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Rescuing the Missing: A Study of Prospective Person Memory on Missing Persons

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Running head: PROSPECTIVE PERSON MEMORY FOR MISSING
PERSONS

Rescuing the Missing: A Study of Prospective Person Memory on Missing Persons

An Honors Thesis submitted in partial fulfillment of the requirements of Honors Studies
for Bachelor of Arts in Psychology and Biology

By

Brandon Mills Spillar

Spring 2015

J. William Fulbright College of Arts and Sciences

The University of Arkansas

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Table of Contents

Abstract.....	3
Introduction.....	4
Method.....	12
Results.....	17
Discussion.....	22
References.....	28
Appendices.....	31

Abstract

An average of 1,700 missing persons cases are filed everyday in the United States (Federal Bureau of Investigation, 2013). With such a large number of people placed in potential danger, their security is the utmost concern to families, communities, and consequently our society (Spilman, 2006). In response to people going missing, police departments often use news teams and photos to exhort the public to be on the lookout for these missing persons (Tarling & Burrows, 2004). As a result, people practice what is called Prospective Person Memory. Prospective person memory is a cognitive process involving people correctly identifying a face they have been told to be on the lookout for (Lampinen, Arnal, & Hicks, 2009a). Improving the public's ability to identify missing people greatly improves the ability to locate missing persons (Lampinen, 2009a). In this experiment, participants viewed photos of a missing person they were informed to be on the lookout for, were exposed to the actual missing person shortly after, and tested on their ability to correctly identify and report the sighting. This experiment measured the effects of differing expectancy levels, number of pictures viewed, and appearance changes between photos to the actual person on prospective person memory. Results from this experiment showed that there was no statistical significance between conditions. The experiment, its implications, and limitations are discussed.

Rescuing the Missing: A Study of Prospective Person Memory on Missing Persons

Introduction

In December of 2013, the FBI reported 84,136 active missing person records in the United States (Federal Bureau of Investigation, 2013). Sadly, juveniles under the age of 20 account for 51.7% of these active records (FBI, 2013). Missing persons are clearly a rampant problem in society. Not only are they in danger, but also can have a severe impact on families and communities (Hogben, 2006). In order to rescue missing persons, identifying and locating a person increases by employing more people to be on the lookout as well as increasing the ability to correctly identify and report the missing person. As a result, investigators have used multiple techniques involving displaying photos on milk cartons, television news, playing cards, internet postings, and photo postings at highly frequented locations like your local DMV (Brown, 1997).

To understand and tackle this issue, improving the public's ability to locate missing persons has been a focused area of study. Research on what is now called "Prospective Person Memory" has been at the forefront of solving this issue. Prospective memory is simply the process of encoding something specific to be remembered and acted on in the future. Put succinctly by Harris (1984), it is the process of "Remembering to Remember." Specifically, Prospective Person Memory (PPM) is the process of remembering a presented photo, and being able to correctly identifying this person in the future.

A widely known example of the use of prospective person memory involves AMBER alerts. AMBER, which stands for "America's Missing: Broadcast Emergency Response" is also named after the devastating story of Amber Hagerman who was

kidnapped and murdered in 1996 (Griffin, Miller, 2008). Following this, organizations began demanding lawmakers to better establish systems to announce abductions and disappearances to the public. By 2002, 26 states had adopted the AMBER alert system that sends out radio broadcasts, alerts TV news crews, and sends emails and texts to update the public on such occurrences. Since 2002, 758 missing children have been rescued through the AMBER alert system (AMBER Alert Success Stories, 2015). While each rescued person is an incredible victory for those involved, this is little consolation to the overwhelming number of those still missing. The need to improve systems such as this is of high importance.

In the past, studies have shown that prospective person memory is very weak. In a study by Lampinen, Arnal, and Hicks (2009a), students were offered a share in a 100-dollar prize if they could correctly identify a person in the next week after viewing a specific photo of that person. In one scenario, students from a general psychology class viewed a photo of a “wanted person.” In the following class period two days later, the person depicted in the photo, with a similar appearance, walked to the front of the class and handed papers to the teacher, then turned and addressed the class with a “Good Morning,” then exited the class. In this experiment, several classes were tested with the same procedure, resulting in anywhere from zero to seven percent of participants making correct identifications. In a similar study, introductory level psychology classes were shown videos of two bank robbers. Two days later, when the class met again, these two individuals stood directly outside the classroom selling cookies. Furthermore, some students were informed of the bake sale and received two-for-one coupons, while others did not. The coupons were intended to increase certain participants’ interest in the bake

sale where they would potentially spend more time viewing the bank robbers turned cookie salesmen. As a result, about 7% of the coupon-receiving participants made correct identifications while only about 2.5% of non-coupon receivers made correct identifications. The article goes on to state that most experiments have less than 7% correct identification rates among participants, though this can still be a large number when thousands of people are shown photos. One clear problem however, is that these percentages most likely err on the side of too many correct identifications, since thousands of participants are able to see the missing or wanted person shortly after viewing a photo of them, often within two days or even five minutes.

One way to post photos of missing persons in the public is to place photos in well-frequented places such as DMV's or supermarkets. In a study by Lampinen, Arnal, and Hicks (2009b) posters of 8 missing children were placed by the exit of a grocery store on a bulletin board. The photos were designed to match the format of previously posted missing persons bulletins including the picture along with descriptive information. The board was placed at the exit for a week. Toward the end of that week, experimenters conducted surveys asking grocery shoppers to fill out a questionnaire after exiting the store. 140 participants were asked a series of questions ranging from how important they believed the issue of missing children was to how much they actually looked at the bulletin board. This study showed that though 90% of the customers believed finding missing children was very important, only 30% actually looked at the photo postings. Of those who actually looked, just over 20% reported that they "briefly" looked at the photos. Furthermore, the memory recognition portion of the survey asked participants to identify the children from the bulletin board. There was no significant difference in

accuracy between those who reported looking for a long time and those who did not look at all. The three most common reasons people failed to invest time looking at the bulletin board included “didn’t notice,” “busy,” and “didn’t think to look.” This study shows that though people believe this issue to be very important, bulletin board postings such as these likely have little effectiveness. Thus, the need arises to increase the public’s prospective memory ability, to match their interest in this issue.

