

# The Red Effect in Jury Decision-Making

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*Keywords: red effect, sexual intent, attractiveness, dominance, color, jury decisions*

## Acknowledgements

“Thank you to all the professors here at Kean who always believed in me. I would be nowhere without you all.”

## Abstract

Past research has shown that in many situations the color red has an effect on the way women are viewed. When women wear red, they may be perceived by men as having higher sexual intent and by women as more of a threat. For men, red has often been associated with dominance and power. The present study examines whether red affects jury decision-making, especially since red has also been associated with hostile choices. An online survey of college students was used to explore the hypothesis that when a woman involved in a sexual assault trial is pictured in red, she will be victimized more in that the defendant will receive a lesser sentencing for the assault. It is further hypothesized that when the crime is not sexual (e.g., embezzlement) the red effect may not apply. In the first case, although the hypotheses test results were not statistically significant at the .05 level. The average sentencing that defendants received in sexual assault trials was found to be shorter when the woman wore colors other than red. In the second case, women in red received the highest average sentence in embezzlement trials. This suggests that there could be some dominance and intelligence associated with women wearing red and that future studies should examine this further.

## Introduction

Aspects and perceptions of colors have been the focus of many scientific studies (Elliot & Maier, 2014; Gueguen, 2012a; Schwarz & Singer, 2013). Red, specifically, is associated with lust, sexuality, and romantic love (Elliot et al., 2010; Gueguen, 2012a; Schwarz & Singer, 2013). This is not surprising as red is often used that way in art, literature, cosmetics, and prostitution; for example, red-light districts (Elliot, Tracy, Pazda & Beall, 2013b). Advertisers seem to have grasped the meaning of red and used it to their advantage. However, red is also often associated with anger, hostility, and danger (Lin, 2014). The reaction of people when a stoplight turns from red to green and another driver does not respond quickly enough for others demonstrates this principle (Gueguen, Jacob, Lourel & Pascual, 2012). Being primed with red, whether it be signs, stoplights, or car color can result in an agitated mood (Gueguen et al., 2012). Whether red is being used in a positive or negative way, it has been found as a color associated with emotional contexts rather than neutral (Kuniecki, Pilarczyk & Wichary, 2015). Indeed red is one of the colors recognized by most cultures to share similar meanings (Fetterman, Liu & Robinson, 2015).

Female primates, when close to ovulation, involuntarily show the color red in their chest, face and genitals, which is a signal to their potential mates (Schwarz & Singer, 2013). This is due to an increase in estrogen and blood flow (Lin, 2014). Similar to our non-human relatives, people could be using the color red as a sexual signal (Prokop & Hromada, 2013). Men unconsciously could be acting on this when they decide to approach a woman in red clothing. For example, women have been found more attractive and sexually appealing by men when simply holding a red laptop case (Lin, 2014). If the red effect is physiological, it should also be universal.

Elliot et al. (2013b) investigated this universality by testing the effect red has on individuals from an underdeveloped country with less exposure to other cultures. Men were found to rate a woman as more attractive in red and they were more interested in getting to know her (Elliot et al., 2013b). However, unlike many studies in developed nations such as the United States, men did not report the woman in red as more interested in sexual intercourse (Elliot et al., 2013b). Gueguen (2012a) showed that men in developed nations rated women in red clothing as

more attractive, but also as more promiscuous. These ratings were made in response to viewing a photograph of a woman in red clothing. When the woman wore red, she was seen as more attractive and sexualized in some cultures because of the color of her outfit. There was no behavioral or verbal communication to support the men's assumptions. This demonstrates that red does not only have an unconscious and physiological meaning, but can also become stronger through societal reinforcement (Elliot et al., 2010).

