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How emotion regulation strategies moderate the influence of disgust sensitivity on crime scene evaluations

Ewout Jurgens

In collaboration with Esther Weerts

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Institute of Psychology
Faculty of Social and Behavioral Sciences – Leiden University
Date: 17-11-2018
Student number: 1372009
First examiner of the university: Lotte van Dillen
Second examiner of the university: Gaby Vanderveen

Abstract

As disgust leads to less accurate memory and stricter moral judgements, the present research investigates how decisions related to juridical procedure could be less influenced by the experience of the emotion disgust, which should lead to more impartial verdicts. We instructed participants to apply different emotion regulation strategies while viewing photos of victims at a crime scene. We measured the effect of these emotion regulation strategies on their memory and the number of years they sent the perpetrators to prison. We expected to find that using reappraisal would lead to the best memory performance and least strict verdicts, followed by the control condition and then emotion suppression. However, we only found that participants in the control condition performed significantly better on the memory tasks than the participants who suppressed their emotions. Additionally, we found that people with high sensitivity to disgust sent offenders to jail for a significantly longer time.

Keywords: *Emotion regulation strategy; memory; moral judgements; reappraisal; suppression; disgust; juridical procedure; verdicts.*

Introduction

Our society trusts that the judgements made in our courtrooms are based on objectively perceived information and therefore reliable and right. But how trustworthy and objective is the procedure that takes place between the crime and the judges' verdict?

Being exposed to images of the crime scene which could evoke negative emotions, such as images with a lot of blood, might influence the judge's decision (Cush &

Delahunty, 2006). For example, Douglas, Lyon and Ogloff (1997) demonstrated in their research that judges in a murder case who saw cruel pictures of the victims sentenced defendants to jail for a significantly longer period than judges who did not see the crime scene photos. Whalen and Blanchard (1982) proved in their research how easily judges' decisions could be manipulated by changing small details which elicit different levels of emotions. They showed that, aside from the level of cruelness of the photos, other aspects determine to what extent judges are influenced while or after being exposed to cruel crime scene photos. For example, judges who saw pictures of a victim's injury in colour, which were more vivid, made the defendants pay a higher amount of compensation than judges who saw the photos in black and white. Bright and Goodman-Delahunty (2011) confirmed these results in their research. Additionally, they found that judges who saw gruesome photos rated the defendant as more negligent.

Judges are not the only people whose work might be influenced by the emotions such cruel images evoked - the legal process starts with the members of the criminal investigation department. What and how they watch could influence the way they write their reports and take their pictures; for example, pictures taken from an angle where the wound looks more cruel. These reports and pictures are the information the whole investigation department, the prosecutor, the judge and other parties will read and see (Van den Eeden, De Poot & Van Koppen, 2017). The emotions they experience while seeing the cruel crime scene photos might influence their judgements (Bright & Goodman-Delahunty, 2011). In other words, judgments made during the whole investigation and lawsuit procedure are sensitive to the influence of emotions, which might lead to unfair verdicts in the end.

As mentioned above, extremely vivid photos evoke negative emotions, and these emotions reduce people's objectivity while considering the case, because the experience of these evoked emotions sometimes influences people's judgements while doing their job (Whalen & Blanchard, 1982). A simple solution to this problem would be to exclude these cruel crime scene photos from criminal reports; however, this would not improve legal decisions, because crime scene photos often include useful information (Tung et al., 2015). That is why it is important for every person involved in the criminal investigation procedure and lawsuit procedure to know how to use the right emotion regulation strategies when watching the photos. These strategies can improve their ability to perceive all possible information from photos while at the same time experiencing little emotion, so they are able to do their job in an objective but also accurate way. To examine what strategies are most suited for this, I will first discuss which strategies are currently used for jury members. Next, I will mention the consequences of a certain emotion on moral judgement. Then, I will elaborate on this particular emotion. Thereafter, the emotional and cognitive consequences of several emotion regulation strategies will be explained. I will discuss personal differences regarding preferences and outcomes when it comes to emotion regulation strategies. Finally, this introduction will be ended with the present research hypotheses.

Current strategies

Many have already tried to improve the objectivity of lawsuit procedures, for instance, by giving certain instructions to jury members. Edwards and Bryan (1997) investigated these attempts to give jury members useful instructions but found that these attempts were not very successful. For example, jury members in the United States were

instructed to ignore emotionally charged information. Edwards and Bryan (1997) demonstrated that emotionally charged information is less easy to ignore than non-emotionally charged information by measuring which emotions participants felt during the research. They concluded that participants who were exposed to emotionally charged information felt more negative emotions. Although the participants were instructed to ignore the information they got, the participants who were exposed to emotionally charged information came to stricter verdicts than those who were exposed to neutral information. However, this was not the only finding. Edward and Bryan also found that when all participants were exposed to emotionally charged information, the participants who were instructed to ignore it, a technique called suppression of emotions, came to stricter verdicts than those who did not receive this instruction. So, trying to ignore emotionally charged information leads to a rebound-effect.

The present research is about demonstrating the effects of suppression, with regards to multiple variables which will be mentioned later on, in comparison to other emotion regulation strategies.

The effects of disgust on moral judgements

Emotionally charged information influences peoples' judgments, but how does this work, and what kind of emotions cause this effect? Eskine, Kacinik and Prinz (2011) provided answers to these questions in their research on the extent to which taste influences moral judgement. They measured moral judgements by making participants answer how wrong they thought a deed, like eating your own dog after his death, would be on a fourteen-point scale. They found that people who tasted a bitter drink, which evoked

disgust, thought these deeds were more wrong than people who tasted a sweet drink or just water.

Of course, a bitter taste and the sight of visual evidence is not the same; however, both might induce disgust. People use this effect as information while making a moral judgement (Schnall, Haidt, Clore, & Jordan, 2008). Making moral judgements is what judges do, which makes Eskine, Kacinik and Prinz's (2011) research about bad tastes in the mouth very relevant for this study. According to Edwards and Mottarella (2014), photographical evidence could also arouse emotions which influences judges' verdicts. They found that judges who experience hostility towards the defendant or compassion towards the victim feel like they are less able to make a fair judgement. This seems to be supported by participants' verdicts; participants who felt more emotions were more likely to convict the defendants. Moreover, as mentioned before, Douglas et al. (1997) found that judges who saw cruel photos of a murdered victim actually sentenced defendants to jail for more years than judges who did not see any photos of the victim. Seeing the years of imprisonment included in the judge's verdict will be one of the dependent variables in this research, these findings are relevant for the present research.

In summary, verdicts could be influenced by visual evidence that evokes emotions. Disgust in particular needs to be reduced for professionals working in criminal investigation and lawsuit procedures. Because disgust is so important for the present study we will focus on this emotion in the next paragraph.

