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Accuracy of the Memory of a Child as an Eyewitness

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Trials are heavily influenced by eyewitness testimony, but just how accurate is the memory of the person who saw the crime? Research suggests that eyewitness testimonies are often not accurate, but still have a significant impact on the outcome of the trial. Increasingly, children are testifying in court. Little research looks at the credibility of a child's testimony, instead focuses on the impact the testimony had on the jurors, or the outcome of the trial. I propose an experimental study to examine the effect that age has on memory.

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Several different factors can influence our memory, including age, perception, emotion, and maturity level (Greenhoot & Bunnell, 2009). Throughout one's lifetime many different memories will be formed. What we remember has much to do with how we perceived our experiences (Greenhoot & Bunnell, 2009). Our memories are often affected by the emotions that surround them (Greenhoot & Bunnell, 2009). It has been suggested that our memory of an event is the way we want to remember it and not what actually happened.

Valid understanding of the accuracy of memory has important implications. Imagine being accused of a crime, and the eyewitnesses of the crime have you pinned as the criminal for a crime you did not commit. Eyewitness testimony has a significant impact on the outcome of a trial; it is estimated that eyewitness testimonies significantly impact the outcome of a trial in at least 75,000 criminal cases each year (Holcomb, & Jacquin, 2007). Ziskin (1970), for example, discussed the case of Adolf Beck, a man who spent seven years in prison for a crime that he did not commit. Beck was selected out of a lineup by 22 eyewitnesses and two police officers as the man who committed the crime (Ziskin, 1970). When this case was further investigated, the real criminal was caught, and it was revealed that Beck and the offender looked nothing alike (Ziskin, 1970). Yet, 22 eyewitnesses

and two police officers had selected Beck as the criminal. An innocent man put behind bars makes research on accuracy of the eyewitnesses' memory particularly important.

Emotions can color the way we remember an event. Victims of the terrorist attacks in New York City on September 11th 2001, and the victims of the bombings in Moscow in 1990 were asked to recall the events that occurred on that day as accurately as possible (Wessel & Wright, 2004). Both of these events were horrific acts of terrorism that resulted in thousands of people losing their lives. The results of the study suggested that the more of an emotional impact the day had on the person, the better they remembered it (Wessel & Wright, 2004). The participants who were directly affected by September 11th were more accurate when piecing together the events that occurred that day than the participants who were affected by the bombings in Moscow (Wessel & Wright, 2004).

When people connect an emotion to a memory it is easier for them to recall it. Schmidt, Patnaik and Kensinger (2011) indicated that an emotional impact of an image would help participants recall images more accurately than the images that provoked no emotional response. Participants were shown 540 images that range from low-arousal items, such as pictures of landscapes or houses, which provoked no emotional response. High arousal items were pictures of people grieving, or an action shot of a fight, which stimulated an emotional response.

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When the participants were asked about the images, they were more accurate when discussing the images that provoked an emotional response (Schmidt et al., 2011).

Aizpurua, Garcia-Bajos, and Migueles (2011) investigated the relationship between age and emotion, and its effect on memory. In this study older adults ages 56 to 79, and young adults ages 18 to 24, watched a video of a robbery, then rated it based on emotional content, and were asked to recall the events as accurately as possible. Participants filled out a questionnaire that used a numerical scale to rate the emotions they had while watching the video. The questionnaire focused on violence that occurred, emotional impact associated with the event, and true or false questions based on what occurred in the video (Aizpurua et al., 2011). The results indicated older adults were more likely to accept false information, but both groups had rated the video similarly in the emotional impact associated with the event, and level of violence (Aizpurua et al., 2011).

Age and a fixed amount of time, when asked to recall memories can influence the accuracy of memory. Participants which were either children or young adults, viewed pictures, and then were questioned in a speed response condition and a non-speed response condition (Mecklinger, Brunnemann, & Kipp, 2010). The speed response condition gave the participants a fixed amount of time before they moved onto the next image, whereas the non-speed response condition was not timed. No significant difference was found in the accuracy of memory between the groups, in the non-speed response condition. However, the results indicated that memory accuracy was higher in young adults than children in the speed response condition. Overall, both groups responded more slowly and more accurately in the non-speed response condition (Mecklinger et al., 2010).