It has also been suggested that women receive more tips when waitressing if they are in red clothing, but this is only when the person leaving the tip was male (Gueguen & Jacob, 2014). Men have been found to sit closer to a woman in red, as well as ask her more intimate questions (Kayser, Elliot, & Feltman, 2010). All of these findings suggest that men, without knowing it, are more attracted to women in red and behave differently. However, not only does red affect attraction, but it has also been shown to exude dominance and threat. Players in sport scenarios reported feelings of dominance and threat when wearing red, or felt that their opponents were more dominant and threatening when in red (Feltman & Elliot, 2011). However, in the context of dating, male competition may produce a different outcome. This means a man could feel and come across as dominant and threatening wearing red while also acting on any perceptions he may have of a woman in red. Additionally, women have been found to associate dominance with status, which means women may find men in red more attractive (Elliot et al., 2010).

As Gueguen (2012a) found, there is an interaction between attractiveness and the color red. However, the red effect does not seem to affect every woman equally. Schwarz and Singer (2013) clarified between sexual and physical attractiveness, because identifying someone as attractive is different than feeling a sexual attraction towards them. Elliot et al. (2010) describe sexual attraction as a physical desire. The sexual attraction men feel is found more for younger women and is further enhanced by the color red (Schwarz & Singer, 2013). Men may associate age more often with sexual attraction, on a physiological level, as it is connected to a woman's reproductive value. Similar to the red effect being amplified by younger women, it is also strengthened by more feminine women. Wen, Zuo, Wu, Sun and Liu (2014) showed that men's sexual attraction to women in red increased only when the woman had stereotypically feminine characteristics.

This femininity factor is important with cosmetics. Makeup can make a woman look more stereotypically feminine and younger and certain products like lipstick and blush often contain tints of the color red. In many cultures red lipstick specifically, has been found to increase a woman's femininity and attractiveness (Stephen and McKeegan, 2010). Research has found that women use more makeup, as well as wear more red and pink clothing when near ovulation suggesting an underlying physiological connection to the color (Beall & Tracy, 2013; Gueguen, 2012b). The use of makeup can make a woman's cheeks rosy, similar to what happens to animals naturally as a mating signal. Even though women wear makeup for themselves, that does not mean that others will not still view them in the manners just described. Gueguen and Jacob (2012) found that lipstick, like clothes, affected men's tipping behavior in restaurants. Men were shown to tip more than women when the waitress wore lipstick with red lipstick resulting in the most tips.

Men's responses or behaviors may not be completely unsubstantiated; for example, women have been found to wear red when primed to think there was high potential in meeting a mate (Kayser, Agthe, & Maner, 2016; Prokop & Hromada, 2013). However, when attractiveness was included as a variable, women were only more likely to choose red if they thought the man they would be meeting was attractive (Elliot, Greitemeyer, & Pazda, 2013a; Kayser et al., 2016). Women were also more likely to report wanting to engage in sexual behavior with a man in red more than in green (Elliot et al., 2010). When women were asked to look at photographs of a woman in red the results showed that they were more likely to consider those in red more sexually receptive than those in white and that they would guard their mate more from a woman in red, regardless of her attractiveness (Pazda, Prokop, & Elliot, 2014).

Pazda et al. (2014) suggest that there is reason to believe there is a red effect for women. However, this effect can be enhanced or modulated when factors like age, femininity, and attractiveness are manipulated. It is clear that people not only rate others a certain way in red, but that this can also influence how they feel about themselves when wearing red (Elliot et al., 2010, Feltman & Elliot, 2011; Roberts, Owen, & Havlicek, 2010). Research has shown that hostile people prefer red to other colors and that this relationship follows into social decision-making (Fetterman et al., 2015). Participants who were measured as hostile and preferring the color red

were more likely to indicate harming a person in hypothetical scenarios (Fetterman et al., 2015). When primed with angry words, people have actually been reported to see red when presented with an ambiguous color (Fetterman, Robinson, Gordon, & Elliot, 2011).

