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Fabricated Forensics: Examining an Undergraduate Population's Ability to Detect Fallacies in Crime-Based Media

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My research examines the effects of general education on students' perspectives of the CSI effect. The CSI effect is a phenomenon in which people's perceptions of criminal investigation are distorted from the truth because of the media's portrayal of criminal investigation. The study sample includes undergraduate students enrolled in a Mid-Atlantic University. To quantify the degrees in which subjects are susceptible to the CSI effect, the subjects will be measured on their ability to identify basic forensic investigation flaws portrayed in three different television series. Subjects were given a worksheet, exposed to a fifteen-minute video compilation, and were told to keep a tally of various scientific inaccuracies portrayed in the video. The subjects were tested on identifying a lack of personal protective equipment, unrealistic technology, evidence contamination, unsafe procedures excluding protective equipment, unethical corpse handling, lack of evidence documentation, unrealistically quick analysis, and false scientific information being given as true. Subjects were scored on the accuracy of their worksheet tallies completed during the experiment. The purpose of this research is to determine if there is a significant difference in general forensic knowledge between the undergraduate population, in terms of crime show viewership habits and student year. This could indicate that individuals in upper-class years of a higher education degree program are more proficient at detecting procedural fallacies enforced by the CSI Effect. While other research explores how forensic media impacts public influence on the job duties of forensic scientists, there is minimal research exploring how student education is influenced by the CSI Effect. By conducting this experiment, we can examine if slight differences in education impact knowledge of forensic procedures. This experiment provides future research implications for creating similar experiments, with a focus on specialized education and perceptions within the CSI Effect.

Dedication

This thesis is dedicated to my Father, who compassionately taught me the importance of education and instilled in me an enthusiasm for learning. This one's for you, Dad.

Introduction

The CSI Effect is a social phenomenon describing how people perceive television shows about forensic science. The general hypothesis of the CSI Effect is that people who watch television shows about criminal investigation and forensic science will believe that what they see in the shows are accurate depictions of real-world investigations (Schweitzer and Saks, 2007). When discussing forensic science shows or crime media, scholars often refer to shows such as *CSI, NCIS, Bones, Law & Order, Law & Order SVU,* and *Criminal Minds.* These shows portray a violent crime being committed and depict investigators working on the case. Typically, cases are solved within one 30- or 60-minute episode. Within the CSI Effect, there are two subcategories of the effect: a pro-defense effect, and a pro-prosecution effect. A pro-defense effect is when the defense benefits from aspects of the CSI Effect, such as in the belief that there is a need for DNA evidence in a case. A pro-prosecution effect is when the prosecution benefits, such as in the belief that forensic evidence is irrefutable (Schweitzer and Saks, 2007).

A general theory less specific than the CSI Effect is called “cultivation theory”. Cultivation theory is the principle that increased viewership of a television show will alter an individual’s perception of the social phenomenon portrayed in the television show. The individual could then believe that the television depiction of the phenomenon is accurate to the real world (Maeder and Corbett, 2015). For example, cultivation theory would argue that if an individual watches the news daily and sees reports on violent homicides in their area, then the individual is more likely to believe violent crime is on the rise, as opposed to someone who does not watch the news daily.

This research seeks to determine if crime show viewing habits, as well as education, have an impact on the ability of people to recognize flaws in crime media. If people watch crime

media, cultivation theory would argue that these people would not be able to recognize flaws as accurately as people that do not watch crime shows. I exposed students to a compilation of crime media clips to determine if they could accurately identify procedures in crime shows that are not realistic. Another characteristic that my research examines is the impact of general education on the CSI Effect. While numerous studies look at how the general population is susceptible to the CSI Effect, I wanted to determine if having more college credits would impact a person's ability to understand fallacies in crime media.

Literature Review

This literature review contains scholarly, peer-reviewed sources that serve to provide an analysis of aspects of the CSI Effect. The literature is classified into four categories: theory focused studies, studies using college students, pro-CSI-Effect conclusive studies, and anti-CSI-Effect conclusive studies. The CSI-Effect is a recently discovered phenomenon and does not have a clear, causal relationship. Reviewing studies with and without evidence of the CSI Effect is important for understanding the ongoing debates scholars have regarding the CSI Effect.

Cultivation Theory and Perceived Realism

In Hayes-Smith and Levett's (2011) research, they exposed potential jurors to a real case transcript, and provided different levels of forensic evidence (none, light, or heavy), to different subject groups (2011:34). The researchers discovered that individuals watching more crime scene investigation shows, as well as general television, viewed officer and police sergeant testimonies as less significant in the presence of abundant forensic evidence. These testimonies were only important in cases with no forensic evidence present (2011:38). Daily crime show viewers were more confident in their decision to convict the defendant than weekly crime show viewers when exposed to fingerprint evidence (2011:39). Maeder and Corbett (2015) preface