Some studies have focused on the physical traits of the offenders and the violence of the crime, rather than the details of the crime (Boston, Scott, Brunas-Wagstaff, Wagstaff, Mac Veigh, & Cole, 2003) ; (Ahola, 2012). Another study compared the eyewitness testimonies of young adults to the testimonies of adults 65 years or older (Brimacombe, Jung, Garrioch, & Allison, 2003). The participants watched a video of a crime and then were questioned that day about what they observed in front of a mock jury. The jurors evaluated the eyewitness testimonies for credibility. The results indicated that the young adults were more accurate when discussing the events of the crime, and the older adults often added in story-like details that were false (Brimacombe, et.al, 2003). The older adults would add in false information when they were unable to reproduce what they saw.

Evidence shows that eyewitnesses' perception can vary based upon gender. Ahola (2102) examined the effect that a person's gender has on the evaluation of a crime that they have witnessed. Participants watched a video of a

crime and then were questioned about the offender's appearance, and then rated the violence on a number scale. The results indicated that females perceived the crime to be more violent than male participants, but both groups were able to accurately describe the appearance of the criminal (Ahola, 2012). In a similar study, participants watched a video of a woman being attacked by a man (Boston, et al., 2003). Participants who rated the crime to be more violent than other participants were better able to describe the offender's physical characteristics (Boston et al., 2003).

Memory seems to be less accurate when participants have the opportunity to discuss what they saw before they are graded on their accuracy. Each of these studies had participants watch the videos by themselves, and remain isolated from the other participants before they were questioned about what they saw. Bonham and Gonzalez (2009) reviewed a study that indicates that memory can be easily shaped by others. Participants were questioned 24 hours after they watched a video that depicted a crime being committed (Bonham & Gonzalez, 2009). Some of the participants were given false information about the crime right before they were questioned. The majority of the participants that were given false information answered the questions less accurately than the participants that were not given false information (Bonham & Gonzalez, 2009). Valentine and Maras (2011) reviewed a similar study, but allowed some participants to watch the video depicting the crime in pairs, and let them discuss what they saw in the video. The participants were unaware that they watched different videos. When the participants were questioned about what they saw in the video 75 % of the participants did not remember the crime correctly.

The way a question is asked can influence retrieval. Another study looks at the questioning of an eyewitness and its effect on retrieval practice. Participants read a case study and then were video-taped while being questioned; a lawyer used complex, leading questions, or simple alternatives (Kebbell, Evans, & Johnson, 2011). The video-taped questioning of the participants was submitted into a mock trial as eyewitness evidence. The participants were confident that their memory was accurate, however, when asked a complex or leading question it took them longer to answer the questions, which lead mock jurors to perceive them as less accurate (Kebbell et al., 2011).

Children often testify in court and significantly affect the jury's decision-making process. Holcomb and Jacquin (2007) conducted a mock trial to assess the impact of the age of the eyewitness, level of involvement in the crime, and the accuracy that the testimony has on the outcome of the trial. The eyewitnesses in the mock trial were children ages 5, 11 and 16. Six different mock trials were conducted and had children serve either as

bystanders, or victims of the crime. In previous research, jurors rated bystanders more believable than the victims (Holcomb & Jacquin, 2007). The results indicated that the younger the child and the more involved in the crime the child was, had a greater influence on the outcomes of the trial by influencing the jurors vote (Holcomb & Jacquin, 2007). Also, regardless of the level of involvement, jurors rated 5 year old children to be more believable than older children (Holcomb & Jacquin, 2007).

Regardless of whether or not eyewitness testimonies are accurate, they have a significant impact on the outcome of a trial (Holcomb & Jacquin, 2007). Some studies suggest that eyewitnesses can be easily misled by others, and add in false information, but still have a significant impact on the outcome of a trial (Valentine & Maras, 2011). Researchers suggest that despite the perceived inaccuracy of eyewitness testimonies by children, they have a more significant impact than that of an adult eyewitness (Wright, Hanoteau, Parkinson, & Tatham, 2010). More often children of all ages are testifying in court, but there is much speculation about the accuracy and reliability of the honesty of children (Wright et al., 2010). Children under the age of ten have a significant impact on the jury often stimulating feelings of sympathy or guilt when listening to their testimony (Holcomb & Jacquin, 2007). Younger children possess frailer cognitive abilities than an adult, and as a result, they often recall less detail about an event than adults do (Nikonova & Ogloff, 2005). However, studies strongly suggest that children testifying in court have more of an impact than adults testifying. Nikonova and Ogloff (2005) reviewed the 1993 case of R. V. Marquard, in which a young child was testifying in court. She was unable to provide much detail, and her story kept changing; but nonetheless the jury favorably turned the verdict in her favor.

