

The CSI Effect: An Investigation into the Relationship between Watching Crime Shows and Forensic Knowledge

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The “CSI effect” is the notion that crime television shows may have an impact on the criminal justice system. The purpose of the current study was to investigate a previously unexplored component of the CSI effect—whether these shows may help individuals acquire forensic knowledge that could be relevant when committing a crime. We asked 323 university students to respond to a prompt that asked them how they would best burglarize a house. Participants also reported their most commonly watched television shows, number of episodes watched and their level of involvement with the crime shows. Results indicated that total number of crime shows watched did not relate to how many times participants mentioned forensic evidence in their responses; however, individuals who were more involved in the crime shows they watched were more likely to mention forensics (e.g., whether they would wear gloves to avoid leaving fingerprints or wear a hat to avoid leaving hair fibers).

In August, 2011, 28-year-old Israeli-resident Daniel Moaz murdered his parents in an effort to acquire an early inheritance. After stabbing his mother and father, he fled to his own apartment. He then did something unusual—he returned to his parents’ house later that night to scrape his DNA from under their fingernails and to clean the house with bleach. Where did Boaz get the idea to cover his forensic tracks? According to his testimony, he got the idea from watching a television show (Lidman, 2012).

In recent years, television shows centered on crime have captured the public’s interest. In fact, five of the top ten scripted shows for the 2014-2015 season involved solving crimes and catching criminals (e.g., NCIS [National Criminal Investigative Service], NCIS: New Orleans, The Blacklist) (Schneider, 2015). Many of these shows feature a group of

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special agents, criminalists, or police officers using their investigative skills to solve seemingly difficult crimes. Collecting and analyzing evidence from the crime scene is a large component of these shows, and it appears that this focus on fingerprints, fibers, and numerous other types of forensic evidence appeals to a large number of television viewers. In fact, in 2012, CSI (Crime Scene Investigation) was named the most watched drama show in the world for the fifth time, amassing over 63 million viewers on five continents (Bibel, 2012); in 2014 and 2015, NCIS took the lead (Kondolojy, 2015).

Given that millions of people are exposed to these crime shows on a regular basis, it is reasonable to presume that the information presented on these shows, especially in regards to forensic evidence (e.g., fingerprints, hair fibers), may be impacting the criminal justice system in numerous ways. This “CSI effect” is alleged to be seen in the decisions of jurors (Baskin & Sommers, 2010), the behavior of attorneys (Stevens, 2008; Wise, 2010), and even in the practices of police (Huey, 2010) and crime labs (Stephens, 2007). In addition to these influences, however, there remains another facet of the CSI effect that has yet to be explored: Do these televised crime shows, with their focus on forensic evidence, have the potential to teach people how to better carry out and conceal crimes?

The CSI Effect

The “CSI effect” is the notion that watching crime-based television shows influences factors related to the criminal justice system. The effect has gained much attention, both in academic research and the popular media—both NPR (Rath, 2011) and *The Economist* (“The CSI Effect,” 2010) have published stories on the effect.

The notion that people’s attitudes and behaviors may be influenced by television has its roots in cultivation theory (Gerbner, 1969; Gerbner & Gross, 1976), one of the most popular theories in mass communication research (Bryant & Miron, 2004). Cultivation theory is centered on the idea that television helps shape one’s reality of the world—the more one sees certain ideas, images, or values, the more they become incorporated into one’s reality. Much of the research in this domain has focused on perceptions of crime and the criminal justice system. For instance, research has found a relationship between the amount of one’s television exposure and a tendency to overestimate one’s odds of being the victim of a crime (Gerbner & Gross, 1976; Heath & Petraitis, 1987). Although the original cultivation theory (Gerbner, 1969) focused on total hours spent viewing television, most recent research in the domain, including research conducted on the CSI effect, stresses the importance of considering the specific television shows being watched, as opposed to

the total amount of time spent watching television in general (Ferris, 2011; Podlas, 2005). Indeed, more recent studies have found that the link between television viewing and overestimation of being a crime victim exists only for viewers who watch crime shows specifically (Dowler, 2003).