The top three causes for why participants failed to view postings of the missing children can be explained through a couple unique studies involving gorillas and money growing on trees. In one article by Mack (2003), a process called inattention blindness is studied. Inattention blindness, described as the inability to see something they are looking at, is likely due to diverted attention (Mack, 2003). In this study, a video was created involving two teams of three players, one team wearing white and one team wearing black, passing a basketball to one another. Participants are asked to attend to a certain portion of the video by asking them to count the number of passes between the players on the white team. There are many things going on in the video involving players moving in circles, bounce vs. aerial passes, and the black team carrying out the same task that participants attempt to avoid attending to. During this process, a woman in a gorilla suit enters the scene, stops in the center, beats her chest, and walks out of the scene while the basketball passing and player movement continuously occurs. This study found that only 8% of the participants noticed the gorilla in the video, clearly revealing the extent of inattention blindness. These results reveal one of the problems behind identifying missing people in public, which is the fact that even when the public walks directly past a

missing person they have been told to be on the lookout for, without proper attention, they may walk right past without a second thought.

Added on to this idea of inattention blindness was a study done to examine the extent to which participant behavior was guided by an object that they did not attend to or were seemingly aware of (Hyman, Sarb, & Wise-Swanson, 2014). In this study, two experiments were conducted. In the first experiment, a sign was placed in the pathway forcing people to sidestep it on their way to class. The sign said "Psychology Research in Progress," and experimenters observed the walking behaviors of passersby, followed by asking them to complete a questionnaire after they'd passed the signboard. Results from the study showed that the use of cell phones impacted walker behavior and awareness. Cell phone users differed significantly in that 25.82% waited until they were five feet away from the sign to avoid it, while only 10.20% of non-cell phone users avoided the sign within the five-foot mark. Additionally, cell-phone users differed significantly in that 55.56% were able to recall what the sign said, while non-cell phone users recalled the words on the sign 77.78% of the time. This experiment reveals that using technology such as our cell-phones impacts our ability to act on and recall stimuli around us. In the second experiment, experimenters found a low hanging branch on a college campus that forced walkers to duck or avoid the branch extending above the sidewalk. At eye level, experimenters attached several one-dollar bills. Observers watched from a distance to see how people reacted or did not react to the money. This study found that individuals using their cell phones were aware of the money about 6.35% of the time, whereas non-cell phone users were aware of the money 19.82% of the time, differing significantly. This experiment further demonstrates the extent of inattention blindness, such that people

can act on stimuli in the environment, such as avoiding the branch, without attending to the fact that free money was clipped onto the branch. Even the low awareness of money among non-cell phone users is alarming. With the rise of cell phone use, the ability for individuals to use something like prospective person memory to attend to particular stimuli in the environment is further compounded. To conclude, the general public clearly experiences a deficit in this ability, pointing to the low levels of confirmed reported sightings experienced in past PPM studies.

The process of Prospective Person Memory has been evaluated cognitively. In a study by Smith (2003), she revealed what is known as the Preparatory Attentional Mechanism (PAM). This mechanism is used during PPM by one performing preparatory processes prior to the event in which prospective memory is required (Smith, 2003). This process involves active monitoring of the environment for the prospective memory cue and the article argues that prospective memory is never automatic. In a follow-up study by Einstein and colleagues, they agreed that PAM is used, though they posit this is not the only mechanism of memory retrieval, in order that prospective memory occurs (Einstein, et al., 2005). Instead, they argue for the multi-process theory: that PPM can occur through both PAM and also through a seemingly reflexive process that occurs more naturally through passive effort of the individual to respond to the correct stimuli. To prove the existence of these so-called spontaneous processes, they conducted an experiment to test whether it was possible for prospective memory retrieval to occur without intention. In order to do this, they set up an experiment where participants were given a prospective memory task involving words on a screen that appeared during an imagery-rating task at the beginning of the study. The next portion of the study involved

a lexical decision task completely separate from the prospective memory task. This was done in order to focus the participants' attention away from the prospective memory task, yet have these old target words pop up to see if automatic retrieval occurred without intending to do so. Results of this study were significant. Participants response times on lexical decisions slowed by about 300 ms with the appearance of prospective memory target words, proving to be a distraction to the participants amidst the ongoing task. Additionally, further analysis helped determine that both mechanisms of PAM and spontaneous retrieval are often used separately with regard to the individual or the specific task they are carrying out (Harrison & Einstein, 2010). These studies uncover the mechanisms the public employs to carry out PPM.

A study by Wells (1978) reveals that there are two sets of variables dictating eyewitness accuracy: system and estimator variables. System variables are variables that can be altered in actual cases, such as how a lineup is conducted. Estimator variables are those that cannot be manipulated, such as the ethnic differences between the witness and the suspect. Clearly, estimator variables are realities of individual cases that cannot be altered to increase or decrease the ability to correctly identify a person, but system variables, and taking advantage of them, can potentially increase the ability to make a correct identification. In the following experiment, both system and estimator variables are considered. An estimator variable looked at is the success rate between genders. System variables tested in this study involve attempting to alter self-efficacy, multiple vs. single photo of missing person, along with appearance similarities and differences.