Disgust

As explained in the previous paragraph, disgust could be evoked by gruesome evidence. Disgust is the emotion that is most likely to influence legal decision-making

(Eskine, Kacinik & Prinz, 2011). Because of this influence, disgust is very relevant to the present research, and that is why clarifying some details about this emotion is important. Disgust is a very important and strong emotion for humans; even a new-born baby can express disgust on his/her face. Disgust is an emotion with an evolutionary background - it is one of Darwin's six basic emotions. It is meant to reject unhealthy things like rotten food and to express to others the food should not be eaten. Because new-borns already express the emotion, it is more logical that we are born with this ability to identify unhealthy things than that we learn this during our life (Hennig, Pössel & Netter 1996). Another important function of disgust is to discover infections which can lead to diseases (Curtis & Biran, 2001). However, in Western culture and many others, disgust is experienced and expressed in many occasions which have nothing to do with food or diseases (Haidt, McCauley & Rozin, 1994). We experience disgust in all different kind of situations, but not everyone feels the same amount of disgust in similar situations. Clearly, there is a distinction between people regarding their sensitivity to disgust (Tyber & De Vries, 2013).

Some people are more sensitive to disgust than others. It is important to take this into account, because a different level of sensitivity for disgust might lead to different behaviour between our participants. More about this will follow.

Emotion regulation strategies and their effects on emotion experience

Professionals who are working in criminal investigation and lawsuit procedure need suitable strategies to minimize the effect of disgust on their work. The two emotion regulation strategies we will focus on in this research are reappraisal and suppression. Gross (2002) distinguished the different emotional consequences of these two strategies in

his research by measuring disgust while watching a gruesome film clip. The participants in the reappraisal group were given instructions to watch the film as if they were a professional who needed to rate the film, so they would be objective. The participants in the suppression group were given instructions to hide their emotional expressions in any way. The control group was told just to watch the film. Results showed that participants in both experimental groups expressed less emotion than participants in the control group, but participants in the reappraisal group experienced the least disgust. Goldin, McRae, Ramel and Gross (2008) confirmed these findings in their research. They used the same type of conditions as Gross (2002), but instead of one film, they used forty short video clips as exposure material. The results of these two studies indicate that using reappraisal as an emotion regulation strategy leads to less experience of disgust while watching provocative images than using no emotion regulation strategy, and especially less than when using suppression. These results are significant to the present study, because we want people in the criminal investigation and lawsuit procedure to experience as few emotions as possible while doing their work, so the judgements they make are more objective.

Cognitive strategies and their effects on memory

According to Gross (2002) and Goldin et al. (2008), reappraisal works best to tackle the influence of emotions on people's judgements. But regarding the fact that the people we are focussing on, judges for example, need to consider all relevant information they gain from photos, the emotion regulation strategy cannot deteriorate their memory of the details. Additionally, reappraisal and suppression also have cognitive consequences which need to be reconsidered (Gross, 1998).

Richards and Gross (2000) did research on the cognitive costs of using reappraisal and suppression to regulate emotions. Participants were shown several slides of people with cruel injuries. The participants were separated into three groups: the control group was told to just watch the slides, the reappraisal group was told to look at the injuries as a forensic professional would do, and the suppression group was told not to make any facial expressions while watching the slides. Next, all participants performed a memory task with questions about the slides. The participants in the suppression group performed much worse at the memory tasks, and participants from the reappraisal group performed best. According to these results, using reappraisal to regulate emotions has less cognitive cost than suppression does. Dillon, Ritchey, Johnson and LaBar (2007) found that using reappraisal especially leads to better explicit memory, the part of the memory we use consciously, in comparison to using suppression and no emotion regulation at all. Using suppression had the most negative cognitive consequences. This was measured with a free recall test after seeing photos. The difference in performance between the groups was larger after seeing a trial of unpleasant photos in comparison with neutral photos. These studies by Dillon et al. (2007) and Richard and Gross (2000) give the impression that reappraisal has no cognitive costs at all, but this is not always the case. Sheppes and Meiran (2008) found that using reappraisal can lead to cognitive costs when the instructions to use reappraisal are given during the exercise instead of in advance. In other words, when the instructions are given online. Giving online instructions means people are already experiencing emotions when they start to process the instructions. Obeying instructions given online requires many more cognitive resources, which has adverse consequences for our memory.

In short, using reappraisal as an emotion regulation strategy has no negative consequences for your memory unless you get your instructions online, while using suppression will affect memory in any case.

What type of people tends to use which strategy?

Above, we discussed the advantages and disadvantages of using suppression and reappraisal as emotion regulation strategies. In this paragraph, we will discuss whether some personality types have a bigger tendency to use suppression as an emotion regulation strategy than others do. In addition, we will elaborate on the question: are people with certain types of personalities more likely to experience the emotion disgust than others would in same situations? Having the answers for these questions would be important for the present research, because we would like to know if some people benefit more from applying certain emotion regulation strategies than others. Gross, Sutton and Ketelaar (1998) proved that people who feel many negative emotions in daily life have a greater tendency to use suppression as an emotion regulation strategy in comparison with people who experience fewer negative emotions. It is important to note that they do not use this emotion regulation strategy because they feel negative emotions more often, but the other way around: these negative emotions are aroused because of their use of suppression as an emotion regulation strategy (Gross, Sutton & Ketelaar, 1998). Moreover, this kind of behaviour is very common for certain personality types. John and Gross (2004) used the Big Five's dimensions to define different personality types. The Big Five is a test which measures personality on five dimensions: openness to experience; neuroticism; agreeableness; conscientiousness and extraversion (Goldberg, 1990). John and Gross (2004) found a strong negative correlation between suppression tendencies and the

dimension openness to experience. They also found a strong negative correlation between the dimension neuroticism and using reappraisal as emotion regulation strategy. So, people who score low on openness to experience are likely to use suppression, and people who score high on neuroticism are not likely to use reappraisal. It would be relevant for this research to know which of personality traits positively correlate to the experience of disgust, as well. Druschel and Sherman (1999) did research to discover which personality traits correlate positively or negatively with sensitivity to disgust. They used the dimensions of the Big Five test in their research, as well; they found a strong positive relation between neuroticism and sensitivity for disgust and a strong negative relation between openness to experience and sensitivity for disgust. Haidt, McCauley and Rozin (1994) found comparable results in their research. While using different scales like the Eysinck Personality Questionnaire and the Fear-of-Death scale, they found a similarly strong, significant relationship between neuroticism and sensitivity for disgust. They argued that the reason for this correlation is that disgust is used as a defensive emotion, and people who are more anxious have more defensive tendencies.

In summary, people who often regulate their emotions by using suppression score high on neuroticism and low on openness to experience (Gross, Sutton & Ketelaar, 1998). These same people often have a high sensitivity for disgust (Druschel & Sherman, 1999). Seeing these differences between people on sensitivity for disgust, and the possible consequences of the experience of this emotion we mentioned earlier, it would be interesting not only to compare participants' results based on the emotion regulation strategy they applied but on their disgust sensitivity as well. Additionally, the combination of these independent variables could be interesting, because it is important to discover

which emotion regulation strategy leads to which results for what kind of people. According to Gross, Sutton and Ketelaar (1998), and Druschel & Sherman (1999), people who experience disgust often have an inner tendency to supress their emotions. It could be possible that applying an emotion regulation strategy like reappraisal would have an influence on them. In comparison, those who do not have a high sensitivity for disgust are not linked to neuroticism and therefore do not have an inner tendency to supress their emotions.