their work by stating that lawyers, judges, and police officers believe their jobs are misrepresented by crime show media, which will cause jurors to solely focus on forensic aspects of the case while diminishing the value of other types of evidence (2015:86-88). There was statistical significance in the relationship between the perception of crime media as true and the weight of DNA evidence in the trial (2015:100). Individuals watching more crime media found the eyewitness testimony less influential, and individuals who rated the DNA evidence as favorable rated the eyewitness testimony as less important. Individuals signifying that the DNA evidence was favorable had less positive views about the defendant (2015:101). The frequency of crime show viewing was found insignificant in regards to subject attitudes of DNA and eyewitness evidence (2015:97). While Hayes-Smith and Levett (2011) prove that police testimonies are not seen as substantial evidence when presented with forensic evidence, Maeder and Corbett (2015) discuss the weight of DNA evidence overshadowing other aspects of a criminal case. Since DNA evidence is seen as a much stronger type of evidence, it makes it more difficult for defense attorneys to refute DNA evidence, which will cause juries to favor the prosecution.

Brewer and Ley (2010) test Cultivation Theory by giving subjects the same sets of questions, but in two different orders. Group A received DNA questions first and then answered questions regarding crime show viewing habits, while group B received questions in reverse order (2010:105). Rhineberger-Dunn, Briggs, and Rader (2016) analyze four criminal investigation shows to determine how frequently television shows use DNA evidence in episodes, which types of characters discuss DNA in the episodes, and the clearance rate of cases containing DNA evidence (2016:539-540). Brewer and Ley (2010) found that subjects discussing their crime show viewership first were significantly more likely to convict a person in

the presence of DNA evidence, and were significantly more likely to acquit with a lack of DNA evidence. Additionally, the researchers discovered that individuals who heavily watch crime show media had self-reported significantly less understanding of what DNA actually is, yet found DNA evidence to hold substantial weight in a trial (2010:107). Rhineberger-Dunn et al. (2016) concluded that of the forensic style crime shows they analyzed, three-quarters of the episodes mentioned DNA evidence (2016:540-541). The researchers analyzed three different types of crime shows: FBI dramas, police dramas, and forensic dramas. Of the studied episodes, in *Criminal Minds* and *SVU* – an FBI and police drama, respectively – the clearance rate of cases with DNA evidence being presented is 100 percent and 91.7 percent, respectively (2016:544). In the two FBI crime dramas studied, only recurring main characters mentioned DNA and DNA evidence (2016:542). While Rhineberger-Dunn et al. (2016) mention that not every episode of crime shows mention DNA, and that not every mention of DNA relates to evidence, the way in which DNA is presented through characters in crime show media distorts how DNA is used in the real world (2016:544-545).

University Students as Subjects

By limiting research subjects to college students, a focus on the impact of the CSI Effect on education, or vice-versa, can be studied. Collica-Cox and Furst (2019) research the impacts of crime show viewership on college students' choice of major. Oppositely, Weaver, Salamanson, Koch, and Porter (2012) analyzed how forensic science college students perceive crime based media. Collica-Cox and Furst (2019) indicate that other scholars believe crime media influences students to seek a career in criminal justice, yet they found that only 23 percent of criminal justice majors agree or strongly agree that they were influenced by crime scene media. The two most reported reasons for seeking a degree in criminal justice were because of interest in the

subject matter and the relevance of criminal justice to the real world (2019:2079). The research concluded that sixty-five percent of criminal justice majors in this study believed *Criminal Minds* and *Law and Order: SVU* are at least somewhat realistic, and that 83 percent of students believed their fellow criminal justice peers were influenced by crime-related shows (2019:2090). Weaver et al. (2012) had forensic undergraduate students describe scientific, ethical, and legal issues they remember from episodes of crime-related media they watched, as well as rate how these issues were handled in the episode. For each of the twelve issues the researchers asked subjects about, the highest recall rate of an issue was 80 percent among all subjects, and the lowest was 65 percent recall among all students (2012:385). The most commonly used rating to describe handling issues was "poor", and the most commonly listed source for information among subjects was their college-level science education (2012:385-386).

While the prior two pieces of literature develop connections between education and the CSI Effect, Vicary and Zaikman (2017) research the effects of criminal investigation media viewing habits and forensic knowledge. The researchers asked subjects to describe their crime show viewing habits and explain how they would burglarize the home of an acquaintance in a manner that would minimize their chances of being caught (2017:55). There was no relationship between the amount of crime media watched and the number of times an individual mentioned forensic topics such as fingerprints, hairs, or DNA. There was also no relationship in the amount of general television watched and the number of forensic mentions (2017:57). However, a participant's involvement while watching a crime episode, such as actively trying to guess the plot and discussing episodes with friends, showed that subjects more involved in crime shows did mention forensics more frequently (2017:58)

Studies Showing a CSI Effect Relationship

When discussing the impacts of the CSI Effect, scholars often mention a defense or prosecution bias being created by the forensic aspects of the case. Baskin and Somers (2012), as well as Hayes-Smith and Levett (2013), conducted quantitative research and found evidence of pro-defense biases. Even after controlling many demographic characteristics in Baskin and Sommers's (2012) research, they still found that the more crime show media a subject watched, the more reliable they found DNA and fingerprint evidence (2012:106). Additionally, people who watched more than three hours of crime shows per week were significantly less likely to convict a person without having scientific evidence presented in court, as opposed to someone who watches fewer than three hours of crime media per week (2012:106). Hayes-Smith and Levett (2013) discovered, through their research, that individuals watching crime dramas daily were significantly less likely to indicate that watching crime dramas had an adverse effect on evidence expectations (2013:227). Participants that had heard of the CSI Effect were significantly more likely to be frequent viewers of crime dramas (2013:226). When people defined what they believed the CSI Effect was, they indicated it was a need for forensic evidence for a conviction (2013:225).

