

The Influence of a Witness' Familiarity with the Perpetrator and Gender-Specific Stereotype  
Consistency on Witness Identification Accuracy

by

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### **Abstract**

The present study examined the influence of an eyewitness' familiarity with the perpetrator in conjunction with gender-specific stereotype consistency on eyewitness identification accuracy ( $N = 105$ ). Neither eyewitness familiarity with the perpetrator nor stereotype consistency was significantly influential on overall eyewitness identification accuracy. Following a simultaneous, target-absent lineup procedure composed of four foils, participants who were familiar with the target provided more correct rejections when compared to those not familiar with the target; however, this was not significant. Similarly, more correct rejections were made by participants faced with an inconsistent gender-specific stereotype when compared to those effaced with a consistent stereotype; however, this also was not significant. No differences in foil identification decisions were observed. Implications and directions for future research are discussed.

*Keywords:* eyewitness identification, stereotype consistency, familiarity, target-absent, simultaneous lineup

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## The Influence of a Witness' Familiarity with the Perpetrator and Gender-Specific Stereotype Consistency on Witness Identification Accuracy

In the summer of 1998, a six-year-old girl ran to her kitchen and found her 68-year-old grandmother being assaulted by a man. When she attempted to run back to her room the man followed her and proceeded to sexually assault her. When she awoke the next morning, she found her grandmother dead. The child ran to her neighbor's house who immediately called the police. While police were on their way, the child told her neighbor that the man who attacked her grandmother looked like her uncle Clarence Elkins (Innocence Project, n.d.). Clarence was subsequently named the primary suspect and questioned later that morning. Following DNA analysis on hair found at the scene, the testing revealed that Elkins could have been a possible contributor of the hairs. As the only direct eyewitness, Elkins' niece testified at trial that Elkins was the attacker despite only seeing the perpetrator for a short time and in poor lighting. Elkins was convicted of murder, attempted murder and rape. Despite his niece recanting her testimony about Elkins being the perpetrator, the courts upheld the conviction. However, throughout the duration of his sentence, Elkin's wife continuously sought to prove her husband's innocence. After working with a private investigator, Elkin's wife proposed that it was perhaps a convicted rapist living near the victim's home in 1988 that might have committed the crime. In 2005 that very same man was moved to the same cell block as Elkin. Elkin was able to retrieve a cigarette butt that the man disposed of in the prison yard and subsequently send it off for testing. Results revealed that the DNA from the cigarette matched those from the rape kit administered to both the victim and eyewitness. After six and a half years and multiple attempts at pleading his innocence, the courts finally acknowledged Elkins' innocence and released him with vacated charges (Innocence Project, n.d.).



The case above illustrates the seriousness of an eyewitness identification and the impact it can have on trial proceedings and sentencing. Accordingly, there are several additional factors that eyewitnesses will consciously or unconsciously be affected by when making an identification. One such factor being automatic gender stereotype activation. For example, Ward, Flowe, and Humphries (2012) reported distributions of crime types by perceived gender stereotypes and found a significantly higher percentage of men were believed to be responsible for crimes related to theft (i.e. robbery and burglary) whereas a significantly higher percentage of women were believed to be responsible for crimes such as prostitution. Additionally, it appears that stereotype activation becomes stronger as the retention interval grows larger. According to Ahola (2012) this adheres to the gender-stereotype-enhancement effect whereby longer retention interval periods enhance and strengthen the effects of gender stereotypes. Specifically, researchers found that with increasing delay between crime and identification, individuals tend to remember both females and males as more masculine when committing a violent act (e.g. robbery) when compared to a neutral act (e.g. walking around in a store). Participants also judged themselves as having a clearer memory of the perpetrator when the perpetrator was a female and likewise that their memory of the target was clearer following the violent act compared to the neutral act. This may suggest that an arousing or salient event triggers and/or strengthens stereotype activation.

With the added layer of schema drawn stereotypes (i.e., the extraction of specific impressions often attributed to individuals from more abstract collections of past experiences) and their effect on impression formation (see Meiser, 2003) we can begin to understand whether it is the overall saliency of a particular cue, pre-existing exposure, or the interactive effect of both gender stereotypes *and* familiarity, that contributes to performance rates on identification

tasks. Therefore, the purpose of the current research is to examine the influence of eyewitness familiarity with the perpetrator in conjunction with perceived stereotype consistency on accurate identification in target-absent lineups. Although familiarity and stereotypes have both been independently examined in their respective fields, the current research will be amongst the first to evaluate their interactive effects on eyewitness identification.

### **Stereotyping**

Schemas, as defined by Bartlett (1932), are referred to as the ongoing organization of past experiences or as Kleider, Pezdek, Goldinger, and Kirk (2008a) would describe them:

“Organized collections of information stored in long-term memory that are quickly accessible and flexible in application” (Kleider, 2008a, p. 2). Whether or not we consciously acknowledge their use, individuals rely on schemas in order to parse together newly presented information in a way that conforms to previous experiences (Axelrod, 1973). In a different light, we can refer to schemas as compensatory mechanisms used in cases where an inadequate amount of information is provided within a specific context. As this theory of schematic processing progressed, it became apparent that these troves of generic knowledge provided us with a high-level theory of memory consolidation (Yamada & Itsukushima, 2013).

According to Fiske (2010), stereotyping refers to the projection of an individual’s own expectations and beliefs onto another individual despite insufficient factual knowledge about the respective individual. In other words, stereotypes can be considered a type of schema that applies more specifically to individuals. Although stereotypes have often fueled racial, sexual, ethnic and even physical divides, social psychologists see stereotyping as an efficient categorization strategy. According to this approach social cues such as age, race or any of the aforementioned attributes are used to categorize individuals and ultimately reduce the complexity of information

processing that could potentially lead to cognitive overload (Araya, Ekehammer, & Akrami, 2003; Fiske & Neuberg, 1990; Gilbert & Hixon, 1991; Macrae, Milne, & Bodenhausen, 1994). Specifically, Gilbert and Hixon (1991) showed that stereotype activation was more likely to be applied when attentional resources were depleted as opposed to when cognitive capacity was unhindered. This suggests that it is not only how readily existing information can be categorized that accounts for the use of stereotypes, but also the amount of cognitive resources dedicated to a task. The more cognitively demanding a task, the more readily individuals apply stereotypes.

In a way, we can think of stereotypes as these “energy saving devices” (Macrae et al., 1994) with neural nets that form associations or links between various pieces of information (based on the spreading activation theory; Anderson, 1983). These links increase in strength as the same information is presented in reoccurring contexts. For example, when we first encounter lightning, there is a high probability that it was accompanied by thunder. Thus, a weak link is formed between lightning and thunder. The next time lightning is accompanied by thunder, the link grows stronger, and so on. Eventually, when we see lightning we also expect to hear thunder. Naturally, if we think of the brain as a processor, it is much easier to simply activate one node (i.e., lightning) and have a subsequent, *automatic* retrieval of thunder than having to activate those two separately. Similarly, stereotypes work as these “pre-packaged” modules of knowledge that only require one piece of information to activate the entire array of stored information while allowing our brain to tend to other events (Macrae et al., 1994). This way, identifying new information is not as cognitively burdensome, since processing new information simply means allocating the data to these previously formed packages (Axelrod, 1973). However, this also allows for the possibility of introducing information that is not part of the actual context (e.g., seeing lightning without hearing thunder).

Although it may be the case that a reduced cognitive load can allow for subsequently better encoding, it remains that stereotypes tend to often overcompensate and in fact prompt false memories. As discussed by Ahola (2012), humans can often be influenced by irrelevant information. If we adhere to the schema theory described above, then information extracted from a specific schema can be relevant to the specific stereotype but irrelevant to the specific scenario. From a philosophical standpoint, this is a type of inductive reasoning; individuals are presented with new information that they then attempt to apply to an appropriate schema but successively risk the intrusion of inaccurate details. According to Araya et al. (2003), individuals who perceive a person from a stereotyped group performing a particular behavior will attempt to instinctively classify these people according to their knowledge of existing social categories. However, when the stereotype behavior is inconsistent with the existing category, individuals will either attempt to reinterpret the behavior to fit a certain category (increasing the likelihood of false memories) or engage in more “effortful processing” whereby newly presented information is uncoupled from existing schemas and genuinely processed independently (Araya et al., 2003; Fiske & Neuberg, 1990; Gilbert, 1989).

However, the complexities surrounding stereotype activation and application can often lead to undesirable outcomes. For example, Duncan (1976) showed European American participants a videotaped dialogue between two men; one African American and one European American. The men in the recording grew increasingly frustrated with each other to the point where either one of the men pushed the other over. Participants were significantly more likely to interpret the act of shoving as more violent when performed by the African American as opposed to the European American. Furthermore, not only are individuals able to attribute intent according to specific stereotypes, as seen above, but individuals are also more likely to reference

stereotypes as indicators of performance. Darley and Gross (1983) found that participants were significantly more likely to predict a child's academic level to be above average when they were under the impression that that child came from a high socioeconomic background.

Albeit a process vital to streamlined cognition, stereotyping and schemas at large can have major implications when recall accuracy impacts eyewitness testimony. Kleider et al., (2008a) examined the effects of eyewitness memory, and more specifically misattribution errors, stemming from schema-driven sources. Participants were asked to watch a slide show of actors of opposite genders performing actions that were either gender-stereotype consistent or gender-stereotype inconsistent. Actions committed by the man resembled those of a typical handyman stereotype (e.g., tightening hinges or using a wrench) whereas those committed by the woman were in line with homemaker stereotypes (e.g., baking a cake or folding clothing). Stereotype inconsistent actions consisted of the female acting out several handyman actions and the male acting out several homemaker actions. Ultimately, researchers found that, following a delay task, participants were significantly more likely to better recall actions associated with the consistent stereotype when compared to the recall of stereotype inconsistent information. Additionally, participants also were asked to respond "remember" in cases where they had conscious recollection of seeing the respective actor performing a specific action. Consistent with previous research (e.g., Stangor, 1988), participants were significantly more prone to inaccurately responding "remember" when they were making stereotype-consistent errors. In other words, when people made errors in stereotype-consistent conditions, they were more likely to experience feelings of true memory, corroborating with the theory that stereotypes can prompt false memories (Kleider et al., 2008a; Kleider, Goldinger & Knuycky, 2008b). Evidently,

therefore, a repertoire of stereotype consistent information has the potential to infiltrate our retrieval process at the subconscious level.