Hypotheses

Based on the theory outlined above, we come up with the following hypotheses for our research:

H1: Participants in the reappraisal group will display a better memory of crime scene photos than participants in both the suppression and control groups, and participants in the control group will display better memory than participants in the suppression condition.

H2: The difference in scores on memory of crime scene photos between participants from different conditions will be larger between those who rate high on disgust sensitivity than between those who rate low on disgust sensitivity.

H3: The verdicts given by participants in the reappraisal group will involve fewer years of imprisonment than the verdicts given by participants in both the control and suppression groups, and those of the participants in the control group will involve fewer years than those from participants in the suppression group.

H4: The differences in years of imprisonment involved in the verdicts between participants from different groups will be larger between the participants who score high on sensitivity for disgust than between the participants who score low on sensitivity for disgust.

In this study, we aim to examine whether using reappraisal as an emotion regulation strategy will lead to less disgust for people who work in the criminal investigation department and involved in lawsuits while they are viewing disturbing photos of evidence. We expect that using reappraisal will lead to less experience of disgust, and therefore more objective verdicts with fewer years of imprisonment. Additionally, we want to demonstrate that using reappraisal while viewing these photos does not have any negative consequences on people's memory of details. Lastly, we want to prove that people who are very sensitive to disgust benefit more from using the reappraisal strategy than others, because they are normally more likely to supress their emotions.

Method

Participants

A total of 126 participants took part in this experiment. We excluded one participant before we carried out our analyses, because this participant's scores on both the memory test and the manipulation check were significantly different from all other participants. The resulting sample was of 125 participants (56 males and 69 females, Mage = 22.69 years, SDage = 6.41 years, age range = 18 – 62 years). The participants were recruited out of Leiden University's Social Science Faculty. As a reward, participants were allowed to

choose between receiving 1 credit or 2.50 euro after the experiment. Additionally, two 50-euro bol.com vouchers were awarded to the two participants who performed best during the memory tasks.

Design

The experiment had a 2 (sensitivity for disgust: low vs. high) x 3 (instruction: watch vs. suppression vs. reappraisal) between-subjects design. Participants were randomly assigned to the three instruction groups. Based on their score on our disgust sensitivity test, they received the label of high or low sensitivity for disgust.

43 participants were assigned to the suppression group, within which 20 participants were labelled as high sensitivity for disgust and 23 as low sensitivity for disgust. 42 participants were assigned to the reappraisal group, within which 20 were labelled as high sensitivity for disgust and 22 as low sensitivity for disgust. 40 participants were assigned to the control condition, within which 22 of them were labelled as high sensitivity for disgust and 18 as low sensitivity for disgust.

Procedure

The research took place in the lab at Leiden University's Faculty for Social Science.

After signing the informed consent, participants were escorted to a closed cabin, in which we placed a computer. The experiment leader instructed them to follow the instructions on the screen and made clear they could call the experiment leader in case of any questions. After starting the program on the computer, the experiment leader closed the door of the cabin.

To measure participants' disgust sensitivity, participants started with filling in the Dutch translation of the Revised Disgust Sensitivity Scale (DS-R, (DS-R; Haidt,

McCauley, & Rozin, 1994; Olatunji et al., 2007). After completing this 12-itemed questionnaire, the computer presented the participants with their instructions. These instructions were different for all three of the conditions but in all cases related to the way the participant needed to observe the upcoming photos. These instructions were followed by two series of photos of victims at a crime scene, taken just after their liquidations. A short story describing what had happened to the victims was attached to the photos. After the two trials, participants were figuratively placed in the position of the judge and were asked the following: 'for how many years would you sentence the person who is responsible for the things you just saw, to jail?' The participants had to fill in how long they think the defendant of each crime should go to jail for. In the next part, we tested participant's memory via two different memory tasks, starting with a free recall task, in which participants were asked to describe both crime scenes in as much detail as possible. The next memory task consisted of 18 researcher-created multiple-choice questions, in which participants were required to choose between four answers where only one was correct.

After the memory tasks, participants continued with the manipulation check. 12 questions were phrased to measure how shocking, horrible and disgusting the participants felt the four different crime scene photos were, followed by 3 questions intended to measure the extent to which participants thought they succeeded in following their instructions during the experiment.

In the last part of the experiment, participants were asked to fill in some general information about themselves.

Then, participants were allowed to leave the cabin and received their cash or credit. The whole procedure took 22 minutes on average.

Apparatus

We used eight computers with a 1920 x 1080 resolution. All computers were provided with Qualtrics and property of Leiden University.

Materials and Questionnaires

Disgust sensitivity

To measure participants' disgust sensitivity, we used the Disgust Scale-R (Haidt, McCauley & Rozin, 1994). This test includes 12 questions in which a specific 'disgusting situation' was described. Participants answered on a scale from one to four how disgusting they thought each situation was. In this case, one stands for 'not disgusting', and four stands for 'very disgusting'. For example: 'You see maggots on a piece of meat in an outdoor garbage'. Logically, participants could score for disgust sensitivity between 12 and 48. Seeing this is the sum of 12 scores differentiating from one to four.

Instructions

We used the same three instructions to manipulate the different groups as Gross and Richards (2000) did in their research on the cognitive costs of emotion regulation strategies. The reappraisal group received the following instructions: 'Look at the injuries at the photos as if you are a forensic professional'. The suppression group received the instructions 'Try to don't express any emotions while watching the photos'. Finally, the instructions the control group received were 'Just watch the photos'.

Crime scene descriptions

Before the participants were exposed the photos, we instructed them to read a small description about the crime scene they were from. Information like the location of the crime, the possible type of murder weapon and a possible description of the incident was phrased in the text.

Crime scene photos

We used the same crime scene photos as Van Dillen, Blokker and Vanderveen (in prep.) did in their research on the relation between gaze behaviour, disgust, crime scene evaluations and punitive judgements. We used two photos from each of the two crime scenes. The first shows the whole room and the second one more focused on the victim's wound. In the photos of the first crime scene, a male actor is laying on a bed pretending he is dead. The photos from the second crime scene show a female actor, who is also laying on the bed and pretending she is dead.

Years of imprisonment

We used the same kind of tool De Keijser (2013) did in his research to the effect of eyewitness testimonies. Participants were required to write down two numbers indicating the number of years they believed the offender of each crime should spend in prison.