Furthermore, self-efficacy may play a role as a system variable. Self-efficacy is defined as the confidence in one's self to complete tasks, which then influences

performance, and in this case, could influence the public's ability to recognize someone in public (Bandura, 1989). Essentially, if one were to believe that they have a high chance of finding a missing person, perhaps they would be more alert and attentive to their surroundings, leading to a higher rate of locating the missing, whereas a person who believed they had no chance of seeing the missing person may not be as active in identifying the target. In this experiment, this is manipulated through high and low expectancy levels by informing participants of the likelihood of seeing the missing person in the next few days. This is a simple manipulation of the participants' mindset, since they all had a chance to see the participant within 5 minutes of the experiment, regardless of the received expectancy level.

Little study has been done involving these system variables on prospective person memory involving expectancy, multiple vs. single photo news videos, and similar vs. differing appearance of photo to actual missing person. Curry, along with Dr. Lampinen brainstormed these system variables in attempt to determine several simple techniques that may improve prospective person memory for missing persons (Lampinen, Curry, & Erickson, under review). The following experiment is a continuation attempting to replicate and add on to the participants run in Curry's study, to further determine significance and strengthen the validity of her findings. Using 126 participants, these variables were tested through experimental work. Participants viewed a one-minute long video of a supposed missing person, which in reality was a picture or multiple pictures of a research assistant. Following this viewing, participants were asked to be on the lookout for the missing person in the near future for a chance to split 200 dollars with the other participants who correctly reported the missing person. After viewing the video,

participants exited the experiment area walking directly past the actual research assistant shown in the video, standing against the wall of the hallway. Though it may seem everyone should immediately recognize the missing person, this could not have been further from the truth. Only 11 out of 126 participants made a correct sighting, while 11 out of 121 participants reported seeing the person in the follow-up survey while failing to report the sighting initially. For the separate conditions, our initial expectation was that multiple photos, being informed of a high chance of seeing the missing person, and similar appearances between photos and the actual research assistant all would lead to a higher correct sighting rate. Unfortunately, there was no significant difference between any condition, likely due to in part to a low sample size and an imperfectly replicated procedure.

Experiment

Method

Participants

The participants involved in this study included 130 individuals recruited from an introductory Psychology course at the University of Arkansas. Participants received credit in their introductory course for partaking in the experiment. Participants also had the incentive at the end of the experiment that if they made a correct sighting, they would split a 200-dollar prize with the other participants who made correct sightings. 130 people participated in the initial experiment. Four participants were removed from the data as a result of experimental malfunctions involving a fire requiring everyone to leave the building, internet failure during an experiment; and miscommunication between the

experimenter and the confederate resulting in the “missing person” not being visible to the participant following the initial survey. The 126 who completed the initial survey had an average age of 19.02 (SD = 2.48), 70.97% of which were female. Of the 126 who completed the initial survey, 121 participants successfully completed the follow up survey shown in Figure 1. Demographics of the participants are displayed in Table 1.

Materials and Procedures

This experiment along with data collection took place between the months of October and December of 2014. The participants were all selected from an introductory psychology course. The procedure involved one experimenter and a female confederate playing the missing person, taking a maximum of 20 minutes. This experiment used one person at a time to avoid multiple participants discussing and influencing one another as they walked directly past the “missing person” in the hallway after the experiment. The participants would enter the room, and were told that they were participating in a “Media Studies” survey to rate the quality of two student produced UATV productions. This was the only form of deception used during the experiment so that participants would watch and remember the missing person video and code the information similarly to how they would normally watch a news story, without extra study or scrutiny. The first video they were shown on the computer was of an actual UATV produced news story, and the participants were then asked to rate the production quality, their thoughts, and what they would change about the news story. Following this, they then watched the news story of the missing person displaying the face of the missing person for 60 seconds, along with the information that the person had gone missing one to two days prior to each experiment. Immediately after the video, they were informed that this video was not true,

but if they do see this person in the next week, they should report the location and description of the person to the email `missing@xxxx.edu` that the experimenters were in charge of to record accuracy of the sighting. Questions following the missing persons video attempted to assess believability, attentiveness to video, and effect of expectancy to determine validity, potential differences between participants, and effects of expectancy values on intent to be on the lookout. Immediately after the participant confirmed knowing that the video was false, and that if they saw the person in the video they would report it to that email, the participant was then led out of the experiment room down a hallway back to the participant waiting area. Prior to this walk, the experimenter would text the confederate who appeared in the video to step into the hallway the experimenter and participant would walk down. The participant would then walk directly past the confederate in the hallway. The confederate made her face visible, but did not make eye contact with the participant, since this could have attracted too much attention, and would have been unfair to the participants who did not attempt to make eye. Furthermore, the participants did not wear the same clothes they were seen in the news stories, since this would increase the chances to make a correct identification, and would add a confounding variable. Once the participant left the hallway, the initial experiment was completed.

Within 24 to 48 hours, the participants were all sent a follow-up survey. If the participant did not fill out the survey, they were emailed three more times over the course of two weeks to remind them to complete it to receive full participation credit. The main purpose of this survey was to assess whether or not people recognized the missing person, yet failed to report it. The participant was sent the survey within 24 to 48 hours,

since they were able to see the “missing person,” and sending this survey soon after would help people to remember their non-reported sightings. Furthermore, the missing@uark.edu account was checked, and those who made a report were sent a Sighting Report Survey asking to describe the person, the location they were spotted, and other details to assess whether or not the sighting was correct. Furthermore, the confederate monitored her locations day to day in case a participant saw the confederate at a random time and place on or off campus within the week, which would be counted as a correct sighting. Furthermore, several variables were manipulated within the video including number of photos, appearance in photos, actual appearance in hallway, and expectancy levels.