With regards to stereotype consistency and eyewitness recognition accuracy, Kleider et al. (2008b) used a similar method to Kleider et al. (2008a) whereby participants were asked to view a series of images consisting of either stereotype consistent or stereotype inconsistent behaviors (e.g., handyman tightening a pipe under the sink vs. handyman pouring cake batter into a pan). After a delay, participants were significantly more likely to misattribute false alarms (i.e., claiming that a behavior was present when it was not) to stereotype-consistent actors compared to stereotype-inconsistent actors. This further suggests that eyewitness recognition accuracy declined over time and that when people cannot accurately remember exactly what they saw, they rely on stereotypes to fill in the missing details, ultimately compromising accuracy as false alarm rates increase.

Kushins (2014) also examined identification accuracy in conjunction with stereotypical attributes but also added a vocal modality. In other words, the research also focused on how well individuals could identify racial groups from just hearing their voice. The study revealed three main findings. First, participants could discriminate between White and Black voices with considerably high accuracy. This can be explained by stereotypically distinct features that differ between races. Second, participants rated Black speakers as being eight times less likely than White speakers to be considered for a managerial job position. Additionally, Black speakers received the lowest evaluation scores in terms of hypothetical measures such as levels of work ethic, style of dress, etc. However, the third and perhaps most interesting finding was that participants were overwhelmingly identifying Asian American speakers as being White (in terms of appearance) but when researchers presented participants with potential headshots of the

speaker, more than half were able to accurately identify the Asian speaker corresponding to the Asian American voice. This change in accuracy can be potentially explained if we consider when particular stereotypes are activated. For example, Asian American and White voices may share similarities in terms of intonation, pitch and speech patterns. Therefore, when hearing an Asian American speaker, individuals may activate a stereotype consistent with a White speaker, and consequently inaccurately identify the speaker as White. However, when presented with conflicting evidence (i.e., a headshot of a clearly non-White individual that must be matched to a White sounding voice) a stereotype inconsistent model is activated and participants may begin to notice or recall subtleties in speech they had not noticed before. In turn these recognizable subtleties may increase overall identification accuracy because of stereotype inconsistent information.

In order to examine how stereotypes can influence more general trait inferences, Wigboldus, Dijksterhuis, and Knippenberg (2003) reported on a series of five experiments that examined an individual's ability to make inferences beyond the rapidly salient features of gender, age, and skin color (as suggested by Fiske, 1998). Researchers found that individuals make stronger spontaneous trait inferences when behavior information is stereotype consistent. Specifically, researchers used various trait-implying sentences each describing an actor's behavior. For example, the phrase "The nurse (soccer fan) puts the elderly woman into bed" contains the behavior (caring), the consistent actor (nurse) and the inconsistent actor (soccer fan). Significant to the current research, specific trait inferences became obstructed by inhibitory processes whenever the portrayed behavior is inconsistent with an already activated stereotype. In other words, participants were less likely to make spontaneous trait inferences when the information presented was stereotype-inconsistent because making a trait inference would

require that you have an activated stereotype from which to draw the inference. Researchers attribute this to the fact that people are less likely to want to change their existing beliefs. Therefore, when presented with stereotype consistent information, people are more likely to draw on that pre-existing knowledge and make spontaneous inferences (regardless of whether or not they are true). Accordingly, Wigboldus and colleagues (2003) attribute this obstruction to an individual's preference to maintaining their existing beliefs as opposed to changing them. The current research also predicts that, when presented with stereotype consistent information, individuals are more likely to make inferences based on the appropriate stereotype. When presented with stereotype-inconsistent information, however, they would make weaker or less trait inferences since they have no stereotype to draw on.

Similar to how stereotypes can lead to spontaneous trait inferences, a theory known as the criminal face bias introduces emotional state characteristics that have been linked to stereotypes (Flowe, Klatt, & Colloff, 2014). The criminal face bias has been referred to as the tendency for witnesses to select the most criminal-looking person from a lineup because stereotypic criminal appearances are remembered better (Flowe & Humphries, 2011). Several characteristics, including facial features such as identifiable scars, tattoos and facial expression can all influence how stereotypically criminal one is perceived. For example, Flowe et al., (2014) asked participants to view a lineup where the members would differ in terms of facial expression (angry vs. criminal-looking vs. happy). Researchers found that participants were significantly more likely to identify an angry-faced or criminal-looking face more often when the fillers were emotionally neutral, thereby supporting the criminal face bias. However, this bias was significantly reduced when all fillers matched the emotional state of the alleged suspect. Researchers attribute this to the fact that participants no longer had a point of reference or



something to compare a suspect to when all members looked the same. Considering the fact that facial appearances have been found to have no link to actual behavior and can actually have a detrimental effect on accuracy (e.g., Olivola & Todorov, 2010), it becomes clear that the stereotyping can have a discernable effect on identification tasks (e.g. Eberhardt, Davies, Purdie-Vaughns, & Johnson, 2006).

Ultimately, stereotype activation provides a mechanism by which cognitive overload can be dampened although directly heightening the risk of inaccurate or irrelevant recall. Information about one particular component of a stereotype can prompt inferences about other associated components, often resulting in the perceiver going beyond the information that is actually being presented (Bruner, 1957; Deaux & Lewis, 1984). It also appears that individuals spend less time examining and encoding relevant information when presented with stereotype consistent information (Carnaghi & Yzerbyt, 2006), assimilate ambiguous behavior to stereotypes when actions were objectively consistent with the stereotypes (Hilton & Hippel, 1990), and form stereotypes about a criminal's appearance based on the crime they *think* the perpetrator has committed (Osborne & Davies, 2014). Specifically, Osborne and Davies (2012) found that participants who saw a target commit a "stereotypically Black crime" were more likely to remember the target as having stereotypically Afrocentric features when compared to a target committing a stereotypically White crime.

When witnessing a crime, individuals are faced with a multitude of sensory stimuli riddled with distractors. Although these distractors may influence recall accuracy, researchers found that individuals were more likely to make accurate discriminations between targets and distractors in schema-inconsistent conditions than in schema-consistent conditions (Yamada & Itsukushima, 2013). This is perhaps due to the fact that a schema-inconsistent object or event

may stand out more as opposed to one that conforms to an existing stereotype. The current research hypothesized that adults will be more likely to accurately recall details of a crime when targets do not fit a certain stereotype (i.e., stereotype-inconsistent) given that inconsistent details may be more salient.

Regardless of stereotype consistency, there may be one characteristic that could potentially override any information provided by the stereotype. For example, an individual with a friend of African American descent would presumably not rely on stereotypical African American features when asked to describe their friend. Instead, the degree of familiarity shared between the two individuals could allow for more unique, individualized and accurate descriptions drawn from traits that genuinely pertain to the friend and not just general traits derived from a stereotype. In other words, familiarity is typically associated with more than just physical trait associations. When describing familiar individuals, one could argue that we tend to rely on other characteristics such as personality traits, mannerisms, or even attitude when describing the person. However, encounters with strangers may draw on stereotypes more because there are no other characteristics to reference. Therefore, the current research predicts that familiarity will elicit a halo-effect whereby eyewitnesses will show improved identification accuracy when they are familiar with the target regardless of gender stereotype consistency.

### **Familiarity**

According to the U.S. Department of Justice, approximately 62% of violent crimes in 2010 were committed by offenders that were known by the victim (U.S. Department of Justice, 2012). In addition to their heightened prevalence, the familiarity aspect of a repeated encounter appears to remain after other attributes of an experience have faded and consequently provide the basis for an erroneous attribution (Jacoby, Kelly, Brown, & Jasechko, 1989). Considering the

delays between crime and identification as well as crime and testimony, the fact that traces of pre-existing familiarity remain strong provides compelling evidence for arguing their importance in both eyewitness confidence and accuracy (e.g., Asai, 2001; Colby & Weaver, 2006) as well as in juror decision-making (e.g., Pozzulo, Pettalia, Bruer, & Javaid, 2014).

Accordingly, it can be argued that the majority of eyewitness research relies, to some extent, on our ability to remember great number of individual faces. In fact, faces can be considered some of the most memorable features of a body (Henke, Landis, & Markowitsch, 1994). This is perhaps because the degree of sensitivity with which people can detect small differences between facial characteristics is higher for faces than for any other object (O'Toole, 2005). According to Werner, Kühnel and Markowitsch (2013) numerous variable traits alter the way in which we analyze faces. From individual facial components such as eye features (Itier, Latinus, & Taylor, 2006) to an individual's gender, race, age, mood and even hairstyle can have a significant impact on how we encode faces. More specifically, research has demonstrated that the perception and recognition of familiar faces critically relies on the internal features of the face such as the eyes, nose and mouth when compared to external features such as hair, chin, and face outlines (Andrews, Davies-Thompson, Kingstone, & Young, 2010). Constant exposure to these features can lead one to hypothesize that accurate encoding positively correlates with increased exposure to a face, leading to a heightened degree of familiarity. Additionally, familiarity can also be described in terms of non-physical traits. According to Brambilla, Riva, and Rule (2013) since people spend more time with familiar targets, this allows them to better identify the target's thoughts, feelings, and behavioral inclinations. Correspondingly, Nater and Zell (2015) believe that individuals have a greater motivation to perceive familiar others more accurately

because failure to do so can result in greater consequences than those from irrelevant interactions with strangers.

Although current research remains limited, studies have shown that familiarity is not only an attribute that is forgotten more slowly than other attributes (e.g., Jacoby, Kelly, Brown, & Jasechko, 1989) but that familiarity can have a noticeable effect on recognition accuracy. For example, Cain, Baker-Ward, and Eaton (2005) demonstrated that older preschoolers were able to recognize 86% of previously seen targets after a three-month delay whereas younger preschoolers did not show this effect. Specifically, children were asked to identify their student caregivers from a photographic lineup one week after the volunteers had left the childcare center (e.g., “See all of these people? One of these people used to come and play with you here. Point to that person”). Next the children were asked to complete a preference ranking lineup (e.g., “Some of these people used to come and play with you here at school. I want you to find out which of those people you liked the very best. Point to the person you liked best”). Following a three-month delay, the same children were asked to identify the faces of their previous caregivers. As mentioned, older preschoolers were more likely to correctly identify the familiar target after a delay when compared to older toddlers and younger preschoolers. Interestingly, older preschoolers had difficulty in the initial recognition assessment which can potentially be explained by (1) inadequate interaction with the volunteer or (2) children requiring more time to encode a specific face which is why they showed an increase in performance following a delay.

In addition to age related disparities, cultural differences can have a significant effect on the processing of unfamiliar faces. For example, researchers showed that Egyptians relied on robust internal-features as opposed to external features for processing unfamiliar faces (Megreya & Bindemann, 2009). This is believed to be primarily a result of the headscarf effect whereby

individuals accustomed to a culture where female's external features are covered by a headscarf become increasingly reliant on internal features when identifying unfamiliar faces. To further demonstrate the influence that culture can have on cognition, Megreya, Amina and Havard (2012) asked both British and Egyptian participants to view a staged crime where the perpetrator was either an own-race woman with or without a headscarf. Participants were then presented with a lineup composed of 10 faces with or without headscarves. Confirming previous results, Egyptian participants showed an identification advantage when the perpetrator wore a headscarf whereas British participants showed an advantage when the culprit did not wear a headscarf.