The relationship between one's CSI viewing and associated thoughts and behaviors has been theorized to exist in several potential ways that are relevant to the criminal justice system. It is possible, for instance, that the watching of crime shows by jurors might favor defendants by increasing jurors' expectations concerning the forensic evidence that is presented to them during a trial. Specifically, jurors might not be satisfied with the more common types of evidence presented (e.g., witness statements) and therefore may be less likely to render a guilty verdict when high-tech forensic analyses are not conducted. For instance, a survey of publicly funded crime labs (Durose, Walsh, & Burch, 2012) found that the most commonly performed service by these labs was controlled substance analysis, followed by fingerprint and DNA analysis. Some of the flashier types of analyses that are featured on crime shows, such as bloodstain pattern analysis, were performed by significantly fewer labs. On the other hand, crime shows could benefit the prosecution. Viewers might think more positively of the expert forensic witnesses and also believe that the forensic science presented is as credible as the evidence portrayed on the shows, thereby ignoring concerns regarding valid collection and handling (see Cole & Dioso-Villa, 2007, for a review of these ideas).

Despite vast amounts of academic commentary (Cole, 2015; Cole & Dioso-Villa, 2007; Cooley, 2007; DiFonzo & Stern, 2007; Ghoshray, 2007; Kruse, 2010; Stephens, 2007; Wise, 2011) and media coverage (Hoffmeister, 2011; Lovgren, 2004; Radford, 2010), very few studies have been conducted to examine whether there is a relationship between crime show viewing and juror thoughts and behaviors, and most of these studies have found little or no support for the idea. For instance, participants in one study were presented with a scenario about an alleged rape where no forensic evidence was available and were then asked to render verdicts and give reasons for their verdicts (Podlas, 2005). Results revealed that frequent CSI viewers were no more likely than less-frequent or non-viewers to be influenced by the lack of forensic evidence. In other words, support for the notion that the show was leading people to expect more forensic evidence, and for viewers to be more likely than non-viewers to acquit when this evidence was not available, was not found. In another study, participants were presented with a crime scene scenario involving hair analysis (Schweitzer & Saks, 2007). Results revealed that, although frequent viewers found the hair

analysis to be less reliable than did non-viewers, there was no relationship between the verdict rendered by each participant and his or her CSI viewing. Other studies also have failed to find support for the CSI effect (Ferris, 2011; Holmgren & Fordham, 2011; Mancini, 2011; Shelton, Kim, & Barak, 2006; 2009) although a few, including a telephone survey of more than 1,000 registered voters, have found that more frequent crime viewers may be more likely than less frequent viewers to have their verdicts affected by the amount of scientific evidence presented at trial (Baskin & Sommers, 2010; see also Sarapin, 2012).

The Police Chief's Effect

Despite the fact that evidence for the traditional CSI effect is limited, there is an additional component of the effect that has yet to be investigated: The "police chief's" version (Cole & Dioso-Villa, 2007). The police chief's version of the CSI effect proposes that the behavior of criminals themselves may be impacted by crime shows in that they learn about forensics methods that could be used to identify them and therefore change their behavior to avoid detection (Cole & Dioso-Villa, 2007; Durnal, 2010). For instance, a would-be murderer may view an episode of a crime show in which DNA is extracted from a strand of hair left behind at the scene of the crime. Now that he has the knowledge that DNA can be extracted from hair, he may be more likely to wear a stocking hat while he commits his crime in order to lessen the chances of leaving hairs behind. If individuals are, in fact learning how to better avoid detection when committing crimes due to techniques they have learned on crime shows, this could have devastating effects for society. To date, however, no studies have been conducted to determine whether individuals who watch crime shows have an increased awareness of the forensic methods that could be used to identify them if they were to commit a crime.

To investigate the relationship between crime show viewing and forensic knowledge, we asked participants to describe how they would burglarize a home and sell the obtained goods without being caught. We also asked them to list the television shows that they frequently watched and how often they watched them. Finally, we asked them to indicate how involved they were with the various crime shows that they watched so that we could determine whether people who are more involved in the shows absorb greater knowledge. In short, we hypothesize that people who view crime shows more frequently, and are more involved in the crime shows that they watch, will be more likely to mention forensics when describing how they would commit their burglary (e.g., "I would wear gloves to avoid leaving fingerprints") compared to people who view

crime shows less frequently or are not very involved in the ones that they watch.

