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Article

Effects of Sadness and Fear in Public Events on Moral Judgments Based on the CNI Model

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Abstract: With the rapid development of society and the deteriorating natural environment, there has been an increase in public events. This study aimed to explore how sadness and fear in the context of public events influence moral judgments. This research first induced feelings of sadness and fear by videos about public events and music, and then used moral scenarios from the CNI model to assess participants' moral thinking. In Study 1, participants were divided into sadness group and neutral group, while in Study 2, participants were divided into fear group and neutral group. During the experiment, participants were exposed to different videos related to public events to induce the corresponding emotions, and emotional music was continuously played throughout the entire experiment. Participants were then asked to answer questions regarding moral judgments. The results showed that based on CNI model, sadness induced in the context of public events significantly increased C parameter, without affecting N or I parameter. Fear increased I parameter, without affecting C or I parameter. That is, sadness and fear induced in the context of public events can influence moral judgments. Specifically, sadness increases individuals' sensitivity to consequence, and fear increases the general preference for inaction in moral judgments.

Keywords: sadness; fear; moral judgments; CNI model; public events; deontology; utilitarianism

1. Introduction

In 2014, two American doctors were accidentally infected with the Ebola virus while aiding in Africa. They needed assistance to return to the United States to receive appropriate treatment. However, the Ebola virus is extremely dangerous, and the doctors' return could potentially expose the entire country to the risk of Ebola infection. Should the two doctors be allowed to return to their own country to save their lives? This is a ethical issue in a public emergency event.

In past several years, the COVID-19 pandemic has caused significant damage to the whole world. In fact, with the rapid growth of the economy and society, as well as the accelerated changes in the natural environment, public emergencies have frequently occurred worldwide in recent years. Radical changes caused by the COVID-19 pandemic affect what is considered right or wrong underlying moral judgments (Francis and McNabb 2022). The decisions made by various parties involved in public events, especially those related to ethical and moral considerations, greatly influence the development and outcome of the events.

During public emergency, individuals often undergo strong negative emotions. Studies have revealed that fear and sadness are commonly experienced by people during the COVID pandemic (Barros et al. 2020; Mertens et al. 2023). Sayegh et al. (2004) posit that emotions of decision-makers during crisis situations can significantly impact their perception and interpretation of events, consequently influencing their decision-making process. Additionally, a body of research has demonstrated the influence of emotions on moral judgments (Greene et al. 2001; Haidt 2001; Szekely and Miu 2015; Valdesolo and DeSteno 2006). Haidt (2001) argues that emotions play a crucial role in moral judgments. Therefore, this study aimed to explore how negative emotions induced in the context of public emergency events influence moral judgments.

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Moral Judgments

The most widely used paradigm in moral judgment research area is the moral dilemma, with the most classic example being the "trolley dilemma" (Foot 1967). The traditional moral dilemma paradigm typically presents a scenario where participants must decide whether to take action that sacrifices a few individuals to save a larger number of people. Based on participants' final choices, their utilitarian or deontological moral principles can be inferred (Greene 2007). Utilitarianism highlights the consequences of moral choices for overall well-being, while deontology is mainly concerned with whether ethical choices are consistent with moral norms and rules (Gawronski et al. 2017). Despite the widespread use of the traditional moral dilemma paradigm, it has also faced criticism. One major critique is that the traditional paradigm fails to accurately quantify the inclinations towards utilitarianism and deontology. This paradigm treats utilitarianism and deontology as opposing principles, assuming that if one is enhanced, the other is weakened. As a result, the observed differences in outcomes are ambiguous, and the results may reflect only the choices influenced by utilitarian inclinations, deontological inclinations, or a combination of both (Friesdorf et al. 2015).