As described, repetition can increase the susceptibility to misinformation. Therefore, when individuals claim that they would be accurate in describing a familiar person, they could be (1) genuinely more accurate or (2) they are overconfident in their prediction. This overconfidence can be explained by the findings that repeated exposure leads to elevated levels of confidence.

Irrespective of confidence levels, Pozzulo, Dempsey, Bruer and Sheahan (2012) demonstrated that familiar faces can increase correct rejection rates in target absent lineups for both children and adults. Specifically, researchers presented children and adults with a series of targets that were either familiar (i.e., popular cartoon characters) or unfamiliar (i.e., unknown human faces). Participants watched a short video clip with either type of target and then be presented with a simultaneous target absent lineup. Results indicated that both children and adults were significantly more accurate with a higher correct identification rate for cartoon faces versus human faces. Similarly, researchers found that both children and adults were significantly more accurate with a higher correct rejection rate for cartoon faces compared to human faces. These findings suggest that familiarity with the target may transcend the effects of age and

further promote the hypothesis that familiarity can increase identification accuracy. Additionally, Clutterbuck and Johnston (2005) showed that aside from accuracy, individuals also were significantly more likely to match familiar faces in a matching task than novel faces. A potential explanation for both the increase in accuracy and decrease in time allotted to recognizing a familiar face is proposed by Jung, Ruthruff, and Gaspelin (2013) who reveal that familiar face identification is an automatic process. Individuals in this study accurately identified familiar faces even when engaged with another task suggesting that perhaps familiarity does not require significant cognitive resources to be processed. Furthermore, individuals were unable to identify unfamiliar faces as automatically as the familiar faces.

In another experiment, Ginet, Py, and Colomb (2014) used four variations of the cognitive interview (i.e., an interview method used to enhance eyewitnesses recall accuracy by employing four key retrieval tasks: report everything, forming mental representation of the appropriate environment, changing the temporal order in which the events are recalled and changing perspectives) to demonstrate that, following a delay, participants that were familiar with a procedure were more likely to remember more details about the procedure when compared to those unfamiliar with the procedure. Specifically, participants were divided into two groups, one group that had previously undergone a surgical procedure (i.e. familiar group) and the other half who had never undergone an operation (i.e. unfamiliar group). Participants were then asked to watch a staged video depicting the hospitalization and operation of a woman. Participants who were familiar with the surgical context recalled significantly more correct information as well as significantly more consistent and irrelevant details than those in the unfamiliar condition. Although cognitive interview methods have been shown to enhance

witness memory (Geiselman et al., 1984), these findings still provide evidence suggesting that familiarity within a specific context can augment accurate recall.

Familiarity, like stereotypes, can also be affected at a subconscious level. Support for this claim has been provided by Zajonc (1980) who demonstrated that individuals expressed a greater sense of liking for unremembered stimuli that they have actually seen before. Consequently, simply forgetting about a specific target does not necessarily mean that all traces of it are erased from memory. This idea of subconscious preference for familiar objects has been further demonstrated by Kunst-Wilson and Zajonc (1980) who showed that individuals displayed a preference for objectively “old” (i.e., shown but forgotten since last exposure) over new stimuli even though they failed to discriminate between the two in a recognition test. In other words, participants were consistently unaware of the fact that they were choosing objects that they were in fact familiar with. Therefore, it could also be the case that eyewitnesses subconsciously pick a lineup member simply because of previous exposure and not because they genuinely remember that member at the crime scene.

### **Stereotypes and Familiarity**

With regards to the interactions between stereotyping and familiarity, Wen and Bin (2008) reported that, consistent with previous research, prior exposure to information about a target’s personal traits could increase the perceiver’s subjective familiarity. More significantly, however, repeated exposure to information about a target reduced individuation (i.e., relying on specific details of a single context) and increased stereotyping regardless of whether the stereotyping was positive or negative.

For example, Cordon, Silberkleit, and Goodman (2016) found that children were significantly more likely to provide correct responses to free-recall stereotype-related questions

when the children were unfamiliar with the target person compared to when children were familiar with the target. Similar to the current research, participants were either introduced to the target prior to the identification task or not (i.e., prior exposure vs. no prior exposure). Additionally, each target either matched a specific negative stereotype (i.e., depiction of a messy and clumsy individual) or did not. Approximately two weeks after the children in the familiar condition interacted with the target, they were subjected to a memory interview where they were asked a series of free recall questions as well as a set of closed-ended questions. The research presented here predicts that participants faced with a familiar perpetrator will make more correct identifications when compared to those in non-familiar conditions. Similar to our hypothesis, researchers predicted that participants in the familiar/no-stereotype condition would provide a higher proportion of correct identification responses compared to participants in the unfamiliar/stereotype condition who would provide the lowest proportion of correct identification responses. In regards to closed-ended questions, familiarity appeared to improve the proportion of accurate correct identification responses, presumably because the children had a longer exposure to the target. Interestingly, stereotypes lead children to answer close-ended questions with greater accuracy in general, but this effect was abolished (i.e. there was an increase in errors) when the children were asked more specific closed-ended questions about stereotype related information (i.e. “Was Debbie messy or clean?”) Overall, research demonstrated that familiarity does indeed result in higher proportions of correct identifications but also that stereotypes can both enhance and hinder memory depending on the type of questions asked.

While the relationship between stereotyping and familiarity can be approached from numerous perspectives, research as early as half a century ago specifically support the influence



of objective familiarity (i.e., increased exposure) on stereotypes. Prothro, Melikian, and Levon (1955) examined a study conducted in the Near East (i.e., Western Asia) where they had asked university students to describe the stereotypical American. The following year saw a large influx of American students thus prompting a subsequent increase in familiarity and an eventual change in the perceived American stereotype. Likewise, it would be consistent to conceive a situation where a perceiver's repeated exposure to a stereotype-inconsistent target eventually begins to either (1) alter an existing stereotype or (2) begin to form an entirely new stereotype.

Although the interactions between familiarity and stereotypes appear to rely largely on independent beliefs and their susceptibility to change, these beliefs can accrue and begin to form social group divides. For example, lower familiarity with other-race faces contributes to the formation of both negative stereotypes and suppression of positive stereotypes for other-face races while promoting in-group favoritism (Zebrowitz, Bronstad & Lee, 2007). When considering the degree of objectivity necessary for accurate identification, it is essential that research maintains an active effort to at the very least understand how these implicit biases influence identification.

### **Lineup Procedure**

Of all the witness evidence presented at trial, one of the most powerful and closely examined claims made by an eyewitness is the positive identification of a suspect (Dobolyi & Dodson, 2013). According to the National Institute of Justice, nearly 75% of the first DNA exonerations were initially cases convicted under eyewitness *misidentifications*. Considering the nature and severity of this type of evidence, there has been a considerable amount of research conducted on improving identification accuracy (e.g., Lindsay & Wells, 1985; Wells, 1978).

The current study uses a simultaneous lineup procedure where the target is removed and replaced with an innocent suspect (i.e., target absent). In a simultaneous lineup procedure, witnesses are presented with *all* of the lineup members at the same time and are asked to determine whether the perpetrator is present or is not present. Conversely, in a sequential lineup procedure, witnesses are presented with each alternative lineup member, one at a time, with no option of reviewing past photographs as each photograph requires a yes or no decision from the witness (Clark & Davie, 2005; Lindsay & Wells, 1985). According to Wells (1993), in a target present lineup the only possible outcomes are a correct identification (i.e., correctly identifying the perpetrator), a foil identification (i.e., incorrectly identifying one of the fillers) and an incorrect rejection (i.e., indicating that the perpetrator is absent when he or she is present). On the other hand, in a target-absent lineup, the outcomes are a false identification (i.e., incorrectly identifying the innocent suspect), a foil identification, and a correct rejection (i.e., correctly rejecting a lineup when the perpetrator is not there). In the past, simultaneous lineups have been shown to be superior to sequential lineups in terms of correct identification rates and accuracy advantage (Amendola & Wixted, 2015; Dobolyi & Dodson, 2013; Malpass, 2006; Steblay, Dysart, & Wells, 2011) although a debate within the literature remains (e.g., Steblay, Dysart, Fulero, & Lindsay, 2001). Simultaneous lineups also have been shown to prompt more accurate correct identification rates when compared to elimination lineups (i.e., a combination of simultaneous and sequential procedures, Pozzulo, Dempsey & Pettalia, 2013). These advantages have led the simultaneous lineup to be one of the most widely used procedures for identification in the United States (Wogalter, Malpass, & McQuiston, 2004) and Canada (Beaudry & Lindsay, 2006).

Simultaneous lineups also tend to elicit relative judgements from witnesses when compared to sequential lineups that prompt witnesses to make absolute judgements. In other words, when witnesses are presented with all lineup members at once, they are more likely to compare lineup members to each other rather than to their memory of the actual perpetrator. Although this may be useful in target-present conditions where the witness is presented with the perpetrator and the possibility exists that they select the correct person, this procedure can be problematic in target absent conditions. More specifically, as discussed by Wells and Seelau (1995), in target absent conditions, the witness most often chooses the lineup member who most closely resembles the perpetrator, not the one that *is* the perpetrator. This may be explained by the eyewitness' inherent belief that they *must* choose someone or genuine distortions in memory that prompt them to believe they are choosing the right person based on the *most similar* option. Conversely, in target-present conditions, it is possible that member who is believed to most resemble the perpetrator *is* the actual perpetrator.

Although limited, some research has examined the interactive effects of stereotypes on target absent lineups. For example, Knuycky, Kleider, and Cavrak (2013) found that eyewitnesses to a stereotypical perpetrator (i.e., stereotypes deemed to be 'prototypically' Black; Black facial features) were more likely to misidentify more stereotypical faces in a target absent lineup compared to eyewitnesses to a non-stereotypical perpetrator who misidentified less stereotypical faces in a target absent lineup. This finding can perhaps be explained by the previously mentioned conformity effect whereby individuals have no salient cue to rely on and therefore conform to preexisting stereotypes during identification. This hypothesis can further be solidified by the findings that eyewitnesses to a non-stereotypical perpetrator (i.e. stereotype inconsistent) misidentified less stereotypically faced perpetrators in target absent lineups

(Knuycky et al., 2013). Similarly, this effect can in part be due to the fact that in stereotype inconsistent conditions, individuals have a more salient cue to rely on when making an identification and therefore are not as prone to make identifications that rely on stereotypes. For example, Cordon, Silberkleit and Goodman (2016) demonstrated that in children, familiarity increased the proportion of correct identification responses. Additionally, although consistency of the stereotype was altered, participants also showed increased correct identification rates in the stereotype condition when compared to those in the no stereotype condition. Accordingly, it may be that the saliency of adhering to a stereotype in the first place (in this case a messy and clumsy individual) made the target more memorable than no stereotype at all.