While the prior pieces of literature in this section conclude that a pro-defense bias exists within the CSI effect, Schweitzer and Saks (2007) put this bias to the test in their experiment. Subjects were given a transcript of a fabricated criminal trial with only a microscopic hair analysis as the forensic evidence. The researchers argued that the case did not have enough substantial evidence to make the defendant guilty beyond a reasonable doubt (2007:357). Only 18 percent of frequent crime media viewers found the defendant guilty as opposed to 29 percent of nonviewers (2007:362). Individuals that watched crime media daily were the only group of

people that explained skepticism towards the hair analysis testimony on the questionnaire. Even though the frequent crime show viewers were unsure of the testimony, they self-reported that they had a strong understanding of the job responsibilities of people working in forensic science (2007:363). The findings in Schweitzer and Saks' (2007) research connect to Baskin's (2012) and Hayes-Smith's (2013) pro-defense bias conclusions. The frequent crime show viewers in Schweitzer and Saks (2007) study had lower conviction rates, which means that there is a heightened expectation for more forensic evidence, as well as a critical attitude towards the forensic evidence.

Studies Not Showing a CSI Effect Relationship

Some research argues that there are other factors that account for differences in conviction rate or perception of forensic science beyond media viewing habits. Podlas (2005), and Kim, Barak, and Shelton (2009) conducted experiments on potential jurors to determine conviction rate factors in various trial cases. Podlas (2005) used a fabricated alleged rape case in which forensic evidence could not determine that non-consensual sex occurred, which the researcher argues makes the verdict not guilty (2005:455). Of the 291 fully completed worksheets, 250 people delivered a not guilty verdict. Of the 250 not guilty verdicts, 187 people identified as frequent viewers of *CSI,* and 148 of the frequent *CSI* viewers also frequently watched law dramas (2005:457). Only fifteen of the 187 frequent viewers marked forensic reasons in their not guilty verdict, and ten of the non-frequent viewers did the same thing (2005:459-460). There were a total of eight possible reasons that were provided on the survey for subjects to choose from, and four of the reasons related to forensic evidence (2005:460).

Kim et al. (2009) also examine a potential juror's choice to provide a conviction with only circumstantial evidence or eyewitness testimony in murder cases, physical assault cases,

and other criminal cases. The research found that white jurors, low education jurors, and jurors from high-density crime areas were more likely to convict in a case with only circumstantial evidence. Older individuals and males were more likely to convict people than younger individuals and females, in cases where only an eyewitness testimony was presented. Older individuals and males that watch crime shows were still more likely to convict in the same manner (2009:456). The research concluded that in cases where only circumstantial evidence was presented, individuals' race, education, and neighborhood were significant demographics in convicting cases. In scenarios with eyewitness testimonies, age and gender were statistically significant demographics. Researchers noted that the CSI effect only had an indirect effect on circumstantial evidence cases, which contributed to their lower conviction rates due to an increased expectation of more evidence (2009:458). Podlas (2005) and Kim et al. (2009) attempt to disprove the CSI Effect and steer future research towards focusing on other personal demographics besides crime show viewership.

While the literature mostly agrees that there are demographics that contribute to individuals' perceptions of crime media, scholars are unsure as to exactly what causes people to be more or less susceptible to the media portrayals of criminal investigation. Research in this literature review regarding cultivation theory discovered that DNA evidence depicted in forensic media has made people feel that it is irrefutable. Studies on University students found that students can recall issues in forensic media, but the susceptibility of the CSI Effect on students is unclear. Lastly, some current research finds pro-defense biases of subjects when asking about forensic evidence in trials, while some studies could not find a causal link between the weight of forensic evidence and crime media viewing habits.

Methods

Design

My research uses a field experiment design to gather data on students' abilities to detect improper scientific, legal, and forensic procedures in a variety of crime-based media video clips. The television shows used in this research, *NCIS, Bones,* and *The Wire,* were used because they were conveniently available through Amazon and Netflix subscriptions. Some improper procedures I decided to measure were originally incorporated in Weaver et al.'s (2012) study. Since students in their study could remember specific incidents of forensic malpractice, I incorporated some of their measured ethical issues in my experiment. Other improper procedures described in my study were measured because of their relevance to plot advancement of crime media episodes. Since crimes have to be solved in a 30- or 60-minute block, shows cut corners by using fake technology and fabricating scientific facts that conveniently speed up the investigation process (Rhineberger-Dunn et al, 2016).