METHOD

Participants

Participants were 323 undergraduate students from a Midwestern university who participated in exchange for course credit. The median age was 19 ($M = 18.92$, $SD = 1.02$). Fifty-two percent of the participants were female. One participant failed to complete the free response portion of the study and therefore was excluded from the analyses.

Materials and Procedure

Participants completed the study in a computer lab in groups of two to ten. On computers, they first completed a demographics questionnaire and then were given the following prompt: "Imagine you're home from school for summer break and are going to break into a house across town. Your parents are acquaintances of the couple living there and you've heard they have a lot of money. Your hope is to steal some cash and small electronics while they are not at home. Think for a minute about how you would plan this event, how you would carry it out, and what you would do afterward to provide the best chance of getting the items and not getting caught during or afterward."

Participants were given twenty-five minutes to type as much as they wished. Three minutes before the time was completed, the experimenter indicated to the participants that they should begin finishing their responses. Most participants wrote approximately 25 sentences (around 500 words) and used the entire time.

After completing their responses, participants were asked to list the crime-related television shows they had watched at least somewhat regularly in the past five years; although the "CSI-effect" is named after only one show, researchers of the phenomenon tend to assess popular crime shows in general (e.g., Ferris, 2011; Mancini, 2011; Shelton, Kim & Barak, 2006; 2009). Categories and examples were provided to prompt students' memories: CSI Shows (such as *CSI*, *CSI Miami* and *NCIS*), Romantic Crime Shows (such as *Bones* and *Castle*), Police Investigative shows (such as *Criminal Minds* and *Law & Order*), and Real Crime Investigation Shows (such as *20/20* and *Dateline*). Non-crime shows were assessed as well, with categories including Reality Shows (such as *The Bachelor* and *Survivor*), Comedy Shows (such as *Friends* and *Modern Family*), One-hour Drama Shows (such as *Grey's Anatomy* and *Parenthood*), and Other Shows. The non-crime shows were included as a control to ensure that, if a relationship was found between the number of crime shows watched and mention of forensic evidence, it could not be explained by a generally high level of television viewing. Participants

also were asked to indicate how many episodes they watched of the shows that they listed, with options of 20%, 50%, 80%, or 100% of all episodes.

Additionally, following the crime show categories, participants were asked to rate their involvement with the show by answering four questions (adapted in part from Levy & Windahl, 1984): “While watching this show, I try and guess what is going to happen at the end of the episode,” “After watching the show, I think about what I have just seen and heard,” “I discuss with others what I have seen on this show,” and “I have looked up information about what I have seen on the show.” Responses ranged from (1) *Never* to (4) *almost all of the time*. Responses to these four statements were totaled to create a composite involvement score. Following completion of this section, participants were debriefed and thanked for their participation.

RESULTS

Nine undergraduate coders who were blind to the purpose of the study coded the free responses—three groups of three read approximately 100 responses each. Coders were asked to indicate whether each of the following topics was mentioned in each participant’s response; the categories were created by the authors after perusing a selection of responses for common themes: Fingerprints (e.g., “It is imperative you wear gloves during this procedure so you do not leave fingerprints anywhere in the house. One fingerprint and your butt is headed off to jail”), hair fibers (“I’d put my hair up and in a cap so my hair wouldn’t shed and be in their house”), footprints (“I would wear shoes with no patterns on the bottom so they wouldn’t leave marks if you walked across the carpet”), and soil (“I would also buy new flip flops that don’t have any personal traces on them, like dirt from my house, which would be disposed of after the heist”).