Memory of crime scene

A free recall test like Dillon, Ritchey and Johnson (2007) used in their research to the effect of emotion regulation strategies on memory was also used in the present research. Without prior warning, participants were asked to write down as many objects from each crime scene as they remembered. For example, A lamp, tissues and a plant were correct answers for the first crime scene. For each correct answer, one point was awarded. Since there were 10 mentionable objects in total, the maximum score for this part of the memory

test was 10. The free recall memory task was followed by a researcher-made 18-itemed multiple-choice questionnaire about the four photos participants were exposed to. These were based on the multiple-choice test Robinson, Johnson and Herndon (1997) used in their research. For example, one question was ‘Which object did not appear on the nightstand next to the victim?’ followed by four possible answers. Nine out of the 18 questions were related to blood. For example: ‘Besides the victim’s head, on which other places there was blood, as regards to the photos of the male victim?’ with also four possible answers. The remaining 9 questions were not about blood. For every correct answer, one point was awarded. For this part of the memory task, a maximum of 18 points could be rewarded. This made the maximum total score for the memory tasks 28.

Manipulation check

We used The Emotion Regulation Questionnaire (Gross & John, 2003), which measures to what extent participants experienced three different negative emotions, while they were watching the photos. For all four photos, participants had to fill in the extent to which they thought the photos were horrible, shocking and serious on a scale from one to seven. Combining all three emotion scores, participants could have a total score ranging from 3 to 21.

We also added three multiple-choice questions to measure if our manipulation worked. To check whether the participants followed the given instructions, we added the question ‘While watching the photos I tried to’. The three answers participants needed to choose between were the three different kind of instructions we gave our participants: ‘Look at the injuries at the photos as if you are a forensic professional’, ‘Try to don’t express any emotions while watching the photos’ and ‘Just watch the photos’.

To measure if their answers on the former question matched with the instructions they received earlier ,we added the question ‘At the beginning of the research I was instructed to’. The three answers participants needed to choose between were again the three different kind of instructions we gave our participants: ‘Look at the injuries at the photos as if you are a forensic professional’, ‘Try to don’t express any emotions while watching the photos’ and ‘Just watch the photos’.

As a final manipulation check, we asked the participants how well they managed to execute their instructions. The four possible answers they could choose between were ‘Very good’, ‘Good’, ‘Medium’ and ‘Bad’.

Independent variables

The independent variables were the emotion regulation strategy and sensitivity to disgust. We randomly assigned participants to the three different emotion regulation strategies: suppression, reappraisal and control. 43 Participant were assigned to the suppression group and received the following instruction: ‘Try to don’t express any emotions while watching the photos’. 42 Participants were assigned to the reappraisal group and received the following instruction: ‘Look at the injuries at the photos as if you are a forensic professional’. 40 Participants were assigned to the control group and were instructed to ‘Just watch the photos’.

The second independent variable, sensitivity to disgust, was measured with Disgust Scale-R (Haidt, McCauley & Rozin, 1994). This test involves twelve questions asking participants to answer how disgusting they find the situation sketched in each question on a scale from one to four, in which one stands for ‘Not disgusting’, and four stands for ‘Very disgusting’. Participants’ total scores for disgust sensitivity ranged from 12 and 48. The

50% of participants with the lowest scores were designated as low disgust sensitivity, and the 50% of participants with the highest scores were designated as high disgust sensitivity.

Dependent variables

The two dependent variables we have measured are memory and years of imprisonment. Memory was measured by open-ended questions, like the one in the experiment of Dillon, Ritchey and Johnson (2007), in combination with a multiple-choice test like the memory test in the experiment of Robinson, Johnson & Herndon (1997). For every correct answer, participants earned points. Their final score was the sum of all their earned points and could have been between 0 and 28.

The other dependent variable, years of imprisonment, was measured by a questionnaire participants responded to after being exposed to the photos. The sum of the two numbers of years of imprisonment they sentenced the two defendants to prison for was their score on the second dependent variable. De Keijser (2013) measured this variable in the same way in his research.

Results

Preliminary analyses

We computed an ANOVA to check if there were any differences in disgust sensitivity between the participants from the three different conditions based on the different instructions they received. The variable instructions were used as the between-subjects factor in this ANOVA. There were no differences found for sensitivity for disgust between the three conditions: F (2,122) = .285, p = .752, ηp2 = .005. Participants scored between 15 and 45 on this variable, on a scale where 12 would be the absolute minimum

and 48 the maximum score. The estimated marginal means and standard deviations for the three conditions were as follows: for the reappraisal condition, participants scored *M* = 29.3, *SD* = .9; for the suppression condition, these were *M* = 29.8, *SD* =.9; and for the control condition, the results were: *M* = 30.4, *SD* = 1.0.

Knowing this, we continued with performing a median-split to divide the participants in two groups: the low disgust sensitivity group and the high disgust sensitivity group. However, first we computed a Q-Q normal distribution plot for disgust sensitivity to be sure that the results on this variable were normally distributed. The Q-Q normal distribution plot will be find just underneath.

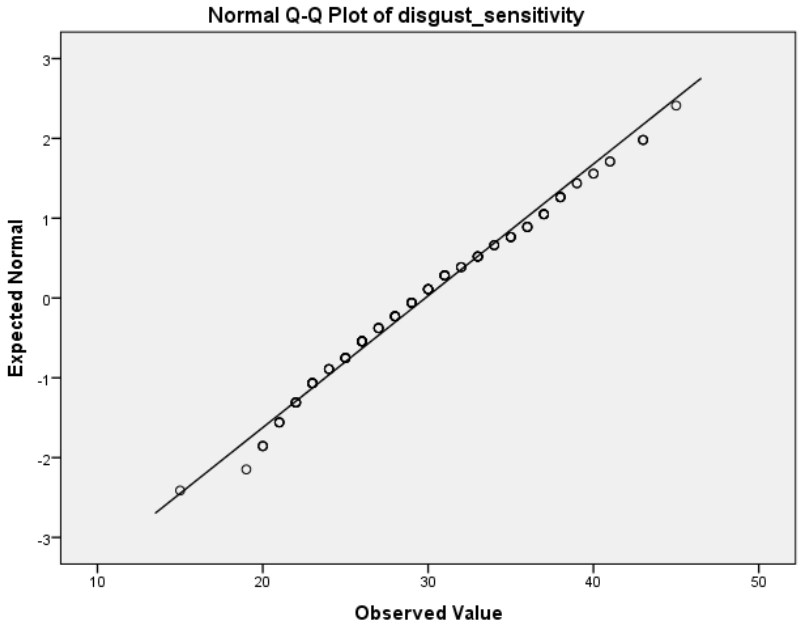

Figure 1: Distribution of disgust sensitivity scores

In the normal Q-Q plot of distribution, through the X-axis we find the observed disgust sensitivity scores of our participants. Through the Y-axis we find the expected normal scores. This Q-Q plot shows that all observations are around the vertical line, which

allows us to presume the scores are normally distributed, meaning we were able to compute the median split. The median for participants' score on the variable disgust sensitivity is 29. Based on this, we designated participants who had scored 29 or lower as the low disgust sensitivity group and participants who scored 30 or higher as the high disgust sensitivity group. The low disgust sensitivity group contained 63 participants; the high disgust sensitivity group contained 62.