The video of the missing person and the appearance of the person in the hallway were broken down into five variations: multiple both, multiple match, multiple mismatch, single match, and single mismatch as shown in Figure 2. Furthermore, the confederate would appear in the A or B appearance in the hallway where appearance A involved hair down and no glasses, while appearance B involved the girl tying her hair up behind her head along with glasses as shown in Figure 2. In the multiple both condition, the participants saw two side-by-side photos of the missing person in appearance A and B, followed by the confederate actually appearing in A or B at random. In the multiple match condition, the participant saw two photos of appearance A, or two photos of appearance B, followed by the actual confederate appearance corresponding to the same appearance in the video. The multiple mismatch condition involved two photos in appearance A or two in appearance B, while the confederate actually appeared as the opposite appearance. The single match condition involved one picture of appearance A or

appearance B followed by the confederate corresponding similarly to the video appearance. The single mismatch video showed one picture of appearance A or appearance B followed by the confederate actually appearing in the opposite appearance. The number of participants who completed each condition involved 28 in the multiple both, 25 in the multiple match, 23 in the multiple mismatch, 25 in the single match, and 25 in the single mismatch. The confederate would randomly select which appearance to be in based on random selection. The confederate would select from a stack of notecards, half of which had appearance A listed and the other half, appearance B. The confederate would select the card, then hand it to the experimenter who handed it to the participant at the beginning of the experiment. The notecard had the initials of the confederate followed by the appearance so that the participant would not understand the meaning of the letters, and so that the survey would show videos of the correct girl. For instance, the participant received notecards that said MMA, MMB, KBA, or KBB. The survey then randomly assigned the five photo conditions corresponding to the confederate involved that day.

Furthermore, expectancy levels were varied from participant to participant at random. Following the initial experiment before having a chance to view the confederate in the hallway, participants were informed that they had either a 90 percent or 15 percent chance of actually seeing the missing person. 66 participants received the 90 percent condition and 60 received the 15 percent condition at random. Completion of the initial survey and follow up survey each received half a credit for the psychology course.

Results

Manipulation Checks

Timing of Event. Participants were informed in the initial survey that the missing person had disappeared at least two days prior to the airing of the news story. This was done to err on the side of creating a high interest level in the video due to the recency of the report, as opposed to a less recent case.

Emotional Reaction. The emotional reaction of the two stories was recorded to assess the level of normal responses to each video to assess how much attention was actually paid to the videos. Using a Likert-Scale, participants rated their level of different emotions from “not at all” to “extreme.” Since the content differed between the two videos, the introduction of a new fast-food restaurant compared to a recent person who had gone missing, certain emotions were expected to be seen more than others if people actually paid attention. The results consisted with expected emotion differences. In the second Missing Person Video, people were significantly more concerned, anxious, frightened, angry, surprised, interested, disgusted, sad, and found the video more important. The first video was found to be significantly happier. “Hopeful” had no significant difference between the two videos. Due to the consistency between the expected emotions elicited from each video and the results, this shows that people paid adequate attention to the videos overall as shown in Table 3.

Missing Person Details. To further test the overall attention paid to the video, an open-response question immediately following the Missing Person Video asked for the main points in the news story. The responses showed that every participant (100%)

included the detail that a girl had gone missing further showing that adequate attention was paid. Furthermore, in the follow-up study, participants were asked in multiple-choice format the reason this girl was being sought. The vast majority (97.52%) responded that this girl was missing. Similarly, the vast majority replied with the correct email to report a spotting (97.52%). Forgetting the email would disrupt their ability to correctly report someone, though the three participants who forgot the email also did not report seeing the person as indicated in the follow-up survey. The last measure asked in multiple-choice format where the girl had last been seen. The majority (83.47%) of responders correctly selected that she had last been seen on Dickson Street.

Belief in Veracity of Story. In the initial survey, two questions were asked regarding the believability of the Missing Persons Video. The first question asked how much one believed the Missing Persons video was an actual news story; half (50.00%) of the participants believed it to be true. The second question, following the video, asked whether or not the participant actually believed that the girl was missing responded similarly (50.81%). These responses show that the video of the missing person was believable to half the participants that may have caused participants to not code the information of the missing person in a comparable way to reality, though this question was asked immediately after participants were told the video was fake.

Intent to be on Lookout. Several questions were designed to assess the participants' intended looking behavior compared to their reported looking behavior. The correlation between how likely the participants thought they would encounter the missing person in the next week and their perceived intent to be on the lookout in the next week strongly correlated $r(119) = 0.346$, $p = <0.0001$. Furthermore, the correlation between

how likely they believe they will be in the same location and to what extent they self-reported actually being on the lookout also correlated strongly, $r(119) = 0.25$, $p = 0.006$. These relationships show that perceived expectancy of actually seeing the person relates to their intent to look for the person in the next week, which also relates, though not as strongly with their self-reported looking behavior.

Main Outcome Variables

Expectancy. Towards the end of the initial survey, participants were informed that they had a 90% (high) chance of seeing this person in the next few days or a 15% (low) chance of seeing the missing person in the next few days. Of the 126 participants who completed the initial study, 66 participants were given the high expectancy condition, whereas 60 were given the low expectancy condition. Of the 66 participants who received high expectancy instructions, 54 believed that it was likely they would see be in the same location as the missing person in the next week, whereas 11 of the 60 low expectancy participants believed that it was likely they would see the missing person in the next week. Furthermore, in the high expectancy condition, 46 stated that they intended to be on the lookout in the next week, while 27 of the low expectancy condition stated that they intended to be on the lookout in the next week.

Additionally, belief that they would encounter the individual in the next few days varied with expectancy. Those given the high expectancy condition believed that they would encounter the individual in the near future significantly more than those who received the low expectancy condition $t(124) = 2.41$, $p < 0.017$.

Prospective Person Memory. The main purpose of this study looked at the number of correct identifications made between photo conditions and expectancy differences. Out of the 126 participants that completed the original study, 11 participants (8.70%) submitted sighting reports and all correctly identified the missing person based on the location, time, and description of the missing person they provided. Of the 11 correct identifications, 4 occurred in the multiple both, 1 occurred in the multiple match, 1 occurred in the multiple mismatch, 2 occurred in the single match, and 3 occurred in the single mismatch. Of these 11 correct identifications, 8 participants were in the high expectancy condition, while just 3 were in the low-expectancy condition.