In response to the limitations of the traditional paradigm, Conway and Gawronski proposed a new research paradigm called the process dissociation paradigm (Conway and Gawronski 2013). The process dissociation paradigm is to manipulate the costs and benefits of different consequences resulting from action choices to independently quantify utilitarian and deontological inclinations. This research paradigm no longer views utilitarianism and deontology as mutually exclusive but may coexist and operate in parallel. However, this paradigm also has certain limitations. For example, it only considers situations where norms prohibit certain actions and does not consider moral judgments in situations where norms endorse certain actions (Janoff-Bulman et al. 2009). Additionally, Gawronski et al. (2017) found that individuals with psychopathy are more inclined to choose action in moral judgments. According to traditional interpretations, this behavior would be considered utilitarian inclination. However, it is evident that individuals with psychopathy have distorted and abnormal moral beliefs, and their behavior cannot be solely summarized by utilitarian inclinations. This indicates that the process dissociation paradigm fails to accurately separate all influencing factors in moral decision-making.

CNI Model

To overcome the apparent limitations of previous research paradigms, Gawronski et al. (2017) proposed the CNI model, which is based on a data modeling approach commonly used in empirical ethics and social psychology, called the multinomial processing tree model (Hutter and Klauer 2016). The CNI model reoperationalizes utilitarianism and deontology, representing them with three parameters: (1) Sensitivity to Consequences (C parameter), (2) Sensitivity to Norms (N parameter), and (3) General preference for Inaction versus action irrespective of consequences and norms (I parameter). Higher estimated values of C and N indicate greater sensitivity to consequences and norms, respectively. A higher estimated value of I suggests a lower general inclination towards action, indicating a greater preference for inaction.

The CNI model has been increasingly adopted by researchers and has received substantial empirical support in the field of moral judgments. Researchers have used the CNI model to investigate the influence of various individual physiological characteristics, such as gender (Gawronski er al. 2017), testosterone (Brannon et al. 2019), chronic stress (Zhang et al. 2018), incidental emotions(Gawronski et al. 2018), personality traits (Kroneisen and Heck 2020) and so on. Therefore, this study also adopted CNI model to study how sadness and fear induced by public emergency events affect moral judgments.

Emotion and Moral Judgments in Public Emergency Events

Some researchers have also investigated moral judgments in public events, especially during the COVID-19 pandemic. For example. Mazza et al. (2020) discussed the relationship between the level

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of perceived stress and the moral judgments of university students and workers in Italy. Another study conducted by Francis and McNabb (2022) compared utilitarian choices before and during the COVID-19 pandemic. According to previous research in the field of ethics, it has been found that emotional factors play a very important role in moral judgments (Haidt 2001). However, there is little research on the impact of emotions on moral judgments in the context of public events.

In public emergency events, individuals typically experience five stages: shock (fear), heroism (altruism), sadness (internalization), anger (externalization), and rebuilding normalcy (Rudenstine and Galea 2014). In the moral dilemma of "harming to save," participants mainly experience fear and sadness (Szekely and Miu 2015). Additionally, researchers have found that people experience sadness and fear frequently and intensely during public events (Barros et al. 2020; Mertens et al. 2023). Previous research has shown that although sadness and fear are both negative emotions, they have significantly different effects on individuals' behavior and cognition. Fear primarily leads to avoidance tendencies (Kligyte et al. 2013), while the impact of sadness is more complex and may influence individuals' cognitive styles, behavioral tendencies, and emphasis on different moral theories (Bodenhausen 1993; Wegener and Petty 1994). Therefore, this study selected sadness and fear as the independent variables in the research. Studying these two different negative emotions separately can help better understand individuals' moral judgments in public emergency events.

Lerner et al. reviewed research findings from 1980 to 2014 on emotions and decision-making and concluded that emotions have a powerful and pervasive impact on decision-making, including moral decision-making (Lerner et al. 2015). Researchers have found that incidental emotions tend to carry over from one situation to another and influence other decisions (Keltner and Lerner 2010). According to Greene's dual-process model of moral decision-making, general negative emotional experiences lead to more deontological moral choices. When individuals perceive rich details of harm to victims in moral contexts (Bartels 2008), they tend to make more deontological judgments. Negative emotions are significantly associated with deontological choices (Szekely and Miu 2015), while positive emotions increase utilitarian moral judgments (Valdesolo and DeSteno 2006). The ventromedial prefrontal cortex (VMPFC) is considered a key neural basis for social affective functioning. Patients with VMPFC damage are unable to integrate social emotions into complex reasoning processes, which may lead to more utilitarian judgments in moral dilemmas (Thomas et al. 2011).