Manipulation check

To analyse the results of our manipulation check, we computed a MANOVA on participants' total scores of the three variables (shocking, horrible and serious) which measured participants' negative emotions while watching the four photos; disgust sensitivity (high, low) was used as the between-subjects factor. Even though we did not observe an interaction effect between disgust sensitivity and the items, we examined disgust sensitivity's effect on the three items separately. The multivariate tests for disgust sensitivity showed a significant effect: F (3,121) = 3.78, p = .012, ηp2 = .086. Next to the fact that the tests of between-subjects effects found a significant effect for the variable 'horrible' (F (1,123) = 5.96, p = .016, ηp2 = .046) the test found a significant effect for the variable 'shocking' as well (F (1,123) = 7.21, p = .008, ηp2 = .055). For the variable 'serious', there was no significant effect found (F (1,123) = .361, p = .549, ηp2 = .003). The estimated marginal means show us that the high disgust sensitivity group thought the photos were more shocking, horrible and serious than the low disgust sensitivity group. As mentioned before, for 'shocking' and 'horrible', these differences were significant. The means are presented in Table 1. Notice that these are the means and standard deviations of the sum of participants' different scores for each of the four photos we presented to them.

Dependent variable	*M*, *SD* Low Disgust sensitivity	*M*, *SD* High Disgust sensitivity
Shocking	*M* = 15.9, *SD* = .79	*M* = 18.9, SD = .79
Horrible	*M* = 15.9, *SD* = .77	*M* = 18.5, SD = .77
Serious	*M* = 19.8, *SD* = .77	*M* = 20.5, SD = .78

Table 1. Means and standard deviations manipulation check

To make sure that disgust sensitivity and multiple-choice memory test are reliable, we used Cronbach's Alpha to measure the reliability. The results are displayed in Table 2.

Test	Condition	Cronbach's α	Judgment
Disgust sensitivity	All conditions	.80	Good
MC Memory	Suppression	.94	Very good
MC Memory	Reappraisal	.95	Very good
MC Memory	Control	.96	Very good

Table 2. Cronbach's Alpha's

Testing the hypotheses

Memory

To test the first hypothesis, '*participants in the Reappraisal condition will display better memory for crime scene photos than participants in both the suppression and control condition, participants in the control condition will display better memory than participants in the suppression condition',* we computed an univariate ANOVA on participants' memory scores with instructions (reappraisal, suppression, control) and disgust sensitivity (high, low) as the between-subjects factors. Participants' scores on

memory were based on the number of correct answers on both the free recall and multiple-choice task. Participants scored between 6 and 27 (M = 14.76, SD = 4.07), on a scale where the minimum score would have been 0 and the maximum score 28. We found a significant result for instructions (F (2,119) = 4.87, p = .009, ηp2 = .076). The mean and standard deviation for suppression were M= 13.4 SD = .6. For reappraisal, they were M=14.9, SD = .6. For the control, they were M=16.1, SD = .6. We used planned comparisons to find out for which groups the scores differed significantly from each other's. Contrary to our hypothesis, the reappraisal group did not differ significantly from the suppression group (T (122) = 1.73, p = .085) or from the control group (T (122) = - 1.40, p = .165). However, the control group did differ significantly from the suppression group, as predicted (T (122) = 3.12, p = .002).

To test the second hypothesis, '*The differences in scores between participants from different conditions for their memory for crime scene photos will be larger between the participants who score high on sensitivity for disgust than between the participants who score low on sensitivity for disgust',* we used the same ANOVA. Contrary to our hypothesis, we did not find a significant interaction effect between instructions and disgust sensitivity on participants memory: F (2,119) = .46, p= .631, ηp2 = .008. The estimated marginal means and standard deviations are displayed in Table 3.

Condition	*M*, *SD* Low Disgust sensitivity	*M*, *SD* High Disgust sensitivity
Suppression	*M* = 13.8, *SD* = .8	*M* = 12.9, *SD* = .9
Reappraisal	*M* = 14.5, *SD* = .8	*M* = 15.3, *SD* = .9
Control	*M* = 16.0, *SD* = .9	*M* = 16.2, *SD* = .8

Table 3. Means and standard deviations interaction effect

Years of imprisonment

For testing the third hypothesis, *'The verdicts of the participants in the Reappraisal condition will involve fewer years of imprisonment than the verdicts of the participants in both the suppression and control condition, those of participants in the control condition will involve fewer years than those from participants in the Suppression condition'*, we computed an univariate ANOVA on years of imprisonment with instructions (reappraisal, suppression, control) and disgust sensitivity (high, low) as the between-subjects factors. Participants' scores for years of imprisonment are the sum of the two numbers of years participants sentenced the two offenders to prison. These numbers differed between 0 and 120 (M=45.39. SD= 31.92). Contrary to our hypothesis, we did not find any significant result for instructions on years of imprisonment (F (2,118) = 1.16, p = .318, ηp2 = .019). The estimated marginal means and standard deviations were as follows: for the suppression group, they were M= 51.7, SD = 4.9; for the reappraisal group, they were M = 41.9, SD = 4.9; for the control group, they were M=43.3, SD = 5.0. We used planned comparisons to gain more insight in the differences for years of imprisonment between the conditions. Regarding this, we did not find a significant main effect, and we were unsurprised to find that the reappraisal condition did not differ significantly from the suppression condition (T (121) = - 1.33, p = .186), nor from the control condition (T (121) = - .28, p = .779). Neither did the control condition differed significantly from the suppression condition (T (121) = - 1.03, p = .304).

To test hypothesis number four, *'The differences in years of imprisonment involved in the verdicts between participants from different conditions will be larger between the participants who score high on sensitivity for disgust than between the participants who*

score low on sensitivity for disgust', we computed an univariate ANOVA on years of imprisonment with instructions (reappraisal, suppression, control) and disgust sensitivity (high, low) as the between-subjects factors. Contrary to our hypothesis, we did not find a significant interaction effect between instructions and disgust sensitivity on participants scores on years of imprisonment (F (2,119) = .46, p = .631, ηp2 = .005). The estimated marginal means and standard deviations are displayed in Table 4.

Condition	*M*, *SD* low disgust sensitivity	*M*, *SD* high disgust sensitivity
Suppression	*M* = 43.3, *SD* = 6.6	*M* = 60.0, *SD* = 7.3
Reappraisal	*M* = 36.8, *SD* = 6.8	*M* = 46.9, *SD* = 7.1
Control	*M* = 40.3, *SD* = 7.5	*M* = 46.2, *SD* = 6.8

Table 4. Means and standard deviations interaction effect

Disgust sensitivity

Although we did not have any specific hypotheses about the effect of sensitivity for disgust on years of imprisonment, we did find a marginally significant effect: F (1,118) = 3.64, p = .059, ηp2 = .030. The estimated marginal means and standard deviations were as follows: participants who scored low on disgust sensitivity scored *M* =40.1, *SD* = 4.0, while participants who scored high on disgust sensitivity scored *M* = 51.1, *SD* = 4.1

General discussion

The present study investigated the effect of different emotion regulation strategies on memory of details after being exposed to a series of photos showing a victim at a crime scene. The study also investigated if peoples' sensitivity to disgust plays a role in judgement. Additionally, we investigated the relationship between different emotional

regulation strategies and the number of years participants decided to send offenders to prison for after seeing the same series of crime scene photos. While investigating this effect, we also researched the effect of people's sensitivity to disgust.