Several other categories also were coded to determine whether watching crime shows relates to increased knowledge of more general, non-forensics topics: scouting out the house/learning the couple’s schedule (e.g., “I would want to know things like when police cars usually patrol the area, when most people appeared to be out of the house, etc.”), parking away from the house/using a different car than one’s own (e.g., “I would park the car a few blocks away, so no one sees me driving away from the house”), bringing a backpack to carry out items (e.g., “I would also bring a small backpack or purse to hold the items I take, to avoid being obvious when I leave”), dressing in black or wearing a disguise (e.g., “[I would]...wear all black with a mask so no one can see me”), leaving no mess behind so residents do not realize immediately that they have been robbed (e.g., “I would leave everything

exactly where it was so they wouldn't even suspect that they have been robbed"), creating an alibi ("I would tell my friends I was sneaking to see a boy and to tell my parents if they asked that I was at their house all night"), and hiding the goods somewhere/attempting to avoid getting caught while selling ("e.g., Any computer I steal would be reformatted to prevent it being identified as stolen").

Agreement for each set of three coders on each of the crime variables ranged from 67% to 99%; average agreement was strong at 89%. Previous research indicates that levels of agreement of 80% and higher are acceptable for social science studies (Neuendorf, 2002). As an example: The same three coders read all responses for participants 1-80 and for the variable of fingerprints, all three coders either agreed that fingerprints were mentioned in the written response or were not mentioned for 91% of the participants. For the below analyses, a variable was considered to be present in the response if at least two of the three coders indicated it was mentioned.

Out of the 322 participants, 55% mentioned fingerprints, 17% mentioned hair fibers, 19% mentioned footprints, 2% mentioned soil (these variables were summed together to create a composite measure of forensics), 82% mentioned scouting out the house or learning the couple's schedule, 34% mentioned parking away or using a different car, 50% mentioned bringing a backpack, 55% mentioned dressing in black or wearing a disguise, 24% mentioned leaving no mess, 28% mentioned an alibi, and 60% mentioned hiding the goods or attempting to avoid detection when selling them.

Correlational analyses revealed no relationship between the number of crime shows participants watched and their mention of forensic evidence in their written responses, $r = .03$, *ns*. Additionally, there was no relationship between the percentage of episodes of the crime shows viewers watched and their mention of forensic evidence, $r = .08$.¹ There also was no relationship between the number of crime shows listed or the percentage of episodes watched and any of the other crime variables (e.g., creating an alibi), all r 's $< .10$, *ns* (with the exception of the percentage of episodes watched and scouting out the house/learning the couple's schedule, which was statistically significant at $r = .12$). Finally, as expected, there was no relationship between the number of non-crime shows (e.g., *The Big Bang Theory*, *The Bachelor*) listed and the mention of forensics or other crime variables (all r 's $< .12$, *ns* (with the exception of the total number of drama shows watched and bringing a backpack, which was statistically significant at $r = .16$, total number of reality shows watched and not leaving a mess, $r = .14$, comedy shows watched and hiding/selling the goods without getting caught, $r = .12$, and other shows watched and dressing in black, $r = .15$; these findings were not

hypothesized and likely occurred by chance considering the high number of relationships explored in these particular analyses). See Table 1 for correlations.

In order to provide a comparison with previous research on the CSI effect in which participants were split into either viewers/heavy viewers or non-viewers/light viewers (e.g., Baskin & Sommers, 2010; Schweitzer & Saks, 2007) we also performed analyses in which we compared participants who reported watching any crime show to those participants who reported watching none. Results revealed no difference in the amount of forensics mentioned between viewers ($M = .93$, $SD = .99$) and

TABLE 1 Correlations between Television Shows & Crime Variables

Strategy	Show Type				
	Crime	Reality	Comedy	Drama	Other
Scout/Learn Schedule	.10	-.07	.00	.06	-.02
Park Away/Car	.03	.04	.02	.09	.03
Backpack	.10	.08	.06	.16*	.01
Wear Black	-.01	-.07	-.02	-.02	.15*
No Mess	.04	.14*	.00	.03	-.07
Alibi	.04	.05	-.02	.11	.00
Hide/Sell Goods	.06	.04	.12*	.01	.01
Forensics	.03	.06	.10	-.06	-.05

Note. * $p < .05$

non-viewers ($M = .95$, $SD = .97$), $t(320) = -.11$, $p = .91$, $d = .02$. Overall, students in our sample who watched a lot of crime television shows (or any at all) compared to those who watched, none were not any more likely to mention forensics in their responses.

