 13-15 year old adolesc.	Live male pretending to do market research on shoes	No difference between methods.	