The perceptions of the sexual intent of women combined with dominance, competition, and hostile decision-making lead to the hypotheses tested in the present study. This research tested the red effect as part of the jury decision-making process. When a person goes to trial, they have the right to a jury of their peers. For example, a woman would probably not feel comfortable on trial with a jury filled with only males, which is why they are given an attorney or hire a trial consultant to help in the selection of a fair jury. There is always a strategy that attorneys, consultants, and their clients use during *voir dire*, which is the process of questioning potential jurors from a pool (Lieberman, 2011). Since trial consultants are commonly used in court, it is important for them to know how the color red could affect a trial and how much it may impact a verdict. If a woman wears red to trial or is shown in red in any pretrial publicity, jurors could potentially judge her more harshly. Even the makeup she is wearing in a photo or the facial expressions she makes can sway a jury's judgment. Women are often told to smile as the more she does so, the more trustworthy a juror may find her to be (Schmidt, Levenstein & Ambadar, 2012). However, if she was on trial for murder a smile could be interpreted quite differently by a juror. Thus a woman may be viewed in a variety of ways depending on the specific case.

Gender typically accounts for less than two percent of verdict variance; however, that can change depending on the case (Lieberman, 2011). Trials involving sexual violence are more often affected by gender. Additionally, certain trials such as murders and sexual abuse cases tend to receive more attention with pretrial publicity in the media as compared to others (Daftary-Kapur, Dumas & Penrod, 2010). Trial consultants tend to go deeper into questioning of a pool of potential jurors than an attorney typically would during *voir dire* and occasionally use scientific jury selection (SJS) to look into these different factors (Lieberman, 2011). Nevertheless, trial consultants do have guidelines and restrictions to follow, so they cannot control everything about those chosen as a juror, especially since they have a limited number of peremptory challenges (Lieberman, 2011; Kovera & Levett, 2015). It is reassuring to know that ultimately, juries have

been found to do a good job of looking at evidence and rendering fair verdicts (Bornstein & Greene, 2014). Yet, this is after questioning had been done *a priori*.

Based on this prior research, the present study examined how red clothing may affect a trial and the prospect of unfairness that may ensue when it comes to trials involving sexual assaults on women. According to The United States Department of Justice, 18% of women in the United States have been raped during their lifetime (RAINN, 2000; from the Rape Abuse and Incest National Network). That 18% represents approximately twenty million people and only includes those who reported the crime. These women are often blamed and shamed for what they were wearing when the trauma took place, if they are even believed that the event occurred. This study explored if the color red may have further affected the opinion of the jury in a woman's trial in such circumstances. The first hypothesis is that a woman wearing red, when involved in a sexual assault trial, will be victimized more and blamed for “asking for it,” leading to a lighter sentencing for the perpetrator (defendant). The second hypothesis looks at a woman wearing red (as the defendant) who is involved in a money embezzlement crime and whether her sentence could be lessened because the jury may find her more attractive or it could be increased because they find her more dominant, threatening, and/or intelligent. These conflicting factors could lead to no red effect at all. To test these two hypotheses a survey was created and distributed among a pool of student volunteers.

## Methods

### *Participants*

There were 204 participating college students (82 males) willing to act as jurors in a mock trial survey (see *Appendix A*). They were selected through convenience sampling (or “grab sampling”; making use of a part of a population at-hand). Participants accessed the survey and IRB forms from the School of Psychology Research Participant Pool. While some students participated for course credit, others volunteered. The only participants excluded were those under the age of 18, those who had technical difficulties, or those who did not fully complete the questionnaire.

## *Design*

The experiment used a 3 x 2 between-subjects design with the independent variables of color (red, green, and white) and trial type (sexual assault and embezzlement; see Appendix B). The dependent variables were period of imprisonment and confidence in the decision rendered by the juror. Participants (jurors) were randomly assigned to a condition above. Gender and age subject variables were also studied, but were not part of the direct design.

## *Materials*

Stimulus materials consisted of a photograph of a woman in either a red, green, or white shirt (see Appendix C), followed by the description of her trial. One trial presented the woman as the victim of sexual assault, while the other as the perpetrator of embezzlement (see Appendix D). After viewing the picture and reading the trial information, participants indicated the period of imprisonment they would sentence the defendant, using a scale of zero to ten or more years. The average sentencing of the crime in the participant's jurisdiction was also provided as a baseline for participants. There was no time limit as to how long they could view the photo and scenario, because if they were part of an actual jury they would have unlimited time to deliberate. Next, participants were asked to rate their confidence in sentencing lengths using a five point Likert type scale, from "not at all confident" to "extremely confident" to measure their level of certainty or uncertainty. The last two questions were demographic: age and gender. There were six distinct versions of this survey, three involved a sexual assault scenario and three involved a money embezzlement scenario. The shirt colors of the woman were red, green, and white for each trial.