The procedural issues measured in my study are as follows: not wearing proper safety equipment such as gloves and masks; technology being used is too advanced; contamination of evidence or potential evidence; unethical corpse treatment; failure to photograph or document newly discovered evidence; unrealistically quick analysis provided without using technology; false scientific information being portrayed as true; and unsafe crime scene, lab, or investigation practices (not including lack of safety equipment). Showing a variety of smaller video clips as opposed to one, 30-minute television show allows me to condense more scientific fallacies into a shorter time frame.

Study Setting and Sample

The study took place at a small, Mid-Atlantic University during the 2019 Fall semester. The study was open to the entire undergraduate population. This experiment was approved for Institutional Review Board exemption status. Recruitment was initially conducted by flyer and snowball sampling. To increase recruitment, a social media post about my experiment was written, I visited a class to discuss my research, and my research was approved to provide psychology students with credits for completing my experiment. All participants were given a consent letter, were informed about voluntary participation in this experiment, confidentiality, and that some of the video clips will be graphic. Additionally, subjects were informed that no unique identifying information would be included in my final research products (See Appendix Item 1 for the consent letter).

Subjects were given a pre-survey asking about degree major, gender, crime show viewing habits, and family members working in forensics (See Appendix Item 2 for the pre-survey). Lastly, subjects watched a 13-minute compilation of specific crime show clips and were asked to fill out a worksheet, where they recorded tally marks for whenever they felt they saw an improper procedure. The procedures were broken down into the categories stated above, and a notes section was provided for subjects to write down what they saw if they wanted to describe the incidents (See Appendix Item 3 for the worksheet). While the clips chosen were used because they reflect the improper procedures listed above, they were tested numerous times by myself. I watched the 13-minute video, filled out the worksheet, and had a colleague mix the order of the video clips in order to prevent memorization. Of the five times I filled out the worksheet, there were only two discrepancies among all of my worksheet answers.

Thirty-two undergraduate students completed the experiment. The three to one, female to male ratio of this experiment accurately reflects the University ratio. Slightly more first-year students and seniors enrolled in my experiment (N = 10 and 11 respectively), than sophomore and juniors (N = 7 and 4 respectively). The study contained heavy enrollment of psychology majors (N = 23) because of the added incentive of psychology students receiving credits for participation.

The students were scored by how many tally marks they had correctly placed for each type of improper procedure. A total of 22 fallacies were presented in the video clips. If a subject had too few or too many tallies in a category, they lost one point for each tally they were off by within that category. If a subject had the correct number of tallies within a category, they lost no points in that category. For example, if an improper procedure was depicted three times in the video clip, and the subject made four tallies in that row, they received two points (they were off of the correct score by one tally). If the subject made one tally in that row, they received one point because they made one correct tally out of four. If the subject made four tallies in the row, they received the four points.

Data Collection and Analysis

Most of the pre-survey data and all of the worksheet data were inputted into IBM SPSS Statistics Data Editor. I used the compare means function to generate a variety of mean and standard deviation values for different demographics within my study sample, with relation to how these demographic groups scored on the worksheet. Additionally, independent sample T-tests were conducted to test a variety of null hypotheses. Levene's Test for Equality of Variances was also done, and equal variance was assumed in all statistical tests. Each null hypothesis indicates that a specific demographic will not impact the ability to detect improper forensic

procedures. The statistical significance value used for this experiment was $p < 0.05$. Characteristics such as crime show viewing habits, gender, undergraduate year, and number of notes written on the worksheet were analyzed to see if statistical significance was found within the scoring of these groups. Additional statistics such as average points lost and overreporting of procedural issues were analyzed using Microsoft Excel.

Results

Participant Crime Show Viewing Behaviors

Fifty-six percent of the participants indicated on the pre-survey that they watch a crime show at least monthly, and the most commonly watched shows among participants are *Law and Order: SVU* and *Criminal Minds*. The other 44 percent of participants do not watch crime-based media at all, or watch it less frequently than once a month. Additionally, participants were asked whether, prior to this year, they watched crime media at least once a week. Twelve students noted that they did watch crime media once a week last year, and 11 of those students reported that they currently watch crime media at least monthly.

Scoring Based on Viewership

Among all of the participants, the average score was 49 percent. When comparing students that watch media at least once a month with students that never watch crime media, the mean scores were 50 percent and 48 percent respectively, with standard deviations of 12 and 10 percent respectively. The p-value was much greater than 0.05 when conducting a T-Test. When comparing the scores for participants that watched crime media at least weekly last year with subjects that did not, the mean scores were 51 percent and 48 percent respectively with similar standard deviations to the previous comparison. The p-value was much greater than 0.05 in this comparison (See Table 1).

Table 1 – Scores between subjects that do and do not watch crime media

	Dichotomy_Viewership	N	Mean	Std. Deviation	Std. Error Mean
Score	No	14	.480519	.1165218	.0311418
	Yes	18	.500000	.1045860	.0246511

Table 1 – Independent Samples T Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Score	Equal variances assumed	.136	.715	-.497	30	.623	-.0194804	.0391689	-.0994739	.0605132
	Equal variances not assumed			-.490	26.453	.628	-.0194804	.0397176	-.1010531	.0620923

Scoring Based on Participant Demographics

When comparing student scoring based on gender, the mean score was 49 percent for females and 48 percent for males, with standard deviations of 11 and 8 percent. An individual identifying as non-binary was included in the statistical analysis of this comparison; however, a standard deviation could not be created for their score. The p-value was greater than 0.05 (See Table 2).