Logit Regressions 1 shown in Table 5 used the dependent variable of reported confirmed sightings and analyzed differences between number of pictures, match compared to mismatch of photos to target, high and low expectancy conditions, gender differences, and the effect of how much danger the participant believed the missing person was in when viewing the video. Out of 126 participants who completed the original survey, there was no significant difference between participants seeing one or two pictures on correctly reported sightings. There was no significant difference between the multiple match and the multiple mismatch condition. Additionally, there was no significant difference between multiple both and the multiple mismatch condition, though due to the small data set, this comparison is trending toward the multiple both condition. In regard to expectancy, there was no significant difference between the high and low expectancy conditions on confirmed sightings, though the high expectancy condition was also trending. Though gender was also insignificant, 16.67% of men made correct reported sightings while only 5.68% of women correctly reported a sighting. Lastly, there

was no significant difference between the amount of danger the participant thought the missing person was in and confirmed reported sightings.

Non-Reported Sightings. Out of the 126 participants who completed the original survey, 18 participants (14.29%) believed they saw the missing person, as recorded in the follow-up survey, yet failed to report this sighting. Of those 18 participants, 11 of these non-reported sightings were correct having matched the description, time period, and location of the “missing” research assistant. The other seven gave descriptions, time periods, and locations that were clearly incongruent with the research assistant’s whereabouts on campus. Of the 11 correct non-reported sightings, the reason most participants provided was that they did not feel confident enough to actually report the sighting. Of these 11 correct sightings, 3 were in the “Multiple Both” condition, 1 was in the “Multiple Match,” 2 were in the “Multiple Mismatch,” 1 was in the “Single Match,” and 4 were in the “Single Mismatch.” In regards to expectancy with the confirmed non-reported, 5 participants were in the high expectancy condition and 6 were in the low expectancy condition. Participants with incorrect non-reported sightings were composed of three participants in the high expectancy condition and four in the high expectancy condition.

The second Logit Regression shown in Table 6 looked at the dependent variable of both correctly reported sightings and correct non-reported sightings in relation to different conditions. The first analysis showed that there was no significant difference between multiple and single photos of the missing person shown in the video, though trending toward multiple photos. Similarly, there was no significant difference between the multiple match and the multiple mismatch condition, though trending toward multiple

match. There was no significant difference between the multiple both and multiple mismatch conditions. In regard to expectancy, there was no significant difference between the high and low expectancy levels on correct sightings. There was also no significant difference between male and females on correct sightings, though 33.33% of men made a correct sighting while only 11.36% of females made a correct sighting. Lastly, there is no significant difference of the level of danger the participant believed the missing person to be in on correct sightings.

General Discussion

Locating the missing is an incredibly important task on a grand scale. 627,911 missing person entries alone were filed in 2013 (Federal Bureau of Investigation, 2013). Though the number of missing person entries has steadily decreased from its height of nearly 1,000,000 entries in 1994, the fact still remains that locating those who could be in danger is of paramount importance. This study served as an attempt to alter techniques of informing the public of disappearances in order to increase the amount of successfully located missing persons. Participants watched missing videos with different conditions, were told to be on the lookout, and walked directly passed the missing person within 5 minutes of the initial survey. Attempts to alter variables such as self-efficacy through increasing or decreasing participant expectation levels of the success of finding the missing person, the degree of match between the photo(s) in the missing persons video and the actual appearance of the missing person, and the impact of single compared to multiple photos were all tested to see if correct sightings of the missing would increase.

To determine validity and reliability of the experiment, several measures were taken involving emotional reaction to the videos, memory for missing persons details, belief in the veracity of the story, intention to be on the lookout, perceived danger of the missing person, and how expectancy altered participant intentions and self-efficacy. The emotional reaction differences were all consistent with hypothesized reactions between a news story about a new fast-food restaurant and a missing person. The fact that the participants self-reported their emotional reaction toward the missing person video as significantly more important, and that they were more concerned, anxious, frightened, angry, surprised, interested, disgusted, and sad points to the fact that participants paid attention to the videos. Furthermore, 97.52% of participants recalled in the follow-up study that a girl had gone missing, and 83.47% recalled that she had gone missing on Dickson Street, further pointing to an adequate amount of attention being paid. However, only 50.00% actually believed the missing persons video was a real story. Though this question was asked after telling them the video was false, many included in the comments section the fact that the missing persons video was poorly made, largely due to the fact that it involved only a voiceover and still images. This may have caused lower validity in regard to how the public may encode memory for the missing person. There was also a strong correlation between belief that they would see the missing person in the next week, and self-reported looking behavior in the follow-up study. The higher expectancy condition also led to a statistically higher belief that they would actually see the missing person. High expectancy also significantly related to a higher perceived intent to look in the future. This all points to the effect of expectations on self-efficacy and increased looking behavior among participants. Though this is a significant finding,

higher expectancy values did not translate to higher rates of making confirmed sightings. These measures point to strengths and weaknesses of the experiment, mainly that people paid good attention and that self-efficacy was altered through expectancy levels, though the believability of the video was low.

For the main outcome variables, our expected result was that a high self-efficacy would increase reported sightings, since participants would likely have a higher degree of actually being on the lookout in the future. Our other expectation was that multiple photos would experience a higher effectiveness on correctly reported sightings, allowing participants to pay more attention to the more important details like face or hair similarities between pictures, rather than specific clothing or background details (Lampinen, et al., 2010). Furthermore, our other expectation was that photos that matched the actual appearance of the missing person would have a higher rate of confirmed reported sightings, as opposed to photos with a higher degree of mismatch. Lastly, we expected that the multiple match condition would have a higher amount of confirmed reported sightings than the multiple both, due to degree of similarity. However this expected result might have low external validity, since degree of match may be low in actual missing persons cases, whereas a multiple both display could create a more generalized, and averaged memory between the two photos to be retrieved in a realistic setting.