Moreover, different specific emotions have different effects on moral decision-making (Pfister and Bohm 2008). For example, disgust can lead to more severe moral judgments (Wheatley and Haidt 2005), while anger can reduce the willingness to help others (Van Doorn et al. 2014) and increase the tendency to make decisions that uphold fairness and justice (Thiel et al. 2011). Gratitude may potentially increase the willingness to cooperate (Desteno et al. 2010). Gawronski once studied how incidental happiness, sadness, and anger influences responses in moral dilemmas based on CNI model (Gawronski et al. 2018). They found that incidental happiness reduced sensitivity to moral norms. Nevertheless, incidental sadness and incidental anger did not influence any factors in moral dilemma judgments.

Specifically, for fear, it increases individuals' uncertainty and leads to a tendency to avoid actions in decision-making. Fear causes people to exhibit risk aversion in behavioral decisions (Lerner and Tiedens 2006). Schubert proposed that fear is always accompanied by avoidance tendencies (Schubert 2016). Thus, we expected that individuals induced with fear in public events will exhibit a preference for inaction in moral decision-making.

For sadness, the situation is more complex. Firstly, like fear, it is believed to increase individuals' avoidant tendencies in behavior (Bodenhausen 1993; Lerner and Tiedens 2006). Secondly, some studies suggest that sadness enhances individuals' cognitive processing abilities. Alloy and Abramson (1979) found that sadness makes people wiser, more thoughtful, and cautious. Fataneh et al. found that sadness made moral judgment processing more systematic, leading individuals to rely on complex concepts for judgment and reasoning (Fataneh et al. 1979). Thirdly, sadness has been found to be associated with attention to outcomes. Wright and Bower (1992) found that individuals in a sad emotional state significantly overestimate negative events and underestimate positive events.

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Lerner et al. found that sadness makes individuals more myopic and focused on immediate gains (Lerner et al. 1992). In summary, we expected that individuals increase their focus on consequences and preferences for inaction when they experience sadness in public events.

Manipulation of Emotion

Although Gawronski's study found that incidental sadness did not have a significant impact on the C, N, or I parameters, we decided to study the effect of sadness on moral judgments again in the present study (Gawronski et al. 2018). Gawronski mentioned that the reason why sadness did not have an impact on moral choices may be due to the insufficiently strong emotional induction effect of music, so we will induce stronger emotion in the present study. Also, we think that the intensity of emotions triggered by public emergencies might be higher than that of ordinary incidental emotions.

There are various methods for inducing emotions in experiments. These include recalling emotionally events (Polman and Kim 2013), reading emotionally statements, viewing pictures or videos (Lerner et al. 2015), or listening to music clips (Gawronski et al. 2018). Following Gawronski's study, we also chose having participants listen to music to induce sadness and fear. Koelsch (2005) suggests that music can induce unpleasant emotions and has advantages over static images. Emotions induced by music tend to last longer and have a stronger effect compared to other materials. Furthermore, the emotional experiences elicited by music induction demonstrate good cross-cultural consistency (Fritz et al. 2009).

However, in order to achieve better induction effects and induce emotions related to public events, the present study combined watching videos and listening to music to arouse emotions. Eldar et al. (2007) found that compared to watching a movie or listening to music separately, having participants simultaneously watch a movie and listen to positive (happy) or negative (fearful) music can better activate the participants' amygdala and ventromedial prefrontal cortex. This means that using multiple emotion induction methods in combination can more fully induce emotions.