Table 2 – Gender and scoring

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Score	Female	23	.488142	.1123625	.0234292
	Male	8	.477273	.0841655	.0297570

Table 2 – Gender and Scoring

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Score	Equal variances assumed	1.911	.177	.249	29	.805	.0108695	.0436089	-.0783207	.1000597
	Equal variances not assumed			.287	16.368	.778	.0108695	.0378735	-.0692726	.0910115

When analyzing scoring based on class year, first-year students and sophomores scored 51 percent, juniors scored 41 percent, and seniors scored 49 percent. All standard deviations were between 6 and 15 percent. When conducting a T-test for comparing first-year students and sophomores to juniors and seniors, the p-value was greater than 0.05 (See Table 3).

Table 3 – Upper versus lower class students and scoring

	Upper_and_lower_class people	N	Mean	Std. Deviation	Std. Error Mean
Score	First-Year_Sophomore	17	.513369	.0905742	.0219675
	Junior_Senior	15	.466667	.1244427	.0321310

Table 3 – Upper versus lower class students and scoring

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Score	Equal variances assumed	2.233	.146	1.224	30	.230	.0467023	.0381569	-.0312245	.1246291
	Equal variances not assumed			1.200	25.308	.241	.0467023	.0389226	-.0334108	.1268154

Scoring Based on Worksheet Note Taking

Participants had the choice to write notes about what they watched in the video clips. Scores were compared among students that decided to write notes versus students that did not write notes. Of the 19 participants that wrote notes, 10 watch crime shows at least monthly, and 9 never watch crime media. Subjects that wrote notes averaged a score of 50 percent, while subjects that wrote no notes scored 49 percent, with each average having a standard deviation of 11 percent. The p-value was much higher than 0.05 for this comparison (See Table 4)

Table 4 – Comparing note taking to scoring

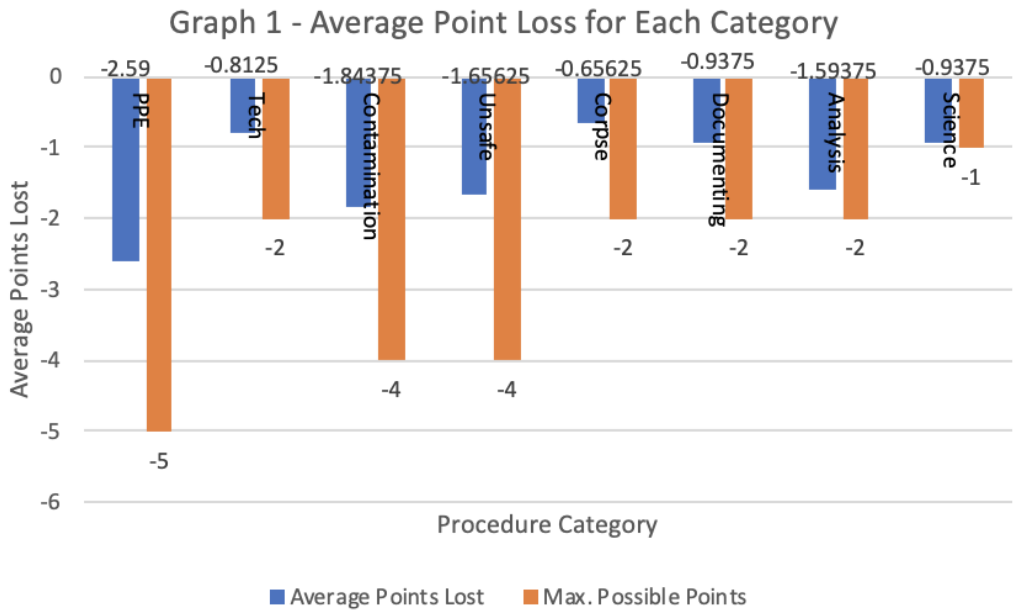
	Dichotomous_Notes	N	Mean	Std. Deviation	Std. Error Mean
Score	No Notes Taken	13	.486014	.1072197	.0297374
	Notes Taken	19	.495215	.1122589	.0257540

Table 4 – Comparing note taking to scoring

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Score	Equal variances assumed	.000	.990	-.232	30	.818	-.0092013	.0396906	-.0902602	.0718577
	Equal variances not assumed			-.234	26.728	.817	-.0092013	.0393393	-.0899573	.0715548

Worksheet Category Point Loss

In addition to measuring averages scores, scores in separate categories were measured to find the average point loss in each procedure category. Some categories were measured more than others in this study, therefore some categories should have a higher average point loss than others. The three most tested categories had the highest average point loss among subjects. Not wearing safety equipment was measured 5 times during the experiment, and had an average point loss of 2.59 points. Contamination of evidence was measured four times and had an average point loss of 1.84 points. Unsafe crime scene procedures, excluding wearing safety gear, was measured four times and had an average point loss of 1.65 points. Two categories had very high average point loss in terms of how much they were measured. Unrealistic quick analysis without technology was measured two times and had an average point loss of 1.59 points. Lastly, false scientific information being portrayed as truthful was measured only one time and had an average point loss of 0.94 points (See Graph 1).