### **The Current Study and Predictions**

The purpose of the current research is to examine the interactive effects of stereotype consistency and degree of familiarity on overall eyewitness identification accuracy when the perpetrator is absent from a simultaneous lineup.

- 1) It is predicted that eyewitnesses will produce higher rates of correct rejection when familiar with the perpetrator compared to less familiar with the perpetrator, regardless of stereotype consistency. This claim relies on the hypothesis that once familiarity appears, stereotypes are no longer necessary and thus mentally discarded.
- 2) Also predicted is a conformity effect whereby under unfamiliar and consistent stereotype conditions, eyewitnesses will make fewer correct rejections because they will rely on potentially biased stereotype knowledge and subsequently increase the risk of introducing irrelevant, absent or inaccurate details.
- 3) It is predicted that eyewitnesses will make more correct rejections when presented with an unfamiliar perpetrator under an inconsistent stereotype. Similar to the findings of

Knuycky et al. (2013), we believe that individuals faced with an inconsistent stereotype are more likely to remember the details of the criminal specifically because they do not fit the prescribed stereotype. These details therefore remain salient due to their irregular or nonconforming nature.

## **Method (Pilot)**

### **Participants**

Participants ( $N = 36$ ; 13 females and 23 males) were undergraduate students recruited from a university in Eastern Ontario, Canada. Participants' ages ranged from 18- to 31-years-old ( $M = 20.1$ ,  $SD = 3.25$ ). The majority of participants (36%) identified themselves as White/Caucasian, with a smaller number of Black/African-Americans (28%), Asians (25%), Aboriginal-Canadians (6.0%) and those who identified themselves as either mixed or "other" (6%). Participants received course credit for their participation in the study.

### **Materials**

**Stereotype Ratings Questionnaire.** Participants were asked to fill out a questionnaire consisting of a series of professions (e.g., pilot, classroom teacher, nurse, construction worker, librarian, etc.) and a consistency scale corresponding to each profession. Specifically, participants were asked to rate whether they perceive the profession as stereotypically male (rating of 1) or stereotypically female (rating of 7).

### **Procedure**

Participants entering the lab were distributed an information consent form (see Appendix A1). Each participant was then shown a stereotype profile video depicting either a female construction worker or female nurse. Participants were then asked to complete a stereotype perception form (see Appendix C) indicating how consistent the actor in the video was with their

(1) perceived appearance of the respective stereotype and (2) how consistent the actors job description was with the respective stereotype (1 = inconsistent, 7 = inconsistent). Participants were then given the stereotype rating questionnaire (see Appendix D) form and asked to rate several gender-specific stereotypes in terms of consistency. Each participant was then debriefed (see Appendix E) and thanked for their participation.

## **Results**

As predicted, construction workers were perceived to be stereotypically male (2.26) and nurses as stereotypically female (5.63) therefore these were used as stereotype profiles for the main study. Additionally, participants rated the appearance of the female actor as consistent with their perceived appearance of a stereotypical nurse (2.47) and rated the actors job description as consistent with that of a nurse (1.89). Conversely, participants also rated the appearance of the female actor as less consistent with a construction worker stereotype (5.18) and rated the actors job description as consistent with that of a construction worker (2.65). Given these data, the female construction worker and female nurse were used in the main study.

## **Method (Main Study)**

### **Participants**

Participants ( $N = 105$ ; 74 females and 31 males) were undergraduate students recruited from a university in Eastern Ontario, Canada. Participants' age ranged from 18- to 41-years-old ( $M = 20.02$ ,  $SD = 3.60$ ). The majority of participants (59%) identified themselves as White/Caucasian, with a smaller number of Asians (25.8%), Black/African-Americans (6.7%), Latino/Latinas (1.9%), Aboriginal-Canadians (1.0%) and those who identified themselves as either mixed or "other" (5.7%). Participants received course credit for their participation in the study.

## Design

A 2 (familiarity of eyewitness with perpetrator: previous exposure (familiar) vs. no prior exposure (unfamiliar)) x 2 (stereotype consistency: gender consistent (female nurse) vs. gender inconsistent (female construction worker) between-subjects design was used.

## Materials

**Stereotype Profile Videos.** All participants were shown one of two stereotype profile videos, lasting approximately 50 seconds in length. In the stereotype consistent condition, participants were shown a digital still photograph of a female confederate for the duration of the video with an audio voiceover that described her daily duties as a nurse. In the stereotype inconsistent condition, participants were shown the same female confederate but this time the audio accompanying the still described the confederate's daily duties as a construction worker.

**Stereotype perceptions.** Participants were asked to rate the extent to which the description and appearance of the confederate in the profile video adhered to their perception of what a female nurse / construction worker does / looks like (Appendix C). Appearance scores ranged from (1) *inconsistent* (i.e. *does not* look like a stereotypical nurse / construction worker) to (7) *consistent* (i.e. *looks* like a stereotypical nurse / construction worker). Likewise, description scores also ranged from (1) inconsistent (i.e. their description of daily duties *match* those of a stereotypical nurse / construction worker does) to (7) consistent (their description of daily duties *do not match* those of a stereotypical nurse / construction worker).

**Crime Video.** Participants were shown one of two silent videos, lasting approximately one minute in length, depicting a staged, non-violent theft. The video begins with a confederate sitting on a couch reading a textbook. As the footage continues, the confederate periodically looks over at the camera, exposing their face fully. On the second glance, the lens zooms in on

the confederate face for approximately 10 seconds prior to panning out. The target is then shown suspiciously looking at an unattended laptop left on a table nearby. Finally, the video concludes with the target standing up, taking the laptop and leaving the room. The length of the videos was altered after noticing ceiling effects. Specifically, both videos were shortened such that the total exposure of the targets full frontal face was decreased to 5 seconds as opposed to the original 10 seconds<sup>1</sup>. The criminal was either the same confederate as the one shown in the stereotype profile video (i.e. familiar) or a different female confederate (i.e. unfamiliar). The criminal periodically stares at the camera lens with the longest full-face exposure lasting approximately 8 seconds in the long video and 5 seconds in the shorter video.

**Description Form.** Two description forms were administered. The first form was distributed following the stereotype profile video. Participants were asked to fill out the open recall description form by writing down everything they could remember about the person in the video (Appendix F). This first form also marked the beginning of the first delay. The second open recall form was distributed following the crime video. This form consisted of two questions; the first required that participants write down everything they could remember about the person in the crime video and the second question asked that they write down everything they can remember about the actual event itself. The description form was not considered part of any delay (see Appendix H).

**Identification.** Participants were administered a simultaneous, target-absent lineup procedure consisting of four 4 x 6 inch photographs of confederates resembling the target (i.e. foils) as well as a “Not Here” photograph. Upon administering the standardized simultaneous lineup oral instructions, participants were asked to complete a lineup form indicating whether

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<sup>1</sup> Chi-square analysis indicated that overall identification accuracy was not influenced by video length,  $\chi^2(1, N = 105) = .388, p > .05$ .



they believed the criminal was present or not present. Identification response forms consisted of 5 boxed options numbered one to four in correspondence with lineup members with the fifth box being the “not here” option (see Appendix I). Participants were to place a checkmark or “X” in the box associated with their selection. Upon selection, participants were asked to rate their confidence in the accuracy of their decision on a scale of 0 (*not at all confident*) to 100 (*very confident*).

### **Procedure**

Upon arriving at the laboratory participants were then randomly assigned to one of the four conditions followed by the distribution of the first informed consent form and demographics form (see Appendix A2 and Appendix B, respectively). Each participant would then watch the stereotype profile video corresponding to their condition. Following the first video, each participant was asked to fill an open recall form, requiring that they write down everything they can remember about the confederate in the video they had just watched (see Appendix F). Participants would also be asked to complete a form indicating their perception of the stereotype (see Appendix C). This required that the participants rate whether or not they believed the confederate audio story and appearance to be consistent with their respective stereotype. Next, each participant would complete a 5-10-minute delay task depending on how long it took for the open recall and perception scores to be completed (12-minute delay task in total). More specifically, once participants began the first open recall activity (following the stereotype profile video) this would also mark the beginning of the first delay activity. If participants finished the description form in less than 12 minutes, they would be asked to play the computer game “Bejeweled” until the 12-minute mark was reached. This ensured that all participants received the necessary delay regardless of how long it took to complete the activity. Participants

were made aware that their score would not count towards completion and that the task was simply a filler task.

Following the delay activity, participants would be shown the non-violent crime video. Participants were then given a secondary informed consent form which outlined the true purpose of the study (see Appendix G). The first informed consent form was deceptive in that it didn't not disclose to participants that they would be acting as eyewitnesses. This was done in order to preserve the spontaneity of being an eyewitness as would occur in real life situations. If consent was given, each participant was then asked to provide an open recall account description of what the criminal looked like (criminal appearance) and any details they can remember about the crime (event description; see Appendix H). A second 10-minute delay task was then administered prior to the lineup procedure. This delay consisted of a crossword puzzle of easy difficulty; once again, participants were made aware that scores would not be taken into consideration. Next, each participant was shown a simultaneous, target absent lineup comprised of four confederate headshots as well as one photograph labeled "Not Here". Participants were read out oral instructions on how to complete the lineup and then asked to indicate their choice on a lineup form (see Appendix I). Once a selection was made and confidence levels were recorded, participants underwent a study check consisting of four questions (e.g. "Were you aware that you were going to be acting as an eyewitness in today's study?") in order to determine any confounding factors that could skew results (e.g. prior familiarity with the confederate, knowledge of the true purpose of the study, etc.; see Appendix J). Completion of the study check indicated the end of the study at which point participants were debriefed and thanked for their participation (see Appendix K).