None of these conditions ended up being significant. The closest value to statistical significance was the occurrence of males experiencing a higher proportion of reported and non-reported sightings, though this trend has not occurred in many other PPM studies (Lampinen, Sweeney, 2013) and is likely due to the low sample size of

males. In the first Logit Regression, shown in Table 5, dealing with the main outcome variables on confirmed reported sightings, differences between conditions were not significant, though somewhat different proportionally. The multiple both condition had a higher proportion than multiple mismatch, as expected. Lastly, the high expectancy condition experienced a higher proportion of correctly reported sightings as expected. In the second Logit Regression, shown in Table 6, dealing with the total number of confirmed reported and confirmed non-reported sightings shows that no differences between conditions were significant, though some were proportionally different. Multiple photos were higher proportionally than single photo displays, lining up with expectations. Males also had a higher proportion of overall confirmed sightings. Lastly, the multiple match condition had a higher proportion than the multiple mismatch condition, which was also expected.

In the study done the previous year by Curry and Lampinen (under review), the only significant outcome involved match conditions resulting in more confirmed reported sightings than mismatch conditions. The need for more participants run is evident, though the lack of significance may point to a floor effect due to such a low number of individuals being able to even identify the missing person and report it (8.73%), along with being split between five conditions. This may also point to other unknown variables at play, significant enough to cause little variation between conditions. An example could be that some participants are more observant than others. For instance, future study could include a computerized and timed identification task to see if some participants are better than others in terms of observancy. The problem of no significance is compounded by the fact that this experiment made conditions for locating a missing person nearly as easy as

possible, by placing the missing person right outside the experiment room to be seen immediately after the experiment ended. This would effectually decrease the external validity even if a statistically significant value were reached. Future study could certainly take place involving more participants.

This study had several limitations. One limitation was the fact that students participated in the experiment between 8 in the morning to 12:30 in the afternoon. A confounding variable is the overall alertness of the participants, due to students often being more awake and alert later in the day. This would cause them to be less attentive not only during the viewing of the news report, but also when walking past the confederate in the hallway. Another limitation is the fact that the sample was all pooled from an introductory Psychology course, which created a homogenized group of participants all generally with the same age. Another limitation involved the fact that self-report was used, which could have affected several different scales such as the emotional reactions to videos or not remembering details in the follow-up survey since people responded anywhere from one day to a month after the experiment. Furthermore, it was noted without a specific number that some participants would distract themselves. For instance, some decided to check their phones following the experiment paying little attention to their surroundings, or would make the walk out of the hallway less awkward by initiating a conversation with the experimenter, and focus attention on the experimenter, which was different from participant to participant. Additionally, the fact that the missing person was only a female may have altered results between genders. Also two missing person girls were used, along with four different experimenters, and there may have been individual differences between each confederate and experimenters

regarding recognizability or experimenter protocol. Lastly, external validity is low due to the incredibly short amount of time between watching the missing persons video and the time in which they actually had a chance to see the missing person.

To conclude, though this study did not end up with significant results, it did reveal more about PPM research. Future studies may reveal statistical significance among these seemingly straightforward variables, but this study will serve as a stepping-stone to run more participants in the future or attempt to change other variables about this process of locating the missing through the help of the general public. PPM research, and improving this process can lead to changing the world, even if that world is in the eyes of one more rescued individual.

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Figure 1. Sample Size of Initial and Follow-Up Survey