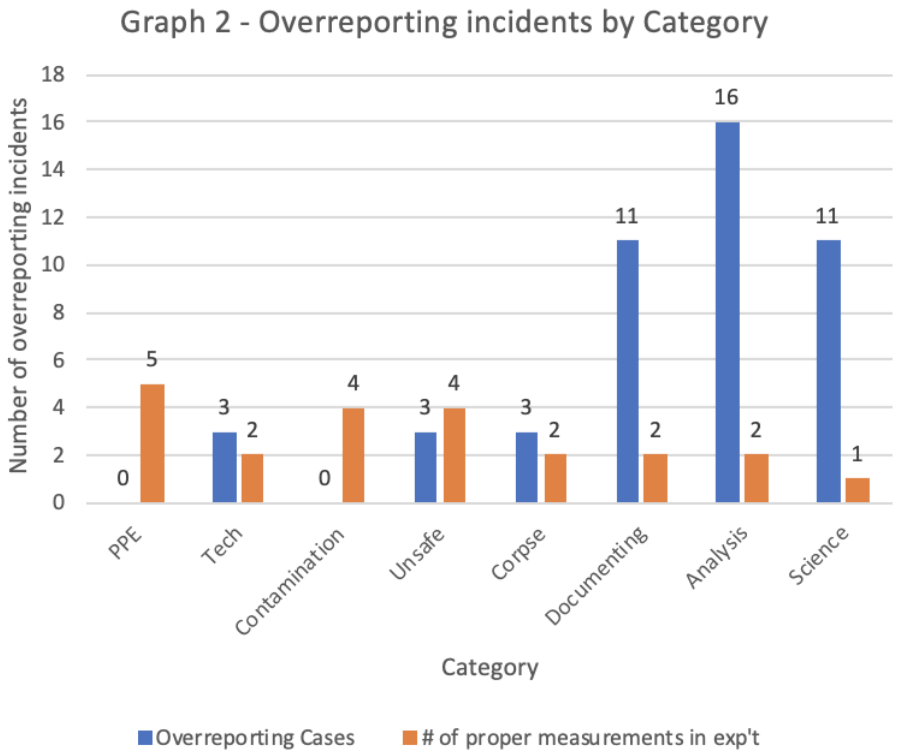


Graph 1: Categories from left to right: Lack of personal safety equipment; technology is too advanced; contamination of evidence; unsafe investigation procedures; corpse maltreatment; failure to document evidence; unrealistic analysis without using technology; and false scientific information being portrayed as truthful.

Over and Underreporting of improper procedures

Whenever participants lost points on a category, it was because they either over or underreported the number of times a procedure was portrayed in the video clips. The three categories that were tested the most (lack of personal protective equipment, evidence contamination, and unsafe procedures not involving safety equipment) in the experiment saw the most underreporting. Three of the categories that were only tested once or twice in the experiment had the most overreporting. One category – unrealistic analysis without the use of technology – was overreported by half of the participants. Two other categories – failure to document evidence and false scientific information portrayed as truthful – were overreported by

one-third of participants. The three most tested categories only had three combined instances of overreporting (See Graph 2).



Graph 2: Order of categories from left to right is the same as in Graph 1.

Discussion

The lack of statistical significance in the multiple statistical tests that were conducted to find a connection between crime show viewership habits and the ability to recognize fallacies indicates there is no causation between the variables. Additionally, since there was no statistical significance in any of the other independent variables in the experiment, such as gender, student year, last year's crime show viewing habits, and notes written on the worksheet, there is no causation between these variables and procedure fallacy recognition. While the scores for subjects that did watch crime shows were slightly better than the subjects that did not watch crime shows, the values easily fall within one standard deviation of each other. The lack of

causation between student year and scoring concludes that an increase in general education does not impact a person's ability to detect fallacies. While students who took notes made it clear that they knew the fallacies they were seeing through their written descriptions, the scoring in Table 4 indicates the students who wrote notes are just as aware of forensic fallacies as students who did not write notes.