To measure these effects, we exposed participants to two sets of photos showing a different victim laying in a crime scene. We divided the participants in three groups, each instructed to apply a different emotion regulation strategy while viewing the photos. Within each group, we made a distinction between participants with a high sensitivity to disgust and those with a low sensitivity to disgust. After watching the series of photos, we had the participants perform two memory tasks with questions about details they could have seen in the crime scene photos. Next, we asked the participants how many years they thought the offender of each crime scene needed to spend in prison, in case they would been sitting in the judge's chair.

The effect of emotion regulation strategies on memory

We found differences between the groups on their memory performance, caused by the different emotion regulation strategy they used, or, in the case of the control group, the absence of an emotion regulation strategy. However, these differences were not as predicted. The result we found was that using no emotion regulation strategy at all leads to better performance at the memory tasks than using suppression. Contrary to our hypotheses, between reappraisal and no strategy and between reappraisal and suppression, there were no significant differences found.

The findings that using reappraisal did not lead to significantly better memory performance than using suppression, reappraisal did not differ significantly from the control condition, and the fact that only the control group did perform significantly better

than the suppression group were unexpected, but also quite interesting. Therefore, this will be further discussed in the following sections of this discussion.

The effect of emotion regulation strategies in combination with disgust sensitivity on memory

We expected that the differences in scores between participants from different groups on their performance on the memory tasks would be larger for those who scored high on disgust sensitivity in comparison to those who scored low.

This prediction is based on the research of Druschel and Sherman (1999) on the one hand, who discovered a positive correlation between disgust sensitivity and the Big Five personality trait neuroticism, and the research of Gross, Sutton and Ketelaar (1998) on the other hand, who found a positive relation between neuroticism and the inner tendency to use suppression as an emotion regulation strategy. We believed that the difference would be larger between participants from different groups who score high on disgust sensitivity because they could have a greater advantage in using reappraisal instead of using suppression than others, based on the research of Gross, Sutton and Ketelaar (1998), who proved that those participants would normally be more likely to supress their emotions. This should lead to poor performance on memory tasks (Richards & Gross 2000). Contrary to our hypothesis, the results tell us there is no effect between the combination of different emotional regulation strategies and high or low disgust sensitivity. Therefore, there were no larger or smaller differences between the groups for people who scored high on disgust sensitivity. The theory that performance on memory tasks would improve more for people who are related to the personality trait neuroticism because of their high sensitivity for disgust when using reappraisal in comparison to people who do

not score high on disgust sensitivity is not proven by this experiment.

Even though there was no hypothesis about the effect of disgust sensitivity and memory, it is worth mentioning that we did not find this effect. So, people's level of tendency to experience disgust has no influence on their performance on the memory tasks.

The effect of emotion regulation strategies on years of imprisonment

We found major differences in scores between the three groups in regard to years of imprisonment, especially between the participants from the suppression and the reappraisal groups. Therefore, we expected to find a confirmation of the most important part of the third hypothesis: 'Verdicts of participants in the reappraisal condition will include less years of imprisonment than verdicts of participants in the suppression condition'. Nevertheless, the differences between the conditions with regards to this part were not significant. This probably has to do with the large differences in scores between the participants within the same condition. According to Field (2013), even though the differences between the conditions are large, this does not guarantee the difference is significant. A significant effect can only be found when the following three conditions are met: first, the difference between the conditions need to be large enough; second, the number of participants must be large enough as well: third, the differences in scores between participants within the same condition cannot be too large (Field, 2013). The last condition is not met, given our results. This could be the reason we did not find an effect for the use of different emotion regulation strategies on years of imprisonment. We will elaborate on this topic later on in this discussion.

The effect of emotion regulation strategies in combination with disgust sensitivity on years of imprisonment

Like the expected effect of emotion regulation strategy in combination with disgust sensitivity on memory we mentioned earlier in this discussion, we also expected an effect between emotion regulation strategy in combination with disgust sensitivity on years of imprisonment. According to Druschel, Sutton and Ketelaar (1998), people who score high on disgust sensitivity are positively correlated with the personality trait neuroticism; Gross, Sutton and Ketelaar's (1998) research tell us this trait leads to the tendency to use suppression as an emotion regulation strategy. Therefore, we expected that the differences on years of imprisonment between the groups would be larger for people who score high on disgust sensitivity, because they are normally more likely to supress their emotions. According to the theory of the present research, this should lead to stricter verdicts. Gross (2002) explains that using reappraisal in the experiment instead of suppression leads to less feelings of disgust, which we theorised should lead to fewer years of imprisonment.

Contrary to our hypothesis, there was no effect found between emotion regulation strategies in combination with disgust sensitivity on years of imprisonment. Therefore, the differences between the three groups were neither larger nor smaller for participants who scored high on disgust sensitivity than for those who scored low on disgust sensitivity.

The effect of disgust on years of imprisonment

Even though there was no hypothesis about the direct relationship between disgust sensitivity and years of imprisonment, we believe it is worth mentioning that we did find a marginally significant effect for disgust sensitivity on years of imprisonment. This means that people who scored high on disgust sensitivity thought the offenders deserved more years of imprisonment than people who scored low on disgust sensitivity. This is a very interesting result, because it confirms the findings of Schnall, Haidt, Clore, and Jordan

(2008) from their research, in which they have proven that the experience of the emotion disgust leads to stricter moral judgements. Our finding suggests people are actually able to sentence offenders to prison for a significant longer period because of the experience of the emotion disgust. It would be interesting to investigate in future research where the strong experience of disgust for these participants arises. Is this purely because of a difference in personality traits, or could gazing behavior, for example, play a part in this? We will elaborate on this in the *future research* section of this discussion.

Limitations

Though the present research led to some interesting findings, not all results where as we had predicted. We possibly would have found the results we expected if some implications in the research we noticed later had been taken care of.

As mentioned earlier in this discussion, we found that using reappraisal does not lead to significantly better memory performance than suppression, but using no regulation strategy, like the participants in the control group, does. Our memory only has limited capacities (Sheppes & Meiran, 2008). Using reappraisal as an emotion regulation strategy leads to depletion of the working memory, contrary to using no emotion regulation strategy like the participants in the control group (Sheppes & Meiran, 2008). In the case of our experiment, participants in the reappraisal group might have had fewer resources left in the working memory to memorize the details on the photos optimally, because they tried to focus on their instructions on the same time as well. This might explain why participants in the control group performed better at the memory tasks; they did not have any specific instructions besides ‘just watch the photos’, meaning all their resources were available to focus on the details they saw. This advantage could explain why the control group

performed significant better at the memory tasks later on than the suppression group, whereas the reappraisal group did not. This lack of equality in cognitive load between the different groups can be seen as a limitation in this research, which might have influenced the results. Recommendations on how to minimise this advantage can be found in the *future research* section of this discussion.