## *Procedure*

This study was a 3 x 2 design: shirt color (red, green, white) with type of crime (sexual assault, embezzlement). Participants in the research pool accessed a survey link created via Qualtrics and were randomly assigned to the conditions described above. All participants received their IRB consent and debriefing forms online through the survey interface. The woman in the photos was always the same so that attractiveness did not vary. She was also stereotypically feminine, of child bearing age, and avoided wearing any makeup or jewelry in the

photos. Her facial expression was held constant with no smiling in each of the photos. The color shirts she wore included red, given its sexual meaning, white, as it is considered a light, pure color, which is the opposite of red (Elliot et al., 2010; Pazda et al., 2014), and green, which is a neutral color because there is little meaning attached to it (Elliot et al., 2013a) other than more positive connotations such as its association with "go" (Elliot et al., 2010). In addition to the color, all shirts were of the same cut, size, and brand.

## Results

A 3 x 2 (shirt color: red, green, white with type of crime: sexual assault, money embezzlement) ANOVA was calculated (not shown). As expected for the dependent variable of sentencing there was a significant difference between the assault ( $M = .532$ ,  $SD = 3.94$ ) and embezzlement ( $M = 2.95$ ,  $SD = 1.77$ )  $F(1,202) = 30.35$ ,  $p = .001$  conditions. The main effect for color was not significant,  $F(2,198) = 2.189$ ,  $p = .12$ . In the sexual assault case, the average sentencing the defendant received when the woman wore red ( $M = 4.3$ ,  $SD = 3.8$ ) was lower than when the woman wore green ( $M = 6.0$ ,  $SD = 4.2$ ) or white ( $M = 5.7$ ,  $SD = 3.8$ ) (see *Appendix E*).

It was also unexpected that green produced higher sentences for the defendant than for white. As for the money embezzlement case the woman received the highest average sentencing when in red ( $M = 3.2$ ,  $SD = 1.7$ ) as compared to green ( $M = 3.0$ ,  $SD = 1.9$ ) or white ( $M = 2.7$ ,  $SD = 1.7$ ) (see *Appendix F*). There were no significant differences in confidence levels of the participants when looking at each color variation,  $F(2,198) = .257$ ,  $p = .774$ . There were also no significant findings when looking at the subject variables of the participants relative to their sentencing choice.

## Discussion

The results, while not statistically significant for this study's hypotheses, did show some differences in average sentencing in the trials due to color variations predicted by the literature. Like Lin (2014) found a trend in desire for sexual activity and red products, a trend with

sentencing in regards to red shirts was evident in this study. Red thus led to the woman in the sexual assault trial being victimized more since the defendant received lesser sentencing from the participants. Even though this study's results were not statistically significant, there was a two-year difference in the amount of time the perpetrator would spend in jail based upon the woman wearing a different shirt to trial. As for green and white shirts, it was not hypothesized that green would produce less victimization for the woman than white. Perhaps green was the closest to a professional color that would commonly be worn in court, in addition to its association with "go" and positive connotations, while white is actually more of a neutral color (Elliot et al., 2010).

In the money embezzlement case, the woman in red received higher sentencing compared to when she was presented in other colors. This could support that red is associated with dominance when worn by women and men in the conditions of this study and according to the literature. It seems possible that the relationship of the color red associated with attraction did not appear in this study because the woman in the embezzlement case would have received a lesser sentencing when appearing in red. Schwarz and Singer (2013) had no significant findings for the color red making a woman look more intelligent or dominant. However, this study found slightly longer sentencing in the cases when a woman appeared in red. The results were also as predicted for the other colors in this case, where white gave the woman the shortest sentencing. Perhaps if the woman was smiling in the photos, that could have altered the red effect. As Schmidt et al. (2012) found, smiling does affect trustworthiness, so if the woman in the survey photos smiled, red may have been linked more to the attractiveness than the dominance perception.