My research found no correlation between independent variables and my dependent variable. While other research finds relationships between crime show viewership and expectations of evidence, there has been no research regarding personal beliefs towards forensic television procedures and crime show viewership habits. Subjects in my experiment were close in age and had partial higher education, which are two variables that should be spread out further in order to better understand how certain groups of people perceive forensic procedures in media. If I had had high school students, college students, adults, and senior citizens participate in my experiment, and all subjects watched crime shows, there may have been significant scoring differences between the groups. Additionally, if people with high school education, college education, and post-graduate education participated in my experiment, significant scoring differences may have existed. The study by Kim et al. (2009) justifies that demographic variables such as age, gender, and education may be related to certain topics within the CSI Effect, such as evidence expectations and conviction rates. Having more generalized subject groups would make it easier to reach broader conclusions. Other variables such as gender and subject's note-taking were not expected to provide statistical significance. While other studies use gender as a variable for understanding conviction rates in different scenarios, it was explored in this study solely to determine if statistical significance was present. Since there is no statistical significance in this study, and it was not expected to provide significance, it should not be studied further. Note-

taking may not have been statistically significant because it was not intended to originally be a quantitative measurement. Notes were going to be used to provide comparisons of subject responses. Since many of the subjects wrote the same notes, the section was turned into a quantitative measurement. If the notes section became mandatory and was used to provide descriptions of each scene, it may provide more fruitful data. Lastly, data may not have been statistically significant because there are no causal relationships between any of the independent variables and the dependent variable. While there are methods to provide stronger subject groups and improve data gathering, other demographics may be responsible for understanding why people have better or worse understandings of forensic procedures.

Categorical point loss values provide insight into what types of fallacies individuals are better at identifying. Subjects clearly understood corpse maltreatment and unrealistic technology being used in the video clips because those categories had the lowest average point loss. Corpse maltreatment may have been easier to identify because the scenes where corpse maltreatment is possible is limited to the scenes where corpses are actually in the scene. Unrealistic technology was also limited to scenes where technology was used, so it may have been easier to identify. While the highest point value losses were in the categories with the most testing, two categories had very close values between average points lost and maximum possible points. False scientific information had the highest point loss in comparison to total possible points in that category. This section was used to test a subject's ability to determine which scientific statements are correct, and nobody in this experiment had an extensive scientific background to understand which statements are accurate and which are false. Unrealistic analysis without technology had very high average point loss, which could have been caused by a lack of understanding how forensic scientists can quickly know some information, and how other details require more than a

few minutes to analyze. Some instances of analysis in the clips were realistic, while others were fabricated in order to advance the plot. Since scientific information was included in the dialogue of the videos, it may have been more difficult for subjects without a scientific background to identify. Additionally, unrealistic analysis without technology was also mainly described in dialogue., which may have made it more difficult to understand whether or not the analysis was realistic, as opposed to having something visual to analyze.

Beyond the context of procedures, there may be other explanations as to why overreporting is seen in this experiment. First, subjects could have had a heightened expectation towards seeing more improper procedures because of the purpose of the study, or have been more alert about procedural issues because of the purpose of the study. Subjects may have thought that every time someone provided scientific information, it had to be false because I am measuring scientific information, or that all technology is unrealistic and has to be fake. Since the categories with fewer cases of improper procedures had higher overreporting, subjects may have wanted to report more incidents to balance the number of improper procedures in each category. Subjects were informed that not all categories would be measured equally, and thus they should only make tally marks on the worksheet when they believe an improper procedure actually occurred. Underreporting can be explained in the categories that were measured more frequently in my experiment by the CSI Effect. If subjects do not have experience working in criminal investigation, they may not be aware of every time it is appropriate to wear personal protective equipment or how investigators avoid evidence contamination.

Conclusion

While this research experiment did not find statistically significant relationships between scoring of improper procedures and crime show viewership, student year, gender identity, or

note-taking, the results of the research provide information regarding jury and trial aspects of the CSI Effect and future research implications. While a 49 percent average score seems unsatisfactory, it is important that subjects were able to correctly identify some flaws in forensic procedures and understand the unrealistic behaviors sometimes seen in crime media. Therefore, this research would argue that if the CSI Effect exists, it has a pro-prosecution bias. Since subjects understand some forensic technology is not realistic and would not be present in a trial, there would be a lower standard for the actual forensic evidence being provided. Since participants overreported issues of scientific information and unrealistic analysis without technology, they may be more hesitant to believe certain types of analyses are actually possible. Because of this, jurors are more likely to convict individuals in trials where forensic analysis occurs and there is a lot of scientific information.

My findings do not connect with ideas in cultivation theory. The purpose of scoring in my experiment was to determine how well subjects understand forensic procedures. Since Cultivation theory argues that people who watch more media will believe that media portrayals of events are legitimate, and I did not see that relationship in my scoring, then my data does not support Cultivation theory. Since Cultivation theory is broad and is applicable to many forms of media, it simply may not be applicable to crime and forensic media. Additionally, research in Cultivation theory may require larger, more diverse sampling groups to show societal trends.

While I could not obtain a sample of forensic science students to participate in my experiment, further research should look at comparing scores between forensic science students and undergraduate students to determine if specific education, instead of general education, has an impact on procedure recognition. An experiment that has even measurements of all improper procedure categories should be conducted to determine if overreporting is still an issue in

specific categories. Larger sample sizes should be obtained in order to provide abundant and stronger statistical data that can better reflect the study population. My research dissects data from a focused, smaller population. Broader sample groups should be used in the experiment to determine if diverse samples will provide statistical significance and show general trends.