## Results

A sequential logistic regression analysis was conducted to determine whether there was an influence of eyewitness familiarity with the perpetrator (familiar vs. unfamiliar) and stereotype consistency (consistent vs. inconsistent) on overall identification accuracy. The first model only included the main effects whereas the second model included main effects as well as two-way interactions. The first model was not significant,  $\chi^2(2) = 0.45, p = .80$ . There was no effect of familiarity with the perpetrator on identification accuracy,  $B = .28, SE = .51, p = .59$ ,  $\text{Exp}(B) = 1.32$  95% CI [.49, 3.59]. There also was no effect of stereotype consistency on identification accuracy,  $B = -.18, SE = .51, p = .73$ ,  $\text{Exp}(B) = .84$  95% CI [.31, 2.28]. The second model also was not significant,  $\chi^2(3) = 3.30, p = .35$ . There was no effect of familiarity with the perpetrator on identification accuracy,  $B = 1.19, SE = .77, p = .12$ ,  $\text{Exp}(B) = 3.29$  95% CI [0.73, 14.93]. Additionally, there was no effect of stereotype consistency on identification accuracy,  $B = .66, SE = .72, p = .36$ ,  $\text{Exp}(B) = 1.94$  95% CI [0.47, 7.999]. Lastly, there was no interaction between familiarity and stereotype consistency on identification accuracy,  $B = -.74, SE = 1.05, p = .10$ ,  $\text{Exp}(B) = .18$  [0.02, 1.38]. See Tables 1 and 2 for the rate of identification accuracy by familiarity and stereotype consistency, respectively.

Table 1

*Rate of identification accuracy (N) by familiarity with the perpetrator.*

	Not Familiar	Familiar
Correct Rejection	.80 (39)	.84 (47)
Foil ID	.20 (10)	.16 (9)

Table 2

*Rate of identification accuracy (N) by stereotype consistency.*

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	Inconsistent	Consistent
Correct Rejection	.83 (45)	.80 (41)
Foil ID	.17 (9)	.20 (10)

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## Discussion

The purpose of the present study was to examine the influence of eyewitness familiarity with the perpetrator and gender stereotype consistency on eyewitness' rate of correct rejection. Familiarity is defined as more than one exposure to a target's face throughout the course of an experiment (see Read, 1991). Cordon, Silberkleit, and Goodman (2016) suggest that familiarity is likely to lead to (1) a more elaborated knowledge base as well as (2) stronger memory traces of an individual. When considering that eyewitnesses are often familiar with the perpetrator prior to a crime taking place (Flowe, Mehta, & Ebbesen, 2011), it is important to understand whether familiarity influences the likelihood of a correct identification.

## Familiarity

The current research predicted that eyewitnesses will produce higher correct rejection rates when they are familiar with the perpetrator compared to when the witness is not familiar with the perpetrator. This prediction was based on previous research suggesting that familiarity improved memory performance and reduce overall suggestibility (Cordon et al., 2016). Indeed, the current study saw a slight increase in correct rejections when the participants were familiar with the perpetrator than when not familiar, albeit not significantly so. Specifically, our research found that neither eyewitness familiarity with the perpetrator nor stereotype consistency had a significant influence on correct rejections rates although there was a minor increase in correct rejections rates when the eyewitnesses were familiar with the perpetrator than when not familiar. This upward trend is consistent with previous research showing that familiarity enhances

memory traces of an individual (Cordon et al., 2016). These results are also similar to those of Lucas and Brewer (2014) who demonstrated that familiarity (operationalized as similarity between a target and a famous celebrity) did not significantly influence eyewitness identification performance following a one-week delay. Similarly, Lucas and Brewer (2015) examined familiarity biases by asking participants to associate a target with someone they know. Researchers found that similar lineup identification choices were made regardless of whether or not an association occurred suggesting that familiarity did not influence identification choices.

According to Read (1994), this is the result of eyewitnesses attempting to adhere to a decision strategy that is based on conscious recollection rather than familiarity per-se. That is, witnesses shift from a recollection paradigm (i.e. "Have I seen this face before?") to a recognition paradigm (i.e. "That's the perpetrator"). However, it may also be the case that this shift is a by-product of cognitive interconnectedness as proposed by the spreading activation theory (Anderson, 1983). More specifically, the spreading activation theory refers to the nature of memory - a system comprised of distinctly clustered cognitive units all linked together to create a series of interconnected webs. These units may contain either episodic or semantic information and most importantly, the activation of a single link can prompt or trigger the activation of any other links associated with a specific memory. It is important to note, however, that these cognitive links are subject to re-encoding errors whenever they are activated.

According to Este's perturbation theory (1997), each time a memory is accessed any information that is associated with it is also accessed, coinciding with the main premise of the spreading activation theory. But, according to perturbation theory, every time this memory is activated, it is also subject to random intrusion and re-encoding – allowing for the possibility that the next encoding results in a memory that is potentially further away from its initial

representation. Consequently, the likelihood of activation is largely dependent on the strength of association – the stronger the association, the less the likelihood of random perturbation. In this way, it can be speculated that the targets in the current research were closely associated with information already stored in the eyewitnesses' memory. For example, gender similarities and physical features (e.g. hair color) between targets and individuals that resemble the targets may have produced associative cues across conditions. Therefore, in the context of eyewitness behaviour, it is possible that an involuntary association occurs at the time of identification, namely between a target and a familiar individual who the eyewitness subconsciously associates with the target. In fact, according to Lucas and Brewer (2014), a number of characteristics could cue this association including: a hair style, particular facial feature, clothing, facial expression or mannerism.

When considering the current study, there are several factors that, when taken together support both the perturbation theory and spreading activation theory. First, the targets used were both females of approximately the same age as the eyewitnesses, therefore all lineup members were also female. Next, the majority of eyewitnesses were females. These two factors alone suggest that perhaps the targets resembled female friends of the eyewitnesses which may have led to incorrect associations (referred to as subjective comparisons; e.g. "She looks like my friend Mary" or "Her nose is similar to Mary's", Meissner, Sporer & Susa, 2008). However, in target absent conditions, these misattributed associations may have actually highly influenced and even encouraged correct identification reports. Specifically, if eyewitnesses made an association between a target and a friend that resembles the target, then it would be expected that they know the target to be missing in absent conditions. In other words, if the target resembled one of their friends, and the association between target and friend became stronger with a delay,

then they would recognize that no one in the lineup resembles their friend, prompting them to make a correct rejection (i.e. selecting “Not Here”). Under this hypothesis, the familiarity component of the study becomes irrelevant because the target is inherently associated with an already familiar face (i.e. that of a friend). Consequently, these subjective comparisons can become problematic when eyewitnesses attempt to recognize a lineup member but compare their features to individuals that merely *resemble* the target. If this is to occur, then the perpetrators actual face becomes “disrupted by the intruding presence of the highly familiar face” (Lucas & Brewer, 2015, p.51).

It has been suggested that eyewitnesses are highly likely to engage in mental rehearsal of a target’s face between the time of the crime and identification (Brewer, Weber & Semmler, 2005). If that target is to be associated with a familiar face, then the familiar face also undergoes rehearsal. Therefore, the degree of familiarity is not necessarily manifested as the relatively brief prior exposure to a face but rather it is an expression of how much the current target resembles a genuinely familiar face (i.e. friend, neighbor, family member, etc.).

It also appears that familiarity-based recall can change along the course of development. Ricci and Beal (1998) found that familiarity within a particular context (in this case familiarity with an environment) does not appear to be a strong influence on child eyewitness memory. This suggests that perhaps memory traces take a longer time to solidify before they can begin impinging on identification accuracy. Once both psychological and neuro-developmental stages of maturation approach (e.g. full development of the pre-frontal cortex), it can be hypothesized that our memory systems begin to behave as described by the spreading activation theory. Therefore, this would explain why familiarity does not necessarily influence child eyewitness memory and why *genuine* familiarity (and not just brief exposure) plays a larger role in adults.

Interestingly, this phenomena is not limited to individuals; previous research has shown that these associations can occur for object too. For example, Krug and Weaver (2005) found that participants frequently reported using familiar/common household brands when no such products were used. This suggests that individuals may associate unknown brands with those that are more familiar to the point where the familiar brand becomes the predominantly activated memory trace.

Other experiments have allowed participants to somewhat control the degree of familiarity. Asai (2001) asked participants to rate the impression of several photographs by assigning personality traits to targets. However, operationalizing familiarity in such a way may lead to the subjective comparisons as discussed by Messner et al., (2008). Specifically, participants may use prior associations with familiar faces when attributing emotional states (e.g. “She looks like my friend Mary who is always angry”). Once again, familiarity in this case is the association between target and familiar face not necessarily a result of previous exposure to the target. Conversely, attempting to artificially induce attributions of familiarity may not always be suitable either. For example, Read (1995) discovered that participants presented with additional contextual information (i.e., non-physical details) about a target were more likely to identify a lineup member due to their “misguided” (Wong, 2009, p. 4) reliance on increased familiarity provided by the additional information. In context, the current research predicted that prior exposure would reduce dependency on stereotypes by prompting the individual to rely on *personal encounters* with the target rather than on stereotypes that may be *associated* with the target. Therefore, our research provided participants with an overview of the target’s occupation (daily duties, roles, etc.) – information that would be deemed contextual. Consequently, it is



possible that the addition of this contextual information may lead to inflated identification choices specifically because eyewitnesses feel more “familiar” with the target.

### **Stereotype Consistency**

Similar to previous research describing the resilience of strong memory traces to misinformation (e.g. Brainerd, Kingma, & Howe, 1985; Pezdek & Roe, 1995) it was hypothesized that consistent stereotypes would provide more opportunities for misinformation intrusion (i.e., introducing information that fits the schema yet never genuinely occurred) . Therefore, it was predicted that under unfamiliar and consistent stereotype conditions, eyewitnesses would make fewer correct rejections because their reliance on stereotypes would increase their vulnerability to suggestibility. Conversely, it was predicted that inconsistency would prompt saliency and therefore increase correct rejection rates under unfamiliar, inconsistent conditions. This study found that participants faced with an inconsistent stereotype made more correct rejections than those inconsistent stereotype conditions; no significance was found, however. Despite our lack of significance, previous research has indeed supported that sometimes stereotype-inconsistent information is remembered better than stereotype consistent information (Dijksterhuis & van Knippenbergg, 1995; Sherman & Frost, 2000).

One potential explanation for why stereotype consistency has no influence over identification accuracy could be offered by child eyewitness studies. For example, as they develop, children become less dependent on schematic representations such as stereotypes for recall (Farrar & Goodman, 1992) as well as rely less on stereotypical information provided by others (Leichtman & Ceci, 1995). Additionally, according to Slusher and Anderson (1987) individuals had difficulty distinguishing between stereotypic occupations that had been presented

and pairs that had only been imagined. Therefore, perhaps it was the mode of presentation that played a larger role in stereotype formation as opposed to the stereotype itself. In agreement with our predictions, previous research concluded that memory was better for expectancy-mismatched information (i.e. stereotype-inconsistent) when compared to expectancy-matched information (i.e. stereotype-consistent; Stangor & McMillan, 1992).