Much of the research surrounding credibility of eyewitness testimonies are conducted on college students, adults, and older adults. Little research has been conducted on the accuracy of a child's testimony. Previous attempts to assess the accuracy of a child fail to take into consideration the demands of children of different ages. Researchers have previously examined the impact that children have on jurors and the outcome of the trial, while few studies investigate the credibility of the testimony of children. Several factors can influence the accuracy of the testimony presented in court when dealing with adults that testify. Children have a different cognitive level than adults. They have less life experience, and in general are less mature. These factors may influence the way a child perceives a crime and how it is remembered. I hypothesize the accuracy of a child's testimony could be compromised by the lack of maturity.

PROPOSED METHOD

Participants

The groups of children will be randomly selected from local public schools, with the consent of their parents. Two different age groups of children will be used, group one will be children ages 7 to 11, group two will be children ages 12 to 16. The control group will be adults from ages 18 to 55. The older adults will not be used due to previous studies suggesting that their memory is less accurate. Each group will be comprised of 30 individuals, with equal numbers of males and females in each.

Materials

A survey will be issued to all of the participants before the experiment begins. The survey will gather basic information about how the participants retain information, history of trauma, and emotional sensitivity. Actors will be used to play the part of Cinderella and her entourage. Horses and a pumpkin carriage will be rented. A video camera will be used for recording purposes.

Procedure

Before the tests begin the participants will fill out a survey (Appendix A). Participants will participate in two different tests to assess their memory. The participants will be seated in a classroom setting, and their attention will be directed outside, the participants will witness an entourage of characters. Cinderella will arrive in a horse-drawn pumpkin carriage, along with a group of guards. All of the participants will be able to have a limited interaction with Cinderella for a period of 25 minutes. After Cinderella departs, the participants will be asked to give an oral statement, write a brief statement about what occurred, including the sequence of events, all the characters present, physical characteristics of Cinderella, her entourage, details of locomotion, and any other pertinent information. A week later, the participants will be issued a multiple-choice test with questions about the Cinderella appearance, see Appendix B. The participants will also be asked to verbally discuss what happened that day, as well as write a description of the events that occurred. The written statements will be compared to the written statements taken right after Cinderella's appearance. The event will be video-taped so that there will be an accurate depiction of what occurred during Cinderella's appearance.

The second test will ask participants to view a short video of individual breaking into a car and taking the car's stereo. The participants will be asked to give an oral statement and write a brief statement about what they saw. The participants will be asked to complete a multiple-choice test as accurately as possible that lists specific

information about the crime, see Appendix C. Again the participants will be asked a week later to complete a written and oral statement, and the same multiple-choice test.

Each test will be conducted on a Saturday, and there will be a week between each test. Each test will be conducted over a course of two weeks. The first Saturday the participants will be exposed to memorable event or the video. The following Saturday the participants will be asked to complete the necessary paper work. The entire experiment will take five weeks to complete.

CONCLUDING REMARKS

Significance

It is anticipated that this study will contribute to the areas of psychology and law. First this study will attempt to further investigate the accuracy of eyewitness's of children. Little research has been conducted on the accuracy of the eyewitness testimonies of children. Rather it has focused on adults and elderly. It has been suggested the children have more of an impact on a trial, by evoking guilt or sympathy from the jury, or convincing the juries vote in their favor (Nikonova & Ogloff, 2005).

This study focuses on children of two different age groups which will help assess the accuracy of children in general, or of a specific age group. The younger age group, children 7 to 11 may remember the events differently than the older group of children and the adults. The methods will use a written and oral statement, as well as a multiple-choice test to assess the accuracy of the memory of children. It may be inferred that one measure used to assess the accuracy of children might be more effective than another.

Lastly, the experiments will look at the relationship between the way an event is remembered and if it changes over a period of time. The participants will be asked to record what they remembered directly following the event and a week after the event occurred. When a person testifies in court as an eyewitness, there is typically a considerable amount of time, (usually several months) that passes between the crime committed and when the person testifies in court.

Limitations

There are several limitations in this study. The first limitation, the tests utilized to assess the memory of the participants might not accommodate the needs of the younger group of children. If the children in the younger group do not understand the question, it could lead to inaccurate answers, which could skew the results. Yet, in order for the test to be fair, each participant had to use the same test material.