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Appendix

Measurement Tools used in experiment

Item 1) Consent Letter

Item 2) Pre-Survey

Item 3) Worksheet

Dear research subject,

This document is intended to be a consent form for your participation in this study. Please read all of the information below carefully. If anything seems unclear, please ask the researcher for clarification. Sign your name at the bottom of this page to acknowledge you have read everything on this page and agree to voluntarily participate in this study.

The purpose of my research is to compare data on student's abilities to detect improper scientific, legal, and forensic procedures when exposed to a variety of forensic, homicide, and crime scene video clips. Prior to watching the fifteen-minute video showing a variety of clips from *Bones, NCIS,* and *The* Wire, you will complete a pre-survey, which will ask you about some general background information. After you are done filling out the pre-survey, you will be asked to answer questions while watching a fifteen-minute video. I am comparing the scores between undergraduate students and examining various demographics to determine if statistical significance exists. This study will take approximately thirty minutes from beginning to end. Scenes in the study may be graphic and disturbing to some viewers because clips from *Bones, NCIS, and The Wire,* will be shown in the video.

This research will add scholarly knowledge in the literature regarding the impacts of forensic education on an individual's perception of the CSI effect. By participating in this research, you are assisting me with determining if general education will improve an individual's understanding of forensic techniques portrayed in media. There is no financial compensation for participating in this study.

Due to the nature of this study, if you choose to participate in this study, you will be shown graphic content. You may feel disturbed or upset during or after viewing the fifteen-minute video clip. If you feel uncomfortable while watching the video, you may leave at any time and can choose to not participate in the study. If you are feeling uncomfortable after watching the video clip, Arcadia University provides individual counseling services and walk-in

appointments for undergraduate and graduate students. There are no more known risks associated with this study.

Students participating in this study that are currently enrolled in a psychology research class will receive 1.0 credits in Sona for their voluntary participation. Otherwise, there is no compensation associated with participation in this study.

- I understand that my participation in the study is voluntary and that I am able to stop participating at any time without repercussion. I understand that my documents will be destroyed and not used in the research if I decide to drop out of the study at any time. I understand I can ask questions about the research at any time.
- I understand that my identity and research answers will remain confidential and that only the researcher will be aware of my identity. When the research results are released, I understand that my name will not be on the research, and that research documents will not have my name on them.
- I understand that the data gathered from my participation in the research will be used to create a senior thesis presentation and for usage at a conference.
- I understand that my consent is voluntary and that I am not being coerced to participate in this research.
- I have read all the information listed above on this consent form and understand it. I understand the resources available to me if I feel uncomfortable with the contents of the video.

Participant Signature: _____

Date: _____

Pre-Survey

1) What year are you currently enrolled in for your master's in forensic science? (if your answer is a, b, or c, go to question 1A, if your answer is d, go to question 1B,)

   a) First-year Forensic Masters b) Second Year Forensic Masters

   c) Third-year or longer Forensic Masters d) I am an undergraduate student

1A) If you are enrolled in the master's in forensic science program, please state how many completed credits in the master's program you have

_____

1B) If you are an undergraduate, please state the year you are in (First-year, Sophomore, Junior, Senior), and what your degree major is

_____

2) What is your gender identity?

   a) Male b) Female c) Other _____

3) Do you have an immediate family member (parent or sibling) that has ever, or currently has a job in criminal investigation, death investigation, or forensic science?

   a) Yes b) No

3) In the past year, how frequently (daily, weekly, monthly, never) have you watched...

   a) Law and Order _____

   b) Law and Order SVU _____

   c) Criminal Minds _____

   d) Bones _____

   e) CSI: Crime Scene Investigation _____

   f) NCIS _____

   g) Other shows (please specify the name) _____

   _____

_____

_____

4) Before this year, have you watched any of the shows listed in question three at least once a week? (If yes, go to 4A)

a) Yes b) No

4A) Please write the names of the shows from the list on question three that you watched at least once a week, prior to this year.

_____

_____

Worksheet

On this worksheet, using the table on the opposite side of this page, keep a tally of how many times a certain improper procedure occurs over the course of the video compilation. An improper procedure is an action portrayed during this video compilation that appears realistic, but is actually fabricated and would not occur in a real-world investigation. Using the time inbetween scenes, write a few words in the brief description section of the table to write a few words about the improper procedure. It is okay if you are unable to write brief descriptions of every improper procedure. Some improper procedures may occur more than once. Some scenes may contain more than one improper procedure. Some may contain no improper procedures. You can have multiple different improper procedures in one scene. However, please do not tally the same improper procedure more than once per scene. Scenes will have short breaks of silence in between them to make it clear when one scene ends, and another begins. Remember that you may ask questions at any time.

Description of improper procedure	Tally	Brief description of scene or incident
Not wearing safety equipment at appropriate times (gloves, masks, etc.)		
Technology is too advanced		
Contamination of evidence or potential evidence		
Unsafe crime scene, investigation, and lab procedures (NOT including lack of wearing safety equipment)		
Unethical corpse treatment		
Failure to photograph or document newly discovered evidence		
Unrealistically quick analysis provided without using technology		
False scientific information portrayed as truthful		