The Present Study

The current study explores how two common types of negative emotions (sadness and fear) in public emergency events influences moral judgments based on the CNI model. Study 1 and Study 2 induced sadness and fear respectively using a combination of video and music, and then assessed participants' C, N, I tendencies by their moral choices in the scenarios from the CNI model of Gawronski's study. This study hypothesizes that sadness will enhance individuals' sensitivity to consequence (parameter C) and increase their general preference for inaction (parameter I), while having no significant effect on parameter N. Fear will lead to an avoidance tendency, making individuals less willing to take action, thus increasing their general preference for inaction (parameter I), with no significant effect on the other two parameters.

2. Materials and Methods

Study 1

Using the CNI model, Study 1 aims to explore how sadness influences moral judgments in public events.

Participants

Using G*Power with an effect size of d=0.5 and a power of 0.8, the calculated sample size was 128. We recruited 132 participants to prevent the occurrence of invalid data. Two participants who had a response time of less than 30 s were excluded, and the final sample included 130 participants with a valid rate of 98.5%. Among them, there were 48 males and 82 females, with a mean age of 21.1(SD=1.75). All participants had normal hearing and vision. They provided informed consent and

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voluntarily participated in the experiment. Participants received compensation after the completion of the experiment.

Procedure

Participants were randomly assigned to either the sadness group or the neutral emotion control group. Emotion was the independent variable, and three parameters of the CNI model for moral decision-making (sensitivity to outcomes, sensitivity to moral norms, preference for inaction) were the dependent variables.

The experiment took place in a well-lit and quiet lab with computers and headphones. After informing the participants and obtaining their consent, they were instructed to wear the headphones and watch a video to induce emotions on computer. Participants in sadness induction group watched a news report video about the Wenchuan earthquake titled "A video from 10 years ago, she cried, and I cried too." Participants in the neutral group watched a news video segment about number of confirmed cases of COVID-19 in February 2022.

To strengthen the effect of emotion induction, participants then listened to music to arouse emotion, which played continuously throughout the experiment. The music used to arouse sad emotion was the theme song of the famous movie "Schindler's List", called "Theme From Schindler's List". For neutral group, the music chosen is "Common Tones in Simple Time" composed by John Adams.

While the music played, participants were required to read moral scenarios of Gawronski's study (2011), and make judgments on 24 moral scenarios. The order of the 24 scenarios was randomized. Subsequently, participants answered two questions about sadness to check the effect of emotion induction, with a rating scale ranging from 1 (not at all) to 7 (extremely intense). Finally, participants were asked to provide demographic information.

Study 2

In addition to sadness, fear is another common negative emotion during public events. fear is an acute reaction characterized by a loss of self-control, resulting in non-social and irrational escape behaviors (Quarantelli 1954). This behavior is based on the perception of being trapped, a sense of helplessness in the collective, and the resulting personal isolation during crises. Moreover, potential public fear can also trigger "secondary disasters". Unlike sadness, fear during public events can easily spread through a contagion effect, resulting in collective fear among the population (Helbing et al. 2000). Therefore, study 2 studied how fear affects moral judgments in the background of public events.

Participants

Using G*Power with an effect size of d=0.5 and a power of 0.8, the calculated sample size was 128. A total of 128 participants were recruited to participant in this study. Among them, there were 45 males and 83 females, with a mean age of 21.0 (*SD*=2.50). All participants had normal hearing and vision. They provided informed consent and voluntarily participated in the experiment. Participants received compensation after the completion of the experiment.

Procedure

Participants were randomly assigned to either the fear group or the neutral emotion group. Emotion was the independent variable, and three parameters of the CNI model for moral decision-making (sensitivity to outcomes, sensitivity to moral norms, preference for inaction) were the dependent variables. Experimental procedures in Study 2 were the same as in Study 1.

The materials used for emotion induction were different from Study 1. For the fear emotion induction group, a video of the Wenchuan earthquake captured by surveillance cameras was used, titled "Terrifying Moment–The Wenchuan Earthquake 12 Years Later". The music used was "Cloudy Day" produced by Phew. For the neutral emotion group, the same materials as in Study 1 were used

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for emotion induction. The manipulation check questions were two questions about fear with a rating scale ranging from 1 (not at all) to 7 (extremely intense).