Although the amount of crime shows watched did not relate to participants' mention of forensic evidence, the *involvement* participants reported in the shows did show a relation. Of those participants who watched any crime show (85% of total participants), those who reported higher involvement were more likely to mention forensic evidence in their responses ($r = .13$, $p = .03$). In other words, it appears that participants who continued to think about episodes after they were over, tried to guess what was going to happen next while the program was on, discussed the shows with others, and looked up information online about what they saw were more likely to be aware of forensic evidence when thinking about committing their own crime. There was no relationship between involvement and any of the non-forensic crime variables (all r 's $< .10$, *ns*).²

DISCUSSION

A few days before Christmas, 2005, Jermaine McKinney murdered a young woman and her mother at their home in northern Ohio. He poured paint on one of the victim's bodies to try to destroy his DNA, set the house on fire, grabbed his cigarette butts while leaving the scene, and later used bleach to clean the door handle and carpet of his car. According to an accomplice, McKinney explained that he watched the television show CSI (*State v. McKinney*, 2008). The story spread, with law enforcement officers across the country noting the effects that crime shows were having on the criminal population. According to a captain in the Los Angeles County Sheriff's office, who was quoted for a story on the McKinney case, "[These shows are] actually educating these potential killers even more" (Associated Press, 2006).

But do people who watch crime shows actually have a better understanding of forensics that they could potentially apply to a crime? To investigate this "police chief's" version of the CSI effect, we assessed individuals' television viewing habits and their mention of forensics when reporting how they would best commit a burglary. Results revealed that the total number of crime shows viewed (and the percentage of episodes watched) did not relate to forensic knowledge, but that involvement in the shows did. Participants who, for example, continued to think about the show after it was over and talk to their friends about what they had seen were more likely to mention topics such as fingerprints, footprints, hair, and soil when discussing their burglary methods.

Why did one's involvement in the shows relate to criminal technique while the sheer number of shows and episodes did not? It is possible that more casual viewers simply did not pay as close attention to the episodes they watched and therefore either did not learn the forensic techniques detailed on the show or did not think to apply the knowledge when planning their burglaries. It also is possible that individuals who were less invested in the crime shows they watched were less invested because they did not enjoy or trust the scientific processes (e.g., hair analysis) and therefore also were less likely to consider forensics when writing their responses. Additionally, research has found an interaction effect between viewership of crime shows and the trait of need for cognition—i.e., people's tendency to engage in, and enjoy, thinking (Cacioppo & Petty, 1982) and organize and elaborate on information to which they are exposed (Cohen, 1957)—such that individuals high in both viewership of crime shows and the trait were more likely to mention problems related to forensic evidence as a reason for their verdicts after watching a videotape of a trial (although this effect only held true for some forensic evidence mentioned in the trial and not others; Mancini, 2011). In other

words, individuals who watched crime shows and were high in need for cognition were more focused than other participants on the forensic evidence. Given that some of the questions in the current study that were used to assess involvement asked whether participants tried to guess what would happen next in an episode or looked up information after the episode was over, perhaps it is the case that participants who reported higher involvement in the crime shows also had a higher need for cognition, leading them to more seriously consider the forensic techniques they saw on the shows. Similarly, research has found a relationship between how realistic one considers crime television shows to be and the influence one puts on DNA evidence presented at trial (Maeder & Corbett, 2015). Perhaps it is the case that participants in the current study who were highly involved in the crime shows also perceived the shows as more realistic and were therefore more likely to consider forensics in their answers.