This study suggests that when in a more serious situation like these trials, many people may not be as affected by the red effect, which supports Bornstein and Greene's (2011) report that juries often render fair verdicts. The relationship between trials and sentencing was the one relationship found significant in this study. The trials had to show significant differences between sentencing regardless of other factors. The average sentencing for sexual assault is ten years, while embezzlement is three to five. This finding was helpful in showing that people were using the anchor and taking the survey seriously. Many participants may have focused more on the details of the case than on the color of the woman's shirt, which is reassuring. However, on an unconscious level, people may have still noticed the color since the average sentencing varied

in the direction of the hypotheses. Each participant received identical trial situations, so any variation could be related to color.

Seeing that there could be years of difference between verdicts due to a change in shirt color is a little shocking to the author. Knowing that the red effect is somewhat physiologically based might seem to be an excuse for sexual assault. However, that is far from the case. When Elliot et al. (2013b) checked to see if the red effect was universal, it was only partly true as people in less developed nations reported women in red as more attractive, but not with higher sexual intent. This shows that there is support that red has similar meanings across cultures and universally makes people appear more attractive. Societal influences can change the perceived sexual intent men assume of women. This is not too surprising as many people struggle with the handling of sexual assault trials today.

It is also interesting that most prior studies' survey questions were directed differently based on the sex of their participants. When men viewed photos of women, they were often asked what they thought the woman in the photo's sexual intent was, but were not told to report how they felt toward her, besides her level of attractiveness (Gueguen, 2012a). Meanwhile women were asked if they were more likely to engage in sexual behavior with a man in red, instead of what they thought the man's intentions were (Elliot et al., 2010). Women were only answering what they were responsible for feeling, while men were asked to make assumptions about the woman in the picture.

Limitations of this study include the small number of participants in each condition and that they were all college students, which is not the most diverse group within a jury pool and may have not ever served on a jury. However, all participants were of age to serve on a jury. In addition, the sexual orientation of participants was not asked, which could affect reported levels of attraction. As all of the shirts were basic T-shirts it may also be appropriate for future studies to have the woman appearing in a dress or suit. Showing a woman in clothing that is more likely to be worn in court may make it more realistic than a T-shirt that is not considered very professional. Even the use of a dress that a woman would more likely wear on a night-out might be more believable to a juror. The style and fit of the shirts may also play a role in the reversal of the usual red effects (Elliot et al., 2013a). However, since past studies have found a similar red

effect regardless of where red was on the body or background, the difference is not anticipated to be too drastic. Using makeup, specifically products with red undertones, could also influence the results.

A broader replication of this study is of interest based upon the points above. There can be more participants, diverse women and trial scenarios, a variety of facial expressions, and different clothing colors and styles to examine. A color like blue could substitute as a neutral. Black was purposely not used because it could have professional, yet also sexual meanings, but it might be of interest to study in the future. Gray is an interesting color for this as well because it can vary in lightness (Elliot et al., 2010). Some studies also compare hue and lightness differences (Elliot et al., 2010). Future studies can also expand with photos of men instead of women, wearing items such as a red tie to see how it might affect their trial outcome if they were perceived as more dominant when wearing the color red.

Ultimately, the results indicate that color can influence the outcome of a jury's decision, but ever so slightly. Just like any trial, it would matter if a case were very equal in evidence on both sides where something as minor as color could sway the verdict. However, adding up all of these small factors could matter greatly to a case, especially knowing that sexual violence cases are exposed to more pretrial publicity, which could exacerbate any red effect (Daftary-Kapur et al., 2010).

It is important to mention that many sexual assaults are not reported to the police, so those that are should be taken seriously so that other victims are not afraid to come forward in the future. It should also be noted that men are victims of sexual violence too, but according to the United States Department of Justice more than 90% of victims are women (RAINN, 2000). The results of this study, although not statistically significant, mimic reports in the literature that the red effect exists. Red can convey different meanings in different situations, but it is still applicable (Elliot et al., 2013a). Every trial will have multiple factors, whereas color will only be a minor, unconscious part of it. However, trial consultants look at each of these small factors to produce the best outcome for their clients. Since there were still years of difference in sentencing for identical trials, besides the variations in color, there is relevance to the red effect.