In accordance to the contextual model of eyewitness identification (CMEI) proposed by Osborne and Davies (2014), the current research relied on the assumption that stereotype activation occurs across modalities. More specifically, the descriptions of the occupational stereotype were entirely linguistic without a visual component (e.g., costumes). According to Osborne and Davies (2014), semantically based stereotypes (such as the mentioned linguistic component) should activate corresponding appearance-based stereotypes. Although this may have contributed to the overall perceived stereotype consistency of a target (i.e., pilot testing showed that female construction workers were *indeed* less consistent with the occupational stereotype even without a visual representation), perhaps this cross-modal activation did not impinge on “system variables” (i.e. factors that are under the control of the justice system such as lineup procedures; Osborne & Davies, 2014). One potential reason for this could be that the stereotype became irrelevant by the time participants were asked to select a member for the lineup. For example, participants were asked to complete a series of four intermediate activities between stereotype introduction and eyewitness identification; two of which were completely unrelated delay tasks. Therefore, by the time identification was required, perhaps traces of stereotype activation had diminished and the focus was on target appearance rather than stereotypic target occupation.

In an attempt to maintain stereotype activation, future studies could (1) use more salient stereotypes (2) ensure that recently activated stereotypes are used in later tasks. In fact, according to the CMEI, stereotype activation is a necessary but not a sufficient condition for eyewitness identification interference. As such, Osborne and Davies (2014) suggest that participants need to apply the use of recently activated stereotypes in order for them to affect how the targets appearance is encoded. To address the saliency of the stereotypes, it is also important to consider the difficulty of the task. Bodenhausen and Lichtenstein (1987) demonstrated that complex tasks may increase the likelihood that a previously activated stereotype will affect perceptions of a stereotyped target.

With respect to lineup procedure, the current research used a simultaneous, target absent lineup approach consisting of four foils and one “Not Here” option. In accord with previous research on memory processes, it can be hypothesised that participants were more likely to use familiarity-based processes (e.g. the process of association as proposed by the spreading activation theory) when responding to simultaneous lineups (Meissner, Tredoux, Parker & MacLin, 2003). The current research (which used a four-member simultaneous lineup procedure) also resembles a more hybrid approach (i.e. lineups consisting of two or three members). This approach, although less common, has been examined by Dillon, McAllister and Vernon (2009) and shown to result in better correct rejection rates when compared to simultaneous lineups (i.e. lineups consisting of six members in total) as have sequential lineups (i.e. photographs of the suspects are presented one at a time without the opportunity to see previously discarded photographs) (Tredoux, Parker, Janat, & Nunez, 2007).

## **Limitations and Future research**

There are several factors that we deemed to be potentially responsible for the ceiling effects found in this study. First, we attributed the length of the crime video to be one potential confound. Specifically, we became aware that our initial crime video had the actor's full frontal face shown for a total of approximately 13 seconds (accounting for just over 20% of the total video length) with the longest single exposure lasting approximately 10 seconds zoomed in on the actor's face. The rest the video did not show the full face of the actor although it was recognizable. Therefore, perhaps exposure time was too long and eyewitnesses effortlessly committed the face to memory and consistently made correct rejections regardless of condition. It should be noted, however, that several lines of research have demonstrated that the amount of time an eyewitness is exposed to a perpetrator positively correlated with identification accuracy (Maclin, Maclin & Malpass, 2001; Meissner & Brigham, 2001; Pezdek & Blandon-Gitlin, 2005). In an attempt to mitigate these ceiling effects, we reduced the longest exposure (i.e. 10 second, zoomed-in, full frontal view) to approximately 5 seconds. Although this did not entirely diminish the ceiling effects, it did reduce the number of correct rejections albeit not significantly. Additionally, perhaps the delay between the crime video and lineup procedure was (1) too short or (2) not sufficiently cognitively engaging. After all, previous studies have shown that the delay between seeing the perpetrator and exposure to the lineup is negatively correlated with identification accuracy (Behrman & Davey, 2001; Pezdeck & Blandon-Gitlin, 2005). However, we do not believe delay length to be the case, considering the fact that previous research has used increased actor exposure times (e.g., 31 seconds with 12 seconds of full frontal view) and an increased delay (one week) and similarly found no significant effects of familiarity on identification rates (Lucas & Brewer, 2014).

Similar to Gilbert and Hixon (1991), the current research adhered to the principle that stereotype activation was more likely to be employed when attentional resources were diminished as opposed to when cognitive capacity was unaltered. Specifically, our research did not alter cognitive load and therefore it should be reasonable to assume that perhaps stereotype activation was not reaching levels high enough to significantly influence identification accuracy. As mentioned, stereotype engagements can be referred to as a means of categorizing newly presented information and ultimately reduce the effort of information processing that could potentially lead to cognitive depletion (Araya et al., 2003; Fiske & Neuberg, 1990; Gilbert & Hixon, 1991; Macrae et al., 1994). However, this principle relies on the assumption that an individual must first reach that state of cognitive overload and only *then* does stereotype activation occur. Inversely, if cognitive load is kept at a minimum, there is no impinging need for stereotype activation. For example, previous research has shown that participants are less accurate in their identifications when they are “cognitive busy” (Garcia-Marques, Hamilton, & Maddox, 2002). As such, it should be expected that stereotype activation should play no role in identification accuracy when cognitive load is small – indeed corresponding to current results. Participants also appear to rely less on stereotype-consistent information and more on familiarity when their cognitive capacity is restricted (Sherman, Groom, Ehrenberg, & Klauer, 2003). Therefore, it would be of benefit to alter cognitive load prior, during and after initial exposure to the perpetrator. More specifically, in an attempt to mimic real world scenarios and increase overall ecological validity, future studies could engage participants in other activities (e.g. categorization or sorting task) while viewing the crime. In this way, the individual’s cognitive resources are not entirely dedicated to the analysis of the crime but rather distributed between a relatively simply yet mental demanding task (i.e. sorting) and the crime.

Another factor that may contribute to overall stereotype activation could be the delay between a crime and subsequent identification. Specifically, previous research has shown that memories that are allowed to decay over a 48-hour period, prompt individuals to rely more on schematic information during retrieval (Kleider et al., 2008a; Kleider et al., 2008b). These same effects were abolished when the delay was only 30 minutes. In the context of the current research, we suggest that a shorter delay may have influenced schematic activation whereby there was no opportunity to encode the stereotype-specific information and thereby no necessary reason to rely on the schematic information. Instead, we believe the target was maintained in short term memory for enough time to still be considered salient information rather than information that requires some sort of categorization into stereotypes or schemas. The model suggested in this case is that stereotypes are used to efficiently encode newly processed information specifically in long term memory (Kleider et al., 2008a). However, if the memory trace itself does not last for enough time to undergo the transfer from short term to long term memory, the schematic activation is essentially redundant since the information will be discarded regardless (i.e. following the experiment, participants are not expected to retain any of the tasks distributed throughout the study).

In summary, there are two main reasons why we believe stereotype consistency had no influence on eyewitness identification. First, as mentioned, cognitive load remained low throughout the experiment. Participants were not required to efficiently store any information because their entire cognitive capacity could be dedicated to a single task. Second, the information that was presented was salient enough to be retrieved from short term memory thereby reducing the need to categorize the information using specific schemas.

As often is the case with mock crime scenarios, arousal levels are particularly low when compared to live events. In live crimes, research has shown that stress and arousal have had no effect on eyewitness identification accuracy whereas higher levels of arousal were significantly related to poorer identification accuracy (Deffenbacher, Bornstein, Penrod, & McGorty, 2004; Stanny & Johnson, 2000), specifically under mock conditions (Pozzulo, Crescini, & Panton, 2008). Therefore, to provide optimal conditions, participants in the current research did not face any imposed stressor and crimes were shown as videos as opposed to live events. Nonetheless, future research could benefit from arousal/stress-induced eyewitness trials. Negative arousal paradigms have previously included viewing images from the Standardized International Affective Picture System (IAPS) (Lang, Bradley & Cuthbert, 2005; see: Ritz, Thons, Fahrenkrug & Dahme, 2005) as well as listening to sounds from the International Affective Digitized Sound System (IADS) (Bradley & Lang, 2007). By incorporating these mediums into eyewitness research (e.g. trial testimony heard aurally rather than read), experiments begin to present emotional states that are often missing under mock conditions.

In order to induce a considerably high level of emotional stress in a controlled and efficient manner, the Trier Social Stress Test (TTST) has garnered worldwide recognition as being one of the standards for eliciting psychological stress (Kirschbaum, Pirke & Hellhammer, 1993). Briefly, the TTST requires that participants assume the role of a job applicant. Participants are told that they will be giving a 5-minute speech to a selection committee which is to be audio and video recorded. The purpose of the speech is to describe why they are suitable for the job. During the stress anticipation phase, participants are given 10 minutes to prepare the speech. Following this speech, participants are asked to complete a serial subtraction task aloud while their performance is recorded. The anxiolytic effects produced by the task stem from the

social-evaluation threats which occur when an important aspect of self-identity could be negative judged by others (Dickerson & Kenny, 2004). In translation to witness experiments, eyewitnesses would be required to provide their descriptions of the perpetrator to an analogous “committee” (e.g. several mock jurors or police officers) and why they believe their descriptions to be accurate. Participants are reminded that their speech is being recorded and that this may subsequently be used as eyewitness testimony at trial. Following their speech, eyewitness would be required to complete a lineup procedure. It can be hypothesised that, in accordance to Pozzulo et al., (2008), an increased state of physiological arousal/stress under mock conditions would decreased over all identification accuracy.

## **Conclusion**

The current research examined the influence of familiarity between the eyewitness and perpetrator as well as gender stereotype consistency on eyewitness identification accuracy. Previous research has shown that stereotypes can elicit false memories that are consistent with a given stereotype (Lenton, Blair, & Hastie, 2001; Payne, Jacoby, & Lambert, 2004) and subsequently affect identification accuracy. Likewise, increased exposure to an individual, expressed as degree of familiarity, has also been shown to yield stronger memory traces and improve eyewitness identification accuracy (Cordon et al., 2006); matching the general trend of the current research. While further research in this area is required, the current study provides the theoretical groundwork necessary for further experimentation on how stereotype consistency and familiarity influence eyewitness identification scores.



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## Appendices

### Appendix A

#### A.1 Sub-Appendix

##### Informed Consent Form

The purpose of informed consent is to ensure that you understand the purpose of the study and the nature of your involvement. Informed consent must provide sufficient information such that you have the opportunity to determine whether or not you wish to participate in the study.

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**Present study:** Do They Fit the Stereotype?