It also is worth noting that the results of our study may provide support for the notion that non-fictional shows, based on real crimes (e.g., Dateline NBC, Forensic Files) may show a stronger relation to certain outcomes than the traditional CSI shows. Although previous research has assessed viewership of other crime shows in addition to CSI, and has stressed the importance of focusing on non-CSI shows (e.g., Mancini, 2013), the majority of analyses have focused on the effects solely of CSI on individuals' expectations for evidence (e.g., Shelton, Kim, & Barak, 2006) or have combined all crime-related shows together (Baskin & Sommers, 2010; Schweitzer & Saks, 2007) as we did above. However, because we assessed involvement with each crime show category individually, we were able to provide support for the notion that involvement with *real* crime shows may show a stronger relation with mention of forensic evidence (i.e., $r = .16$) than involvement with CSI shows ($r = .13$), romantic crime shows (e.g., *Bones*; $r = -.02$), or police shows (e.g., *Law and Order*; $r = .12$), lending support for the idea that, at least in terms of increased knowledge of forensic evidence, real shows may show more of a relation than fictional shows. It is important to note, however, that this finding warrants further study, as the relationship was not hypothesized and the differences in strength of the correlations are small and not statistically significant within the present sample.

There were several limitations of the study. First, participants were college students and perhaps individuals of this age and educational status are better skilled at applying what they have learned from television shows to potential behaviors (in this case, committing a crime). It is possible that an older or less-educated population would show a weaker relationship between their involvement in crime shows and forensic techniques (although the reverse also could be argued, indicating

that the reported results would be even stronger with a non-student population). Importantly, however, actual criminals are likely more invested and involved in seeking information on how to avoid detection, which in turn could lead to a stronger relationship between crime show viewing and criminal behavior (we are assuming that the majority of our participants have not engaged in major criminal behavior, although we do not know for sure). This possibility could be investigated in the future by assessing the favorite television shows of inmates and whether their viewing interests correspond with forensic knowledge.

Also, as is inherent in all research on the CSI effect to date, participants were not randomly assigned to be viewers of the show. In other words, perhaps it is the case that viewers of crime shows have more forensic knowledge to begin with. Therefore the shows are not necessarily teaching them how to better commit a crime, but rather participants who have more forensic knowledge are more drawn to the shows in the first place. A potential future step could be to randomly assign participants who are not frequent viewers of crime shows to watch several episodes of one of these shows versus a non-crime show and investigate whether their forensic knowledge or expectations for forensic evidence (in investigating the more common form of the CSI effect) are influenced. It is important to note, however, that in the current study, it was not the number of shows that was related to participants' skill in committing the burglary, but rather people's involvement in the shows. Future research would need to investigate more specifically if people's knowledge of forensics makes them more involved in a crime show or if their involvement in a crime show increases their knowledge of forensics.

Additionally, although this study revealed a relationship between individuals' involvement in crime shows and their awareness of forensics when hypothetically participating in a crime, we do not know for certain whether individuals would apply this knowledge if actually committing a crime or whether this increased knowledge would result in them truly being more successful in avoiding detection. Also, episodes of crime shows have a murder as their primary crime. A murder, as opposed to the burglary used in the current study, would have the potential to create much more forensic evidence. As such, it would be interesting to conduct a similar study with murder as the hypothetical crime. It seems likely that the mention of the forensic evidence in the written responses would increase, although it is unclear if that mention would vary based upon the amount of crime shows watched or involvement. It would also be interesting to investigate other avenues of potential forensic knowledge, such as newspaper coverage of crimes, true crime books, or the local news. Finally, given the relatively small effect sizes, it is important to replicate and extend the reported findings.

In sum, individuals who are more involved in watching crime-based television shows have more knowledge of forensic techniques that could help them prevent being caught for a crime. Perhaps at future trials, in addition to prosecutors asking jury members about their crime show viewing (*Goff v. State*, 2009), they will ask the defendant as well.

Endnotes

¹To determine whether the percentage of episodes watched for each show listed (as opposed to simply the total number of shows) was related to forensics, we calculated a new variable. If 20% of the episodes for a given show were watched, it was coded as .2; 50% was coded as .5, 80% as .8, and 100% as 1. For instance, if a viewer watched 100% of the episodes for one crime show and 50% of the episodes for another crime show, the percentage was coded as 1.5.

²We performed a series of regressions to determine whether sex, or the interaction of sex with amount of crime shows watched or involvement with crime shows, related to the mention of forensics in the written responses. The models were not significant. Specifics are available from the first author upon request.

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