Ethical constraints prevent the participants from being an eyewitness to a mock crime. The use of children limits what the participants can be exposed too. The first test, uses Cinderella as the main attraction, this might only appeal to the younger children as a memorable event. The older children might not be interested in the event, and more inclined to not remember. It was difficult to find an event that would provoke a reaction from the participants, but still be ethical.

Another consideration is the time frame of the experiment. When one testifies as an eyewitness, they are making a statement based off of a crime that occurred several months ago. When a considerable amount of time has passed between the crime and the trial, it is likely that this lapse in time can affect their memory (Greenhoot & Bunnell, 2009). This study only allows a week between the time when the participants were exposed to the crime and when they make an additional statement. Thus, the short time frame does not accurately portray the amount of time that passes between the crime and the trial.

Additionally, this study does not investigate the relationship between the stress of questioning, which will take place at the trial, and the stress of testifying in general. Greenhoot and Bunnell (2009) touched upon the process of recalling information and how emotions can have an effect on what is recalled. The participants are asked to recall information by filling out a multiple-choice test, and giving an oral and written statement. This study does not utilize a mock trial to mimic the pressures that are placed on eyewitnesses that testify in court. It would be beneficial for further research to consider several aspects that influence how a person remembers and reproduces an event.

APPENDIX A

Please answer the questions as honestly as possible. All answers will be kept confidential and will not be shared with anyone outside of the experiment. If you need help with reading, someone will assist you.

1. When viewing an act of violence (a physical fight or domestic dispute) how does it make you feel?
 - a. Couldn't care less, does not have an effect on me.
 - b. Sympathetic towards the victim.
 - c. Slight concern for the person being attacked
 - d. Angry
2. Have you ever committed a crime or been in trouble with your parents?
3. Do you have respect for authority figures such as police officers, parents?
4. Do you recall an event in your life, which left you feeling sad or happy? How accurately can you recall this event?

Appendix B

An instructor will read the questions, and answer choices aloud. Each answer choice will have a picture matching the description. The picture will be labeled with the corresponding answer choice.

1. What best describes Cinderella?
 - A. White dress, blonde hair
 - B. Blue dress, brown hair
 - C. Blue dress, blonde hair
 - D. White dress, brown hair

2. How many horses pulled the carriage?
 - A. 2 white horses
 - B. 4 brown horses
 - C. 4 white horses
 - D. 2 grey horse

3. How many guards accompanied Cinderella?
 - A. 3
 - B. 4
 - C. 6
 - D. 8

4. What did Cinderella do as soon as she got out of her carriage?
 - A. Waved to the crowd, from her carriage.
 - B. Walked right to the crowd and greeted everyone.
 - C. Talked to her guards, and pet her horse.
 - D. Got back into her carriage.

5. What best describes Cinderella's carriage?
 - A. White, boxy, with four windows
 - B. Orange, and pumpkin like
 - C. Light blue, and looked like a shoe
 - D. Light pink and spherical

Appendix C

An instructor will read the questions, and answer choices aloud. Each answer choice will have a picture matching the description. The picture will be labeled with the corresponding answer choice.

1. What best describes the criminal?
 - a. Male, late 40's, Caucasian, dark brown hair
 - b. Female, late teens, Hispanic, black hair
 - c. Male, early 20's, African American, black hair
 - d. Male, early 30's, Hispanic, black hair

2. What was the criminal wearing?
 - a. Blue jeans, Red hoodie, baseball cap
 - b. Sweat pants, denim jacket,
 - c. Dress pants, light blue button up shirt
 - d. Blue jeans, green zip up hoodie, beanie cap

3. What kind of car did the criminal break into?
 - a. 2004 Lincoln Navigator, Black
 - b. 1998 Toyota Camry, Green
 - c. 2001 Nissan Maxima, Tan
 - d. 2009 Ford Focus, White

4. How did the criminal gain access to the interior of the car?
 - a. Pried the trunk open and crawled through the car.
 - b. Opened the passenger side door, it was open.
 - c. Broke the front driver's side window.
 - d. Jumped on top of the car and broke the sun roof.

5. What did the criminal take?
 - a. A pocket book

- b. A stereo
 - c. Nothing
 - d. A wallet
6. About what time did this crime occur?
 - a. First thing in the morning.
 - b. In the middle of the night.
 - c. Late in the afternoon
 - d. Couldn't tell by the video.

 7. What was the first thing the criminal did when he/she approached the car?
 - a. Checked to see if the car was locked.
 - b. Walked around the car and checked to see if anyone was watching.
 - c. Approached the car, left the scene and came back later
 - d. Immediately tried to break into the car.

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