**Research personnel:** The following people will be involved in this research project and may be contacted at any time: Andrei Mesesan (Principal Investigator, [AndreiMesesan@carleton.ca](mailto:AndreiMesesan@carleton.ca), 613-520-2600 ext. 3695) or Taylor Chapman (Primary Investigator, [TaylorChapman@carleton.ca](mailto:TaylorChapman@carleton.ca), 613-520-2600 ext. 3695) or Dr. Joanna Pozzulo (Faculty Advisor, [joanna.pozzulo@carleton.ca](mailto:joanna.pozzulo@carleton.ca), 613-520-2600, ext. 1412).

**Concerns:** If you should have any ethical concerns about this study please contact, Dr. Andy Adler (Chair, Carleton University Research Ethics Board-B, [adler@sce.carleton.ca](mailto:adler@sce.carleton.ca), 613-520-2600, ext. 8785). You can also contact the Carleton University Research Compliance Office at [ethics@carleton.ca](mailto:ethics@carleton.ca) for any other concerns.

**Purpose:** The purpose of this study is to examine the perceived consistency of several stereotypes.

**Task requirements:** You will be asked to watch videos and then complete questionnaires regarding the viewed videos. You must be 18-years-old or older. This is a visual activity. If you have any vision problems that prohibit you from viewing a video, you are ineligible to participate in the current study.

**Duration and locale:** Testing will take place in Room 111, Social Sciences Research Building, Carleton University. This study will be completed in one testing session, lasting approximately 30 minutes.

**Token for participation:** You will receive a 0.5% increase in your final grade of PSYC 1001, PSYC 1002, PSYC 2001, PSYC 2002, NEUR 2001, or NEUR2002 for participating in this study.

**Potential risk/discomfort:** There are no potential risks involved in this experiment. Should you experience any unease, you have the right to withdraw from the study and still receive course credit. Should you have any ethical concerns with the study, please contact Dr. Andy Adler (Chair, Carleton University Research Ethics Board-B (by phone: 613-520-2600 ext. 4085 or email: [ethics@carleton.ca](mailto:ethics@carleton.ca))).

**Anonymity/Confidentiality:** All the information you provide will be strictly confidential. Data will only be used for research at Carleton University. Your answers will NOT be linked to your name or signature (i.e., consent form) and your responses will be coded in such a way that you cannot be identified. No identifiers will be stored with participants' data as the informed consents

are kept separately from their data so not match can be made. Accordingly, aggregate data will potentially be used in publications.

**Protection of Personal Information:** This Informed Consent Form will be kept in the Lab for seven years. It will be placed in a room that has restricted access and is kept locked and closed at all times. At the seven-year mark, it will be shredded and disposed of.

**Right to withdraw:** Your participation is strictly voluntary. At any point during the study you have the right not to complete certain questions or to withdraw from the study without any penalty whatsoever by informing the researcher. However, once the study session has finished, participants cannot withdraw because the data is not linked to any names.

This study has received clearance by the Carleton University Research Ethics Board-B (105782)

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**Signatures:** *I have read the above form and hereby consent to participate in this study. The data in this study will be used for research publications and/or teaching purposes. I am aware that the data collected in this study will be kept strictly confidential and anonymous. My signature indicates that I understand the above and wish to participate in this study.*

Participant's Name (print): \_\_\_\_\_

Participant's Signature: \_\_\_\_\_

Researcher's Name (print): \_\_\_\_\_

Researcher's Signature: \_\_\_\_\_

Date: \_\_\_\_\_



## A.2 Sub-Appendix

### Informed Consent Form

The purpose of informed consent is to ensure that you understand the purpose of the study and the nature of your involvement. Informed consent must provide sufficient information such that you have the opportunity to determine whether or not you wish to participate in the study.

---

**Present study:** I Spy: Fill in the missing details

**Research personnel:** The following people will be involved in this research project and may be contacted at any time: Andrei Mesesan (Principal Investigator, [AndreiMesesan@cmail.carleton.ca](mailto:AndreiMesesan@cmail.carleton.ca), 613-520-2600 ext. 3695) or Taylor Chapman (Primary Investigator, [TaylorChapman@cmail.carleton.ca](mailto:TaylorChapman@cmail.carleton.ca), 613-520-2600 ext. 3695) or Dr. Joanna Pozzulo (Faculty Advisor, [joanna.pozzulo@carleton.ca](mailto:joanna.pozzulo@carleton.ca), 613-520-2600, ext. 1412).

**Concerns:** If you should have any ethical concerns about this study please contact, Dr. Andy Adler (Chair, Carleton University Research Ethics Board-B, [adler@sce.carleton.ca](mailto:adler@sce.carleton.ca), 613-520-2600, ext. 8785). You can also contact the Carleton University Research Compliance Office at [ethics@carleton.ca](mailto:ethics@carleton.ca) for any other concerns.

**Purpose:** The purpose of this study is to examine your ability to view, retain, and recall certain details about a scene.

**Task requirements:** You will be asked to watch videos and then complete questionnaires regarding the viewed videos. You must be 18-years-old or older. This is a visual activity. If you have any vision problems that prohibit you from viewing a video, you are ineligible to participate in the current study.

**Duration and locale:** Testing will take place in Room 111, Social Sciences Research Building, Carleton University. This study will be completed in one testing session, lasting approximately 60 minutes.

**Token for participation:** You will receive a 1% increase in your final grade of PSYC 1001, PSYC 1002, PSYC 2001, PSYC 2002, NEUR 2001, or NEUR2002 for participating in this study.

**Potential risk/discomfort:** There are no potential risks involved in this experiment. Should you experience any unease, you have the right to withdraw from the study and still receive course credit. Should you have any ethical concerns with the study, please contact Dr. Andy Adler (Chair, Carleton University Research Ethics Board-B (by phone: 613-520-2600 ext. 4085 or email: [ethics@carleton.ca](mailto:ethics@carleton.ca)).

**Anonymity/Confidentiality:** All the information you provide will be strictly confidential. Data will only be used for research at Carleton University. Your answers will NOT be linked to your name or signature (i.e., consent form) and your responses will be coded in such a way that you cannot be identified. No identifiers will be stored with participants' data as the informed consents are kept separately from their data so not match can be made. Accordingly, aggregate data will potentially be used in publications.

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**Protection of Personal Information:** This Informed Consent Form will be kept in the Lab for seven years. It will be placed in a room that has restricted access and is kept locked and closed at all times. At the seven-year mark, it will be shredded and disposed of.

**Right to withdraw:** Your participation is strictly voluntary. At any point during the study you have the right not to complete certain questions or to withdraw from the study without any penalty whatsoever by informing the researcher. However, once the study session has finished, participants cannot withdraw because the data is not linked to any names.

This study has received clearance by the Carleton University Research Ethics Board-B (105782)

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**Signatures:** *I have read the above form and hereby consent to participate in this study. The data in this study will be used for research publications and/or teaching purposes. I am aware that the data collected in this study will be kept strictly confidential and anonymous. My signature indicates that I understand the above and wish to participate in this study.*

Participant's Name (print): \_\_\_\_\_

Participant's Signature: \_\_\_\_\_

Researcher's Name (print): \_\_\_\_\_

Researcher's Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Appendix B**

## Demographics Form

**Your age:** \_\_\_\_\_**Your sex:** \_\_\_\_\_**Ethnicity:** Please indicate which ethnic group you would consider yourself to belong to by checking the appropriate box (optional):

- ☐ White (e.g., European)
- ☐ Black (e.g., African, African American, African Canadian, Caribbean)
- ☐ East Asian (e.g., Chinese, Japanese, Korean, Polynesian)
- ☐ South Asian (e.g., Indian, Pakistani, Sri Lankan, Bangladeshi)
- ☐ Southeast Asian (e.g., Burmese, Cambodian, Filipino, Laotian, Malaysian, Thai, Vietnamese)
- ☐ West Asian (e.g., Arabian, Armenian, Iranian, Israeli, Lebanese, Palestinian, Syrian, Turkish)
- ☐ Latin American (e.g., Mexican, Indigenous Central, South American)
- ☐ Aboriginal Canadian/Native Canadian/First Nations
- ☐ Mixed origin, please specify: \_\_\_\_\_
- ☐ Other: \_\_\_\_\_

## Appendix C

### Stereotype Inconsistent Condition

Please read the questions provided below. For each question, circle the most appropriate answer that conforms to your opinion.

1. How well did Jessie's appearance fit your perception of what a construction worker looks like?

1	2	3	4	5	6	7
Consistent						Inconsistent

2. How well did Jessie's job description fit your perception of what a construction worker/manager does?

1	2	3	4	5	6	7
Consistent						Inconsistent

### Stereotype Consistent Condition

Please read the questions provided below. For each question, circle the most appropriate answer that conforms to your opinion.

1. How well did Jessie's appearance fit your perception of what a nurse looks like?

1	2	3	4	5	6	7
Consistent						Inconsistent

2. How well did Jessie's job description fit your perception of what a nurse does?

1	2	3	4	5	6	7
Consistent						Inconsistent

## Appendix D

### Stereotype Ratings Questionnaire

Read each question below. Using the scale provided, circle the answer that appropriately represents your view of each job occupation.

How would you rate a:

#### **Mechanic?**

1	2	3	4	5	6	7
Male						Female

#### **Librarian?**

1	2	3	4	5	6	7
Male						Female

#### **Construction Worker?**

1	2	3	4	5	6	7
Male						Female

#### **Hair Stylist?**

1	2	3	4	5	6	7
Male						Female

#### **CEO?**

1	2	3	4	5	6	7
Male						Female

#### **Teacher?**

1	2	3	4	5	6	7
Male						Female

#### **Computer Technician?**

1	2	3	4	5	6	7
Male						Female

#### **Engineer?**

1	2	3	4	5	6	7
Male						Female

#### **Nurse?**

1	2	3	4	5	6	7
Male						Female

#### **Daycare Worker?**

1	2	3	4	5	6	7
Male						Female

## Appendix E

### Debriefing Form

***What are we trying to learn in this research?***

The purpose of the present study is to examine the extent to which a profession is consistent with a male or female gender role.

***Why is this important to scientists or to the general public?***

This research is important because it helps better understand how factors such as gender and occupation play a role in stereotype consistency.

***What are our hypotheses and predictions?***

We predict that individuals will be more likely to rate professions that are often dominated by males (e.g. construction workers) as more stereotypically male whereas professions dominated by females (e.g. nurse) will be more likely to be rated as stereotypically female.

***What if I feel distress or anxiety after participating in this study?***

If you feel any distress or anxiety after participating in this study, please feel free to contact the Carleton University Health and Counseling Services at: 613-520-6674, or the Distress Centre of Ottawa and Region at 613-238-3311 (<http://www.dcottawa.on.ca>).