Another unexpected finding we discussed earlier might be explained by a limitation in the research as well: the fact that the sizeable differences we found between the groups on years of imprisonment were not significant. According to Field (2013), large differences within groups reduce the chance to find significant differences between groups. Looking at our research, the within-group differences on years of imprisonment were quite large; this could explain why we did not find a significant difference on this variable between the groups. These large within-group differences may be partly due to the fact that we used open questions to measure this variable (Bridgeman, 1992). Using open questions does not always need to lead to large within group differences, of course; however, using these types of questions, combined with the fact that participants' knowledge about the judicial procedure was probably very variated, means many of them might not be familiar with which sentences are 'common' in court. This could have been the reason that within-group differences were that large, which was partly the reason the between-group differences were insignificant despite their size. Recommendations on how to avoid these large within-group differences can be found in the *future research* section of this discussion.

Additionally, the fact that we did not find any differences between disgust sensitivity in combination with emotion regulation strategy instruction on both memory performance and years of imprisonment might be due to a limitation in the research as well.

We expected to find that the differences on both dependent variables between the conditions distinguish on instructions would be larger for the participants who scored high on disgust sensitivity. We theorised that these participants would benefit more from using reappraisal instead of suppression than participants who scored low on sensitivity for disgust, which should have resulted in major differences between the reappraisal and suppression groups. This prediction was based on the findings of Druschel, Sutton and Ketelaar (1998), and Gross, Sutton and Ketelaar (1998), as we explained earlier in this discussion. The fact that we did not prove these hypotheses with our research could be because the foundation of these hypotheses is based on the positive relationship between the personality trait neuroticism and the usage of the emotion regulation strategy suppression (Druschel, Sutton & Ketelaar, 1998) combined with the positive relationship between neuroticism and disgust sensitivity (Gross, Sutton & Ketelaar, 1998). In other words, an indirect link, which makes the results less reliable (Field, 2013). The suitability of the present research to test these two hypotheses is therefore questionable. This possibly means these results are not trustworthy. In future research, some assets need to be validated in this experiment before we are able to prove a possible effect of disgust sensitivity combined with instructions on both memory and years of imprisonment. In the *future research* section, it will be explained which part of the study should be changed in future research exactly and how this could be done.

Future research

As described in the *limitations* section, the present research has some issues, which might have caused some of the divisions between the results we found and the hypotheses we phrased earlier. In this section, we will provide some recommendations as to how these

limitations could be minimized in future research, to make sure those results could match with our hypotheses. Next to that, we will suggest some additions which could be explored and added to the research to discover more interesting findings.

First, to minimise the differences in depletion of participants' working memory, the control group could perform another task at the same time as they watch the photos. According to Cowan and Morey (2007) a dual-task is easier to perform when the tasks do not share many features, like an audio-task and a spatial-task. As watching the photos and following up the suppression and reappraisal groups' instructions share few features, the control group's task should not either. Therefore, in future research, the control group should perform a similar second task as the manipulated groups, such as following up similar instructions. For example, the control group could be told to apply suitable neutral instructions while watching the photos. The instructions should not have any impact on the way they experience their emotions. When applying this measure, the working memory of participants in the control group will be partly depleted as well, which takes away their advantage over the other participants on the memory tasks. To make sure these instructions are depleting participants' working memory as much as the suppression and reappraisal groups' instructions, there needs to be an extra manipulation check at the end of the experiment to check how challenging participants thought the instructions were. In this case, if the participants from all groups find the instructions they followed while watching the photos equally challenging, the manipulation check is sufficient.

Second, we found major differences between the groups' scores on years of imprisonment. However, as mentioned before, the differences in scores within the conditions were quite large as well. According to Field (2013), we therefore did not find a

significant effect, despite the large difference between groups on this variable. This could be solved in future research when participants' answers would be standardized. Using multiple choice questions could be a way to make sure the differences between participants scores are not that large (Bridgeman, 1992). Another way to solve this problem would be to provide participants with certain knowledge about the juridical procedure. According to Field (2013), reducing individual differences among participants reduces the error in the formula which increases the chance to find significant results. When we make sure all participants know which sentences are 'common' and which ones are not, differences in scores on years of imprisonment in future research might be caused less by individual differences in knowledge about juridical verdicts, which could lead to smaller within-group differences. In turn, this might make the currently insignificant between-group differences, significant.

Additionally, the present research uses an indirect link to investigate the influence of the personality trait neuroticism on the effect between the different kinds of emotion regulation strategies and the dependent variables years of imprisonment and memory. To improve the quality of the research and to make sure the second and fourth hypothesis are more testable, the indirect link between neuroticism and tendency to use suppression, based on both their high correlation with disgust sensitivity, needs to be replaced by a direct link (Gross, Sutton & Ketelaar, 1998). In the present research, we assumed that people with high disgust sensitivity would also score high on neuroticism and would therefore have an inner tendency to apply suppression in certain situations. Looking back, this assumption is not substantiated enough to base hypotheses two and four on. This might be the reason hypotheses two and four are not confirmed by our results. Therefore, in future research, a

personality test should be included in the experiment. Creating a measurable direct link between neuroticism and peoples' inner tendency to apply a certain kind of emotion regulation strategy would improve the validity of this research and will help us in the end to create trustful statements concerning which people might benefit more from the appliance of an emotion regulation strategy like reappraisal.

Next to some recommended adjustments for future research, we would like to propose some additions as well.

To start with, we want to mention the possibilities that would be offered if eyetracking could be involved in this research. As we saw in the result section, people who scored high on disgust sensitivity are more likely to punish heavily. However, which parts of these photos make people with a high sensitivity for disgust willing to sentence offenders to prison for a marginal significant longer time is still unknown. According to Schienle, Übel, Gremsl, Schöngasser and Körner (2016), there is a positive relationship between disgust sensitivity and focussing more on the spots that can easily evoke disgust, like open wounds. This same positive relationship was found between participants who reported experiences of disgust during the research and their tendency to focus on the disgust-evoking spots in Van Dillen, Blokker and Vanderveen's (in prep.) pilot study. However, do people with a high sensitivity for disgust also punish stricter because of this particular gazing behaviour? This would be very interesting to investigate in future research. The results would be very important for society, because the knowledge could be used to create useful training for employees in the juridical procedure.

The next addition is defining the differences between people with high and low disgust sensitivity. Eye-tracking could help us to clarify which emotion regulation strategy

leads to which gazing behaviour. As mentioned before, Goldin et al. (2008) proved that using suppression leads to more feelings of disgust than using reappraisal as an emotion regulation strategy, which makes it likely that people who use suppression will focus more on the disgust-evoking spots on cruel crime scene photos, such as the wounds victims and blood. So, using reappraisal leads to less feelings of disgust, and less feelings of disgust leads to less fixations on the disgust-inducing spots and more focussing on other details (Schienle et al., 2016). A study including eye-tracking would be able to investigate the relationship between gazing behaviour and memory. It sounds logical that focusing less on the wounds leads to better memory for other details. Another possibility is that a high sensitivity for disgust and suppression leads to heading off from the disgust-evoking parts of the photos. However, future research needs to test these claims. In short, the usage of eye-tracking in a similar study would provide answers which could help to improve objectivity in the juridical procedure by means of the improvements it would offer to certain trainings.