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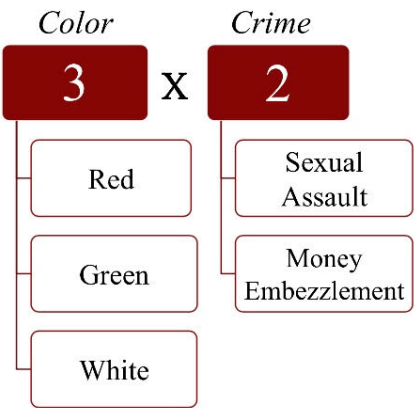
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## Appendices

### Appendix A – Survey participant demographics by age and gender.

Participant Demographics			
Age	Sex		Total
	Male	Female	
18-29	48	70	118
30-39	13	13	26
40-49	10	20	30
50-59	5	15	20
60-69	4	4	8
70 or older	2	0	2
Total	82	122	204

**Appendix B** – Study design (3 x 2) used to examine the “red effect” on decision-making by survey participants. Those responding to the survey were queried after viewing a picture and reading trial information before indicating the period of imprisonment they would sentence the defendant to using a scale of zero to ten or more years; and as to their certainty/uncertainty in their decision-making.



**Appendix C** – *Sample subject pictured for use by survey participants with regard to shirt color.*

*Figure 1*

*Figure 2*

*Figure 3*



**Appendix D** – *Those responding to the survey were queried after viewing a picture (Appendix C) and reading trial information below before indicating the period of imprisonment they would sentence the defendant using a scale of zero to ten or more years. They were also asked to assess the level of certainty/uncertainty in their decision-making.*

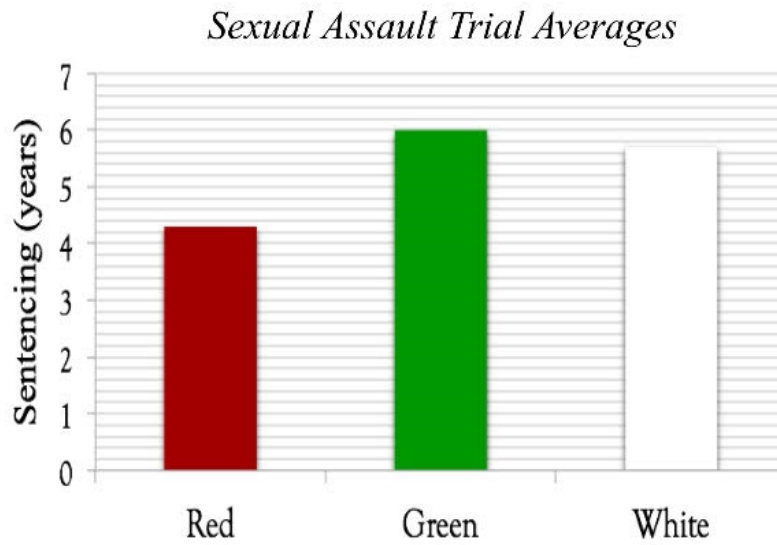
*Case #1:*

You are serving as a juror on a second-degree sexual assault case. A man has been accused of sexually assaulting his co-worker at work. This is his first offense, but he was seen inappropriately touching the victim by many witnesses in the workplace and many stated the victim was visibly uncomfortable. She explained that he made unwanted sexual advances multiple times causing her to feel unsafe when going to work. She is now claiming that he sexually assaulted her one night in the parking lot when leaving work, but other than her report there is no evidence to prove that this happened.

*Case #2:*

You are serving as a juror on a money embezzlement case. A woman was charged with embezzling money at the bank she works at. She was caught one night by a co-worker pocketing some money, which lead to a further investigation where it was found she had embezzled a total of 10,000 dollars. This is her first offense and no evidence has shown that anyone else was involved in the crime with her.

**Appendix E** – *Average sentencing times (years) by color shirt for sexual assault trials.*



**Appendix F** – *Same as App. E but for embezzlement trials.*