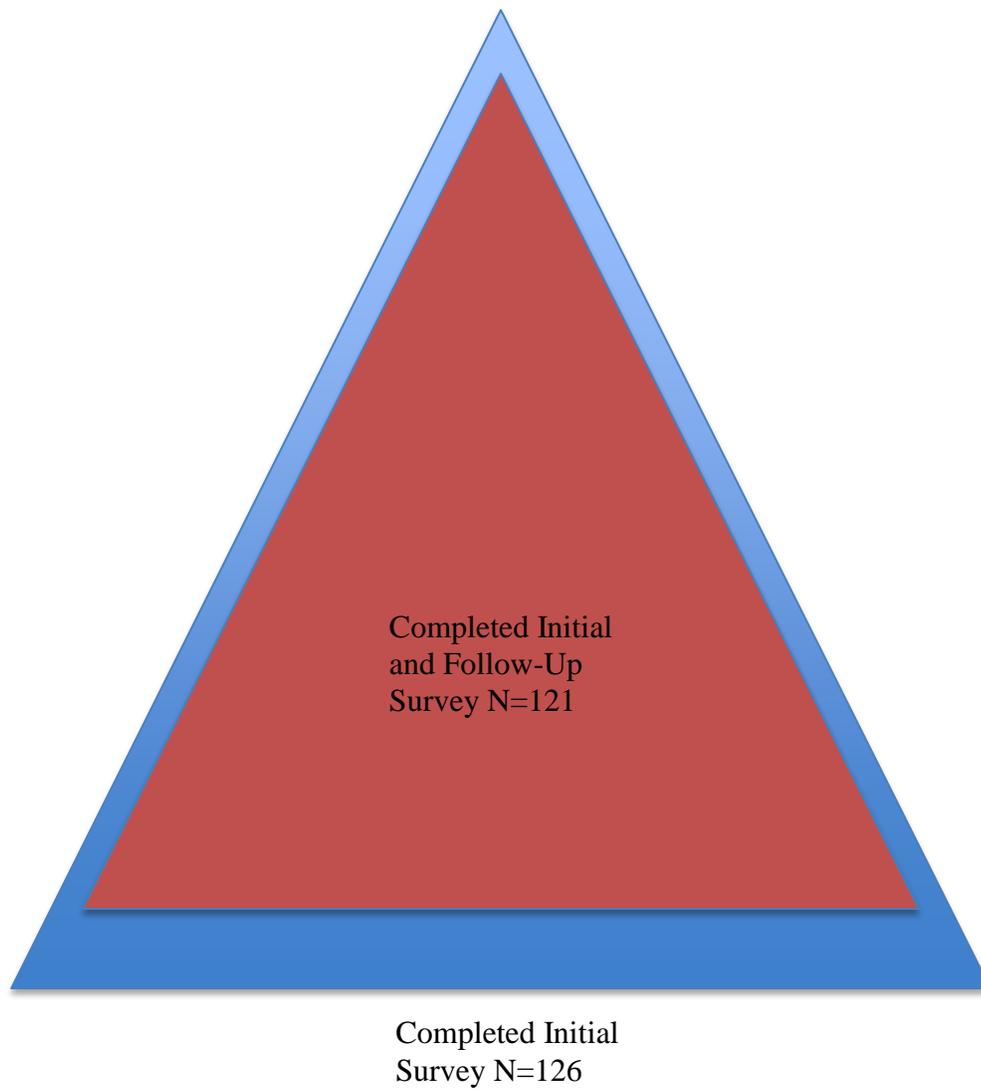


Figure 2. Photo Condition Appearances

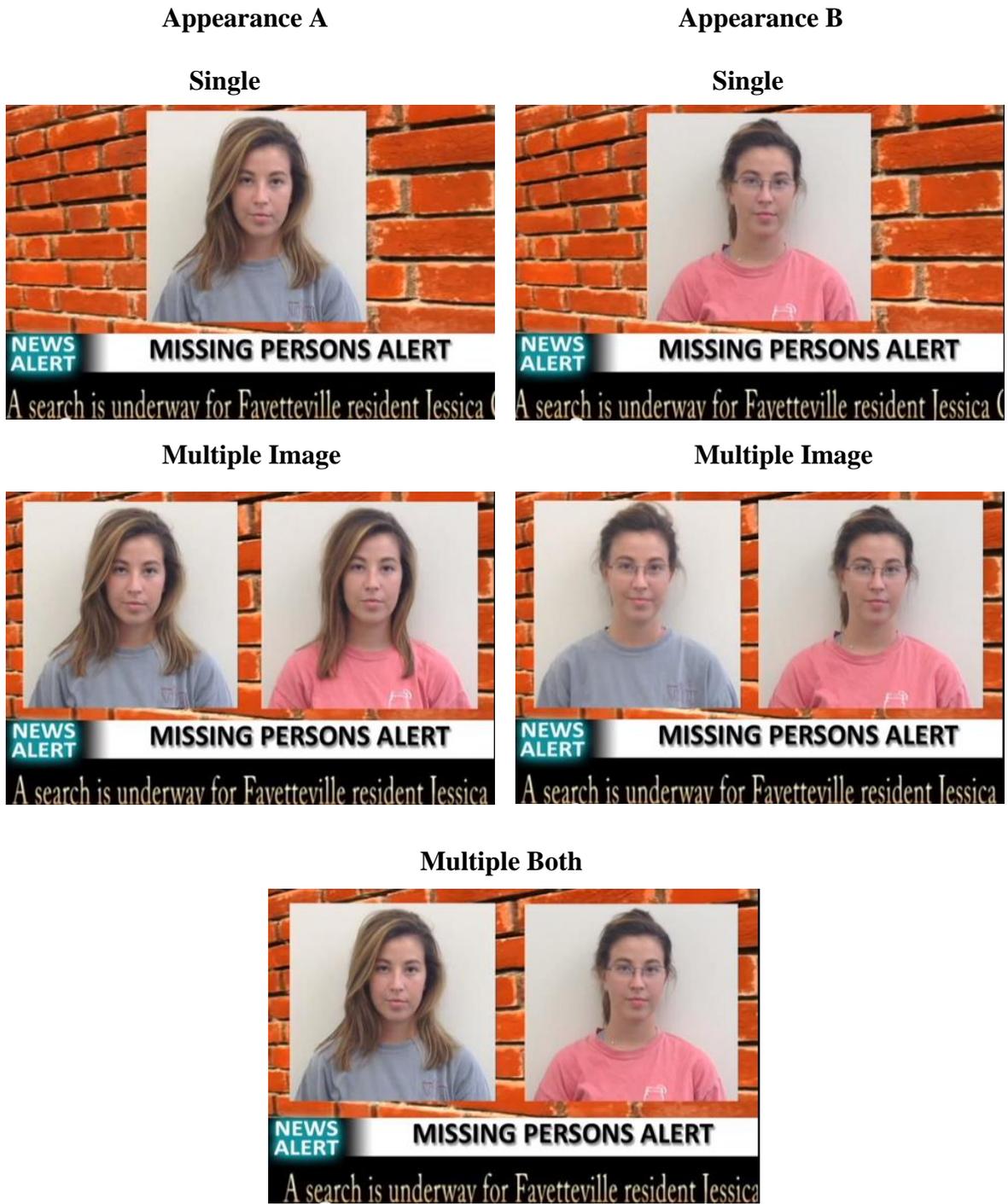


Figure 3. Proportion of Correctly Reported Between PPM Conditions

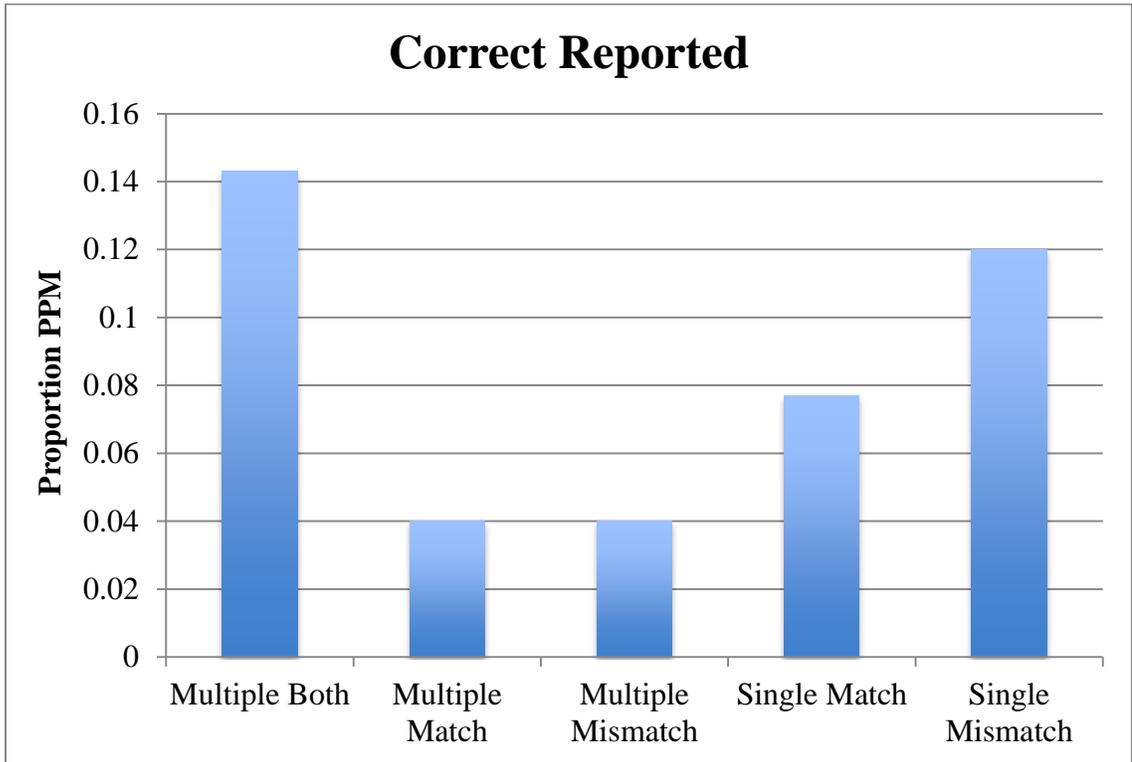


Table 1. Demographics of Initial Survey Completers

	Completed Initial Survey
N	126
Mean Age	19.02
SD Range	2.48
Range Age	18-44
% Female	70.97
% American Indian or Alaskan Native	0.81
% Asian	5.65
% African American	6.45
% Hispanic or Latino	12.9
% Native Hawaiian	0
% White	72.58
% Other	1.61

Table 3. Estimator Variables Determining Attention Paid to Videos through Emotional Response

Emotional Response	Concerned	Anxious	Happy	Frightened	Angry
Video 1	2.71	1.33	2.47	1.01	1.00
SD Video 1	1.49	0.70	0.96	0.09	0.00
Video 2	5.02	2.10	1.00	1.94	1.40
SD Video 2	0.93	0.84	0.00	0.90	0.71
Difference	2.30	0.77	-1.47	0.94	0.40
DF	388	388	388	388	388
p value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Cont'd	Surprised	Interested	Disgusted	Sad	Hopeful	Important
Video 1	1.59	2.56	1.04	1.02	2.25	3.39
SD Video 1	0.72	0.84	0.27	0.13	1.06	0.96
Video 2	1.94	2.84	1.48	2.40	2.28	5.83
SD Video 2	0.90	0.82	0.82	0.88	0.92	0.45
Difference	0.35	0.28	0.44	1.38	0.03	2.44
DF	388	388	388	388	388	388
p value	0.0004	0.0087	<0.0001	<0.0001	0.65	<0.0001

Note: Emotional response to video ratings between 1 (not at all) to 7 (extremely)

Table 4. Proportion of Reported and Non-Reported Sightings Between Video Conditions