Besides disgust, other emotions could influence decisions made in the juridical procedure as well. According Ugazio, Lamm and Singer (2012), anger leads to different moral judgements in comparison with disgust. They found that angry people thought certain kind of behavior was more permissible. It would be interesting to investigate if this emotion also leads to less strict punishments in court. For example, one experimental group will be triggered with anger-arousing photos before participating in the present research. Another experimental group will use disgust-evoking photos. In addition, there should be a control group as well. It would be very interesting to compare these groups and find out if angry people indeed sentence offenders to prison for a shorter period. Investigating

which emotion regulation strategies could inhibit the effect of anger on the strictness of their verdicts would also be important. Szasz, Szentagotai and Hofmann (2011) found that using reappraisal works better than suppression or acceptance to repress anger while doing a frustrating task. We wonder if these emotion regulation strategies have effects on judges' verdicts as well. It is important to include a manipulation check, to measure current emotions, so we can be sure about the effect of our manipulations.

Besides anger, the results for other basic emotions like fear, sadness and joy would be relevant as well.

These additions could be helpful to teach us more about professionals' behaviour during the juridical procedure and how particular behaviours in their work that could lead to irrational decisions can been reduced.

Conclusion

In this study, we found that using no emotion regulation strategy at all leads to better performance at memory tasks than using suppression. We had expected that the use of reappraisal would lead to best scores on memory. However, possibly due to the high cognitive load this emotion regulation strategy brings, this was not the case.

Additionally, there were no significant differences found between suppression, reappraisal and using no emotion regulation strategy on the number of years participants sent offenders to prison for. As expected, the usage of suppression leads to the most years, followed by using no emotion regulation strategy. But despite the major differences between the groups, the results were not significant. This had to do with the differences within the groups which were quite large as well.

We did find a marginally significant effect for disgust sensitivity on years of imprisonment, which means that people who score high on disgust sensitivity are willing to send perpetrators to prison for a longer period. These results tell us that verdicts in court are indeed sensible for the emotions judges experience. This also suggests that disgust, and perhaps multiple emotions, play a part in earlier stages of the juridical procedure.

In short, the present research has shown an emotional influence on court related judgements. Therefore, the fact society trusts that judgements made in court are based on objectively perceived information, and therefore rational and trustful, just as earlier decisions made in the juridical procedure, might not be deserved.

More research need to be done into how to regulate these emotions and which strategy works best for which type of people in order to reduce the impact of our emotions on juridical decisions.

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Appendix A: Case descriptions displayed right before the photographs.

"On Monday morning the police department of Leiden received an anonymous tip stating that someone got wounded at the Moddermanstraat in Leiden. At arrival the police found the moral remains of a 44-year old male. The forensic investigation team was activated immediately. The victim has probably been killed by a misdemeanor. At the crime scene it can be established, with reasonable suspicion, that the victim was killed by a gunshot wound, however no firearm was found. The forensic investigators did the usual forensic research and took the following photographs (photographs a and b)''.

"On Saturday afternoon, the police received a report of a 21-year old student in Amsterdam. When she got home, she found her roommate lifeless in bed. Once arrived at the scene, it turned out to be the remains of a 22-year old female. Forensic investigators were enabled. There is a very strong presumption that the victim was killed by a misdemeanor. Presumably she was attacked in the kitchen, after which she was laid in bed by her attacker. The forensic investigators did the usual forensic research and took the following photographs (photographs c and d)''.

Appendix B: Displayed photographs used to measure memory and emotional responses (a-d).

Photograph a.

Photograph b.

Photograph c.

Photograph d.

Appendix C: Multiple-choice memory questionnaire focused on crime scene details

1. Which object did not appear on the nightstand next to the victim?

a. Mobile phone

b. Deodorant

c. Paper handkerchiefs

d. Lamp

2. What type of pants was the male victim wearing?

a. Track bottoms

b. Trousers

c. Pajama trousers

d. Jeans

3. Besides the victim's head, which other places showed the male victim's blood?

a. Bed frame, pillowcase, victim's hand, duvet cover

b. Pillowcase, duvet cover, T-shirt

c. T-shirt, victim's hand, pillowcase

d. Pillowcase and victim's hand

4. Where did the male victim have his wound?

a. Forehead

b. Left side of the head for the viewer

c. Right side of the head for the viewer

d. On top of his head

5. Which animal was pictured on the male victim's T-shirt?

a. Bear

b. Wolf

c. Tiger

d. Monkey

6. Besides the victim's head, which other places showed the female victim's blood?

a. Bed frame, pillowcase, victim's hand, duvet cover

b. Pillowcase, duvet cover

c. Sweater, victim's hand, pillowcase

d. Pillowcase and victim's hand

7. Where did the female victim have a piercing?

a. Eyebrow

b. Nose

c. Lower lip

d. She had no piercing

8. What kind of earring was the female victim wearing?

a. Silver button

b. Golden ring

c. Silver cross

d. No earring

9. What were the colors of the female victim's vest?

a. Black/beige/blue

b. Blue/green/beige

c. Green/beige/brown

d. Brown/purple/beige

10. With the female victim, on the background, what was the color of the magazine?

a. Purple

b. Orange

c. Blue

d. Green

11. With the … (1) victim, there was more blood on the pillowcase. With the … (2) victim, there was more blood on the head of the victim.

a. (1) Male victim (2) Female victim

b. (1) Female victim (2) Male victim

c. (1) Male victim (2) Male victim

d. (1) Female victim (2) Female victim

12. The … (1) victim had his/her eyes closed. With the … (2) there was more blood on the victim's clothes.

a. (1) Male victim (2) Female victim

b. (1) Female victim (2) Male victim

c. (1) Male victim (2) Male victim

d. (1) Female victim (2) Female victim

13. The backside of the bed frame made in which the male victim was lying, was made of what?

a. Iron

b. Wood

c. Plastic

d. Cotton

14. What was standing on the floor, next to the male victim's nightstand?

a. Lamp

b. Ventilator

c. Garbage bin

d. Plant

15. How many bracelets was the female victim wearing on her right arm?

a. 1

b. 2

c. 3

d. None

16. Where did the female victim have her wound?

a. Forehead

b. Left side of the head for the viewer

c. Right side of the head for the viewer

d. On top of her head

17. How many drops of blood were visible on the fitted sheet of the male victim?

a. 1

b. 2

c. 3

d. None

18. On the male victim, on which two fingers was blood visible?

a. Thumb and index finger

b. Ring finger and little finger

c. Index finger and middle finger

d. Middle finger and ring finger

* Correct answers are bold.