3. Results

Study 1

The average scores of sadness emotion were calculated. Consistent with our expectation, participants who underwent sadness emotion manipulation reported experiencing more sadness (M=2.90, SD=1.25) compared to those in the neutral emotion manipulation group (M=2.30, SD=1.26), $t(128)$=2.70, p=0.008, d=0.473. The emotion manipulation was successful.

The CNI model analysis was conducted using Moshagen's polynomial modeling software, multitree (Moshagen 2010), and the multiTree template file provided by Gawronski et al. (2017) for CNI model analysis. The model calculated the parameters *C*, *N*, and *I*. The CNI model showed a good fit to the data, $G2(2)$=2.338, p=0.311. The purpose of the data was to examine whether the predicted probabilities from the model significantly differed from the empirically observed probabilities in the dataset. In other words, the CNI model only fit the data when the differences were not statistically significant. The G2 value represents the reported model fit. By substituting *C1=C2* into the model, $\Delta G2(1)$=9.701, p=0.002 (Δ indicates the difference in model fit being tested), d=0.552, indicating a significant difference between the two groups in the *C* parameter. Specifically, compared to the neutral group, the sadness group showed greater sensitivity to outcomes (see Table 1). By substituting *N1=N2* into the model, $\Delta G2(1)$=0.870, p=0.351, indicating no significant difference between the two groups in the N parameter. This means that there was no significant difference in sensitivity to moral norms between the two groups. By substituting *I1=I2* into the model, $\Delta G2(1)$=0.000, p=0.982, indicating no significant difference between the two groups in the *I* parameter. This means that there was no significant difference in the preference for action/inaction between the two groups.

Table 1. CNI parameter and 95% confidence intervals of sadness and neutral group.

Group	C			N			I		
	M	SD	95%CI	M	SD	95%CI	M	SD	95%CI
Sadness	0.42	0.02	[0.37, 0.46]	0.14	0.04	[0.06, 0.21]	0.48	0.02	[0.45, 0.52]
Neutral	0.31	0.02	[0.27, 0.36]	0.19	0.04	[0.12, 0.25]	0.48	0.02	[0.45, 0.52]

The study suggests that in the context of public events, sad emotions can influence moral judgments by increasing individuals' sensitivity to outcomes. However, sad emotions do not affect sensitivity to moral norms or preferences for general action/inaction.

Study 2

The average scores of fear emotion were calculated. Consistent with our expectation, participants who underwent fear emotion induction manipulation reported experiencing more fear (M=2.77, SD=1.30) compared to those in the neutral emotion group (M=2.17, SD=1.01), $t(126)$=2.89, p=0.005, d=0.51. The emotion manipulation was successful.

CNI model analysis was conducted using the polynomial modeling software multiTree developed by Moshagen (2010), along with the multiTree template file provided by Gawronski et al. (2017) for CNI model analysis. The parameters *C*, *N*, and *I* were computed. The CNI model showed a good fit to the data, with $G2(2)$=0.983, p=0.612. By substituting *C1=C2* into the model, $\Delta G2(1)$=1.117, p=0.290, indicating no significant difference in the C parameter between the two groups. This suggests that both groups have similar sensitivity to the outcomes. By substituting *N1=N2* into the model, $\Delta G2(1)$=1.164, p=0.281, indicating no significant difference in the N parameter between the two

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groups. This implies that both groups have similar sensitivity to moral norms. By substituting *I1=I2* into the model, $\Delta G2(1)=11.861$, $p=0.008$, $d=0.587$, suggesting a significant difference in the I parameter between the two groups. This indicates that there is a significant difference in the preference for action/inaction between the two groups. Specifically, compared to the neutral group, the fear emotion induction group showed greater inaction inclination (see Table 2). These results suggest that fear emotion influences moral dilemma judgments by increasing the preference for inaction. Fear emotion does not affect sensitivity to moral norms or outcomes.