***What if I have questions later?***

If you wish to discuss this research any further feel free to contact any one of the following people: Andrei Mesesan (Cognitive Science Department, Undergraduate Student, Principal Investigator, AndreiMesesan@cmail.carleton.ca, 613-520-2600 ext. 3695) or Taylor Chapman (Psychology Department, Undergraduate Student, Principal Investigator, TaylorChapman@cmail.carleton.ca, 613-520-2600 ext. 3695) or Dr. Joanna Pozzulo (Faculty Advisor, Joanna.pozzulo@carleton.ca, 613-520-2600, ext. 1412).

***What if I have concerns?***

**Concerns:** Should you have any ethical concerns with the study, please contact Dr. Andy Adler (Chair, Carleton University Research Ethics Board-B (by phone: 613-520-2600 ext. 4085 or email: [ethics@carleton.ca](mailto:ethics@carleton.ca))).

*This research was cleared by Carleton University Research Ethics Board-B (105782).*

**At this time we would like to thank you for taking the time to take part in this study. Your participation has been greatly appreciated!**

## Appendix F

### Open Recall

Write down everything you remember about the person in the video.

## Appendix G

### Secondary Informed Consent Form

The purpose of informed consent is to ensure that you understand the purpose of the study and the nature of your involvement. Informed consent must provide sufficient information such that you have the opportunity to determine whether or not you wish to participate in the study.

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**Present study:** Stereotypes, Familiarity and the Effects on Eyewitness Identification

**Research personnel:** The following people will be involved in this research project and may be contacted at any time: Andrei Mesesan (Principal Investigator, [AndreiMesesan@mail.carleton.ca](mailto:AndreiMesesan@mail.carleton.ca), 613-520-2600 ext. 3695 ) or Taylor Chapman (Primary Investigator, [TaylorChapman@mail.carleton.ca](mailto:TaylorChapman@mail.carleton.ca), 613-520-2600 ext. 3695) or Dr. Joanna Pozzulo (Faculty Advisor, [joanna.pozzulo@carleton.ca](mailto:joanna.pozzulo@carleton.ca), 613-520-2600, ext. 1412).

**Concerns:** If you should have any ethical concerns about this study please contact, Dr. Andy Adler (Chair, Carleton University Research Ethics Board-B, [adler@sce.carleton.ca](mailto:adler@sce.carleton.ca), 613-520-2600, ext. 8785). You can also contact the Carleton University Research Compliance Office at [ethics@carleton.ca](mailto:ethics@carleton.ca) for any other concerns.

**Purpose:** The purpose of this study is to examine different factors potentially influencing accuracy with recollecting information in order to establish what and who you saw. You will be asked to describe the video and you will then be presented with photographs. When you signed up to participate in this study you were told that the purpose was to examine factors involved in the recollection of pieces of recently learned information; this was a deceptive tool used to prevent you from knowing the true purpose of the study, to measure eyewitness accuracy. This was done in order to mimic a real life eyewitness situation as best as possible. In real life, witnessing a crime is unforeseen and unpredictable. Had you known you were intended to watch a crime video your attention to specific details of the crime, such as the perpetrator's characteristics, may have been altered. As a result, your identification may not have represented witnessing a real criminal act. At this time, you have the opportunity to withdraw your data without penalty. However, if you wish to sign this informed consent form, you consent to finishing the study having known its true nature.

**Task requirements:** You will be asked to watch videos and then complete questionnaires regarding the viewed videos. You must be 18-years-old or older. This is a visual activity. If you have any vision problems that prohibit you from viewing a video, you are ineligible to participate in the current study.

**Duration and locale:** Testing will take place in Room 111, Social Sciences Research Building, Carleton University. This study will be completed in one testing session, lasting approximately 45 minutes.

**Token for participation:** You will receive a 1% increase in your final grade of PSYC 1001, PSYC 1002, PSYC 2001, PSYC 2002, NEUR 2001, or NEUR2002 for participating in this study.

**Potential risk/discomfort:** There are no potential risks involved in this experiment. Should you experience any unease, you have the right to withdraw from the study and still receive course credit. Should you have any ethical concerns with the study, please contact Dr. Andy Adler (Chair, Carleton University Research Ethics Board-B (by phone: 613-520-2600 ext. 4085 or email: [ethics@carleton.ca](mailto:ethics@carleton.ca))).

**Anonymity/Confidentiality:** All the information you provide will be strictly confidential. Data will only be used for research at Carleton University. Your answers will NOT be linked to your name or signature (i.e., consent form) and your responses will be coded in such a way that you cannot be identified. No identifiers will be stored with participants' data as the informed consents are kept separately from their data so not match can be made. Accordingly, aggregate data will potentially be used in publications.

**Protection of Personal Information:** This Informed Consent Form will be kept in the Lab for seven years. It will be placed in a room that has restricted access and is kept locked and closed at all times. At the seven year mark, it will be shredded and disposed of.

**Right to withdraw:** Your participation is strictly voluntary. At any point during the study you have the right not to complete certain questions or to withdraw from the study without any penalty whatsoever by informing the researcher. If you do not wish to continue following the disclosure of deceit, you will still receive the full (1%) course credit with no penalty whatsoever. However, once the study session has finished, participants cannot withdraw because the data is not linked to any names.

This study has received clearance by the Carleton University Research Ethics Board-B (105782)

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**Signature:** *I have read the above form, and now that I know the true purpose of this study:*

- ☐ I consent to the use of my data
- ☐ I do not consent to the use of my data

Participant's Name (print): \_\_\_\_\_

Participant's Signature: \_\_\_\_\_

Researcher's Name (print): \_\_\_\_\_

Researcher's Signature: \_\_\_\_\_

Date: \_\_\_\_\_



**Appendix H**

## Description Form

**Event Description**

Please write down everything that you can remember about the video.

**Person Description**

Please write down everything you can remember about the criminal.

**Appendix I**

## Simultaneous Lineup Response Form

Think back to the video. Think back to what the criminal looks like. I am going to show you some pictures. Please look at the pictures. The criminal's picture may or may not be here. If you see the criminal's picture, please place a check mark in the box that corresponds with the criminal's lineup number. If you do not see the criminal, please place a check mark in the box labeled 'not here'.



Photo 1

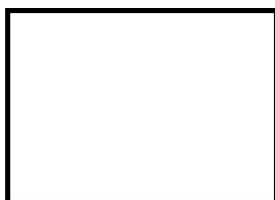


Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Not Here

---

Please rate your confidence in the accuracy of your decision using a numerical value between 0 (*not at all confident*) and 100 (*very confident*): \_\_\_\_\_

**Appendix J****Study Checks**

1. Did you know that you would be acting as an eyewitness to a crime before coming to the study session today? Please circle the appropriate response.

YES                      NO

2. Did you know anyone from the criminal photo lineup (e.g., one of the boys is your friend)?

YES                      NO

3. Before today, have you ever completed a photo lineup identification procedure? If yes, please explain.

YES                      NO

4. Have you ever taken a class on eyewitness memory?

YES                      NO

## Appendix K

### Debriefing Form

#### ***What are we trying to learn in this research?***

The purpose of the present study is to examine whether gender stereotypes and familiarity with the perpetrator influence eyewitness identification accuracy. When adults are familiar with the target (have seen the perpetrator before), *and* the gender stereotype is consistent, are they likely to make errors? What combination of these two factors enhances eyewitness identification accuracy? The current study aims to answer these questions by examining gender stereotype consistency (gender consistent or gender inconsistent) and familiarity (familiar with the perpetrator or not). We seek to explore the potential interaction between these variables, stereotypes and familiarity, and its possible influence on eyewitness identification accuracy.

#### ***Why is this important to scientists or to the general public?***

This research is important because it helps better understand factors that have an effect on eyewitness testimony accuracy. When we better determine which factors contribute or hinder the accuracy of these decisions, eyewitness identification can be more confidently used in the legal system.

#### ***What are our hypotheses and predictions?***

We predict adults will be more correct when asked to identify the perpetrator from the lineup when the target is unfamiliar (did not previously see this target) and when the stereotype is inconsistent (gender-inconsistent). It is thought that familiarity will be detrimental when the stereotype is inconsistent. Adults also are predicted to disregard inconsistencies with familiar people because it does not fit with their stereotype of that person, and therefore their identification accuracy is more likely to be incorrect when the perpetrator is unfamiliar and stereotypes are consistent.

#### ***Where can I learn more?***

To learn more about identification accuracy and the effects of stereotypes and familiarity with older adults, the two articles below can be made available.

Sherman, J.W. (06/2003). Bearing False Witness Under Pressure: Implicit and Explicit Components of Stereotype-Driven Memory Distortions. *Social cognition*, (21)3, 213 - 246.

Asai, C. (2001). The effect of familiarity on eyewitness identification testimony: The relationship between accuracy and confidence. *Japanese Journal of Psychology*, 72(4), 283-289.

#### ***Why didn't you tell me I was going to watch a video of a crime?***

We did not tell you that you would be watching a videotape of a theft because we wanted to mimic real life as much as possible and real life crime happens unexpectedly. Had you been forewarned of the crime aspect of the study, you may have paid attention to the video in a different way and, in turn, this would have influenced your responses to our questions. In this case, your responses would not have been useful to us because they would not be representative of how a real life witness would experience a similar situation.

*Note.* The video you watched was completely fictional, no crime was actually committed.

***What if I feel distress or anxiety after participating in this study?***

If you feel any distress or anxiety after participating in this study, please feel free to contact the Carleton University Health and Counseling Services at: 613-520-6674, or the Distress Centre of Ottawa and Region at 613-238-3311 (<http://www.dcottawa.on.ca>).

***What if I have questions later?***

If you wish to discuss this research any further feel free to contact any one of the following people: Andrei Mesesan (Cognitive Science Department, Undergraduate Student, Principal Investigator, AndreiMesesan@cmail.carleton.ca, 613-520-2600 ext. 3695) or Taylor Chapman (Psychology Department, Undergraduate Student, Principal Investigator, TaylorChapman@cmail.carleton.ca, 613-520-2600 ext. 3695) or Dr. Joanna Pozzulo (Faculty Advisor, Joanna.pozzulo@carleton.ca, 613-520-2600, ext. 1412).

***What if I have concerns?***

**Concerns:** Should you have any ethical concerns with the study, please contact Dr. Andy Adler (Chair, Carleton University Research Ethics Board-B (by phone: 613-520-2600 ext. 4085 or email: [ethics@carleton.ca](mailto:ethics@carleton.ca))).

*This research was cleared by Carleton University Research Ethics Board-B (105782).*

**At this time we would like to thank you for taking the time to take part in this study. Your participation has been greatly appreciated!**