Proportion	Correct Reported	Incorrect Reported	Non-Reported Confirmed	Non-Reported Disconfirmed
Multiple Both	0.143	0	0.107	0.071
Multiple Match	0.04	0	0.04	0
Multiple Mismatch	0.04	0	0.08	0.04
Single Match	0.077	0	0.038	0.077
Single Mismatch	0.12	0	0.16	0.08

Table 5. Proportion of Reported and Non-reported Sightings Between Expectancy Levels

Proportion	Correct Reported	Incorrect Reported	Confirmed Non-Reported	Disconfirmed Non-Reported
90 percent	0.119	0	0.075	0.045
15 percent	0.048	0	0.095	0.063

Table 5. Logit Regression 1 on Main Outcome Variable

Dependent Variable: Correct Reported Sightings

Logit Regression 1	Standard Error	Z-Value	p-value
Multiple vs. Single	0.8974	-1.214	0.2248
Multiple Match vs. Multiple Mismatch	0.87	-0.325	0.7449
Multiple Both vs. Multiple Mismatch	1.032	1.288	0.1979
High vs. Low Expectancy	0.7323	1.487	0.1371
Male vs. Female	0.6743	-1.801	0.0717
Perceived Danger	0.3492	0.644	0.5195

Table 6. Logit Regression 2 on Main Outcome Variable

Dependent Variable: Correct Reported and Correct Non-Reported Sightings

Logit Regression 2	Standard Error	Z-Value	p-value
Multiple vs. Single	0.6168	-1.384	0.1665
Multiple Match vs. Multiple Mismatch	0.6327	-1.373	0.1696
Multiple Both vs. Multiple Mismatch	0.7036	1.021	0.3073
High vs. Low Expectancy	0.5059	0.891	0.3727
Male vs. Female	0.5075	-1.781	0.0749
Perceived Danger	0.2601	0.49	0.6241