Table 2. CNI parameter and 95% confidence intervals of fear and neutral group.

Group	C			N			I		
	M	SD	95%CI	M	SD	95%CI	M	SD	95%CI
Fear	0.30	0.02	[0.26, 0.35]	0.20	0.03	[0.13, 0.27]	0.58	0.02	[0.53, 0.62]
Neutral	0.27	0.02	[0.22, 0.32]	0.15	0.03	[0.08, 0.21]	0.48	0.02	[0.44, 0.52]

In previous studies on moral judgments, the general action/inaction tendency was usually not distinguished from utilitarian and deontological tendencies. In the context of sudden public events, the action inclination is an important factor involved in individuals' moral judgments. It determines the individual's final moral choices and subsequent actions. By utilizing the CNI model, we were able to explore how fear, a common emotion in public events, influences individuals' moral judgments. We discovered that fear affects moral judgments through decreasing individuals' action inclination. This means that when individuals experience fear in public events, they are less inclined to take action. However, fear does not affect sensitivity to moral norms or sensitivity to outcomes.

4. Discussion

This study focuses on how two types of negative emotions in the background of sudden public events, sadness and fear, influence participants' moral choices. The results show that participants induced with sadness show a significant increase in outcome sensitivity compared with those in neutral emotion group, indicating a greater focus on whether the behavioral consequence yields more benefits than costs. Meanwhile, participants with fear show a significant increase in the general preference for inaction compared with those in neutral emotion group, indicating a greater reluctance to take action.

We chose CNI model to discuss how the impact of sadness and fear induced by sudden public events affect moral judgments. This model helps us figure out whether two types of emotions can affect moral choices and specifically through which factors they influence moral judgments. In traditional moral dilemmas, participants must decide whether they are willing to violate moral norms (e.g., not harming others) to achieve utilitarian outcomes (e.g., saving more lives). Typically, in such paradigms, the decision to take action/accept is simply explained as utilitarian reasoning, while the decision to refuse action/reject is explained as deontological reasoning. However, Gawronski et al. (2017) argue that this approach has certain problems. One major issue is directly interpreting observed decisions as indicators of utilitarian or deontological reasoning. For example, it cannot be assumed that a participant's moral judgment always adheres to utilitarian principles simply because they decide to accept sacrificing one person's life to save several others. The same problem exists when considering whether participants adhere to moral norms (e.g., deciding not to kill one person to save others). It is necessary to ensure that participants make consistent decisions in various dilemmas in order to determine which type of moral principle they hold. Additionally, it is difficult to completely link a certain decision to either utilitarian or deontological principles while completely disregarding the other principle. Therefore, Gawronski et al. developed the CNI model, a polynomial model used to measure consequence sensitivity (parameter C), norm sensitivity (parameter N), and the general preference for inaction (parameter I) (Gawronski et al. 2017). This model helps people

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better understand what factors ultimately govern an individual's moral choices, and what factor(s) are affected by sadness and fear.

The influence of negative emotions on moral judgments is controversial. According to Greene's dual-process model of moral judgments (Greene 2007), general experiences of negative emotions tend to lead to more deontological moral choices (Pfister and Bohm 2008; Thomas et al. 2011). However, different specific emotions may have different effects on moral decision-making (Pfister and Bohm 2008). In the case of the two emotions being explored in this study, fear tends to lead individuals to exhibit avoidance tendencies in decision-making (Schubert 2016), which may be related to deontological choices in moral dilemmas. However, the situation is more complex for sadness. Researchers believe that sadness increases individuals' inhibition tendency (Bodenhausen 1993; Lerner and Tiedens 2006), which is usually associated with deontological choices in classical moral dilemmas. Nevertheless, some other studies have shown that sadness can lead to stronger cognitive processing abilities (Alloy and Abramson 1979; Fataneh et al. 2000) and greater attention to outcomes (Lerner et al. 2004; Wright and Bower 1992). That means sadness is also possible to relate with utilitarian moral judgments. Using classical moral dilemma paradigm or process dissociation technique cannot disentangle the impact of negative emotions, especially sadness, on moral judgments. This study utilizes the CNI model to clarify the role of different factors in moral judgments and effectively address the contradictory findings of previous studies.

Gawronski et al. once used the CNI model to study the relationship between three specific incidental emotions (happiness, sadness and anger) and moral judgments (Gawronski et al. 2018). The study found that incidental sadness did not have a significant impact on the C, N, or I parameters. This finding differs from the findings of the present study. They mentioned possible explanations. They think that incidental sadness might have an impact on moral dilemmas, but this effect was too small to be detected in their study with the sample size. Also, they mentioned failing emotion induction manipulation may be another reason. They proposed that, compared to the method of using emotional music clips currently used, other methods of dealing with incidental sadness may be more effective in influencing moral dilemma judgments. Therefore, this study replaced the music materials used by Gawronski et al. (2018) and incorporated video materials to induce sadness, making the induction of sadness more reliable. Meanwhile, the present study focused on sadness and fear induced by public events. The intensity of emotions triggered by public emergencies are higher than that of ordinary incidental emotions. As mentioned earlier, the unique emotional states triggered by sudden public events may lead individuals to make different moral judgments than usual. This is also why we observed the impact of sadness on moral judgments in the present study.

Incidental sadness promotes cognitive elaboration by enhancing the motivation for effortful processing (Wegener and Petty 1994) or alleviating the demand for cognitive resources (Mackie and Worth 1989). To some extent, the analysis of costs and benefits in utilitarianism is a cognitive effort (Greene et al. 2008), so incidental sadness may increase consequence sensitivity in a utilitarian approach. Some researchers have found a correlation between high emotional intensity and higher consequence sensitivity (Kroneisen and Heck 2020). In Study 1, participants induced with sadness showed significantly higher consequence sensitivity (parameter C) than the neutral group.

Research on emotions and moral judgments mainly focuses on moral-related emotions, such as guilt, disgust, and shame, and there is little literature directly studying the relationship between fear and moral choices. Study 2 found that participants induced with fear show an inaction tendency in moral judgments. Fear is associated with evaluations of danger or threat, low certainty, and a sense of lack of control over the situation (DeSteno et al. 2020). Schubert proposed that fear is strongly associated with aversion and avoidance tendencies (Schubert 2016). When participants are induced with fear, they may perceive lower control over the environment and increased uncertainty, making them more likely to choose inhibited choices in moral decision-making. This leads to a significantly higher estimated value of the I parameter compared to the neutral group.

This study focuses on two specific negative emotions, sadness and fear, which are commonly experienced by individuals in public emergencies, and investigates their impact on moral judgments. Based on the CNI model in the field of moral decision-making, this study explores the three

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parameters of moral decision-making tendencies: outcome sensitivity, norm sensitivity, and the general preference for inaction. The study found that sadness and fear, as two negative emotions, have different mechanisms of influence on moral judgments in the context of public events, and their effects are different from the impact of incidental emotions in daily life.

In the context of public events, individuals may experience other types of negative emotions in addition to sadness and fear, such as tension when dealing with threats, anxiety about the unknown future, and they may also experience some positive emotions, such as gratitude due to others' help, admiration for heroes, and so on. Therefore, future research could further discuss the effects of other types of emotions on moral judgments.

The main objective of this study was to investigate how sadness and fear emotions influence moral judgments in the context of public events. The results revealed that sadness increased sensitivity to consequence in moral judgments, while not affecting sensitivity to moral norms and the general preference for inaction. Fear increases the general preference for inaction in moral judgments, while not affecting sensitivity to consequences and moral norms.

Author Contributions: Mufan Zheng and Shiyao Qin conceived the original ideas, and designed the experiments. Shiyao Qin carried out the experiments, collected the data, and analysed the data. Mufan Zheng, Shiyao Qin wrote the manuscript, and Junhua Zhao and Mufan Zheng reviewed and edited the manuscript.

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Conflicts of Interest: The authors declare no conflicts of interest.

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