Original Paper

Dual Processing of Moral Conflicts in Media Entertainment and Their Effect on Moral Judgement and Moral Reasoning

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Abstract

Moral conflict occurs readily in everyday life. Rarely are moral decisions without some ambiguity. In part because moral conflict is so prevalent in life and in part because it seems to be intrinsically absorbing, moral conflict is often present in narrative entertainment as well. Prior research has used a dual-system model of cognitive processing to examine media narratives and has found that moral conflict results in more reflective and systematic processing. However, the research to date leaves several unanswered questions regarding how moral conflict narratives are processed and how that processing influences moral judgement and moral reasoning. Therefore, we utilize a moral conflict manipulation and a cognitive load experimental paradigm in two separate studies to specifically explore how 1) different cognitive processing systems are used to understand moral conflict narratives, and 2) how moral conflict then can influence moral judgement and moral reasoning. Results of these studies point to the fact that moral conflict is processed through a dual system but that these systems likely operate on different aspects of the narrative: we judge quickly and intuitively, and we reason slowly, offering complex reasons. Overriding our cognitive capacity, however, may result in a diminished ability to see moral complexity.

Keywords

Moral conflict, dual systems processing, Moral Foundations Theory

1. Introduction

Moral conflict occurs readily in everyday life. In fact, so common are moral dilemmas that Shantz and Hartup aptly point out that moral conflict "must be regarded as intrinsic to the human condition" (1992, p. 1). In part due to this nature, moral conflict is often present in narrative entertainment as well. In fact,

many films and written entertainment sources owe their engaging plots to the moral and ethical dilemmas posed in them. Given the prevalence of moral conflict narratives both in news and entertainment, prior research has examined media narratives and has found that the presence of moral conflict results in more slow, reflective and systematic processing (Lewis, Tamborini, Grizzard, Weber, & Prabhu, 2012) than narratives that do not contain such conflicts. However, cognitive load, which might also be referred to as cognitive demand and distraction, results in more quick, reflexive and automatic processing. These variations in turn result in outcomes including differences in narrative appreciation (Lewis, Tamborini, & Weber, 2014) and importantly, differences in character judgement (Eden, Oliver, Tamborini, Woolley, & Limperos, 2009).

Why might these findings be relevant? Encouraging more reflective and systematic processing of moral conflict may well help individuals engage in deeper moral reflection of not only entertainment, but of important issues that arise in real life as well. Indeed, current political divisiveness in the US may be in part the result of the lack of reflective processing of important social and political issues (Yanguas, 2015). Despite the potential pragmatic value of more systematic moral processing of messages, the research on this topic to date leaves several unanswered questions regarding how moral conflict narratives are typically processed and how that processing influences moral judgement and moral reasoning. In addition, it is unclear how heavy cognitive load, which is rife in modern life, influences moral processing. Therefore, in this study we explore 1) the effect of manipulated cognitive load on individuals' responses to moral conflict narratives and 2) how moral conflict then influences moral judgement and moral reasoning.

In order to address these questions, this study utilizes a dual systems approach to media processing (Hartmann, 2012). This model argues that moral *judgements* are typically quick, reflexive and intuitive and thus typically governed by system 1 processing; however, the secondary and more reflective moral processing system is responsible for moral *reasoning*. Because past research (Busselle & Bilandzic, 2008) demonstrates that cognitive load acts to decrease system 2, reflective processing, while increasing system 1, reflexive or automatic processing, we explore these issues, by using a two study experimental design. We manipulate both moral conflict and cognitive load in order to consider the processing of moral media and moral judgement concerning the conflict.

In the following sections, we first conceptualize moral conflict, and we elaborate on recent research on media and morality. We discuss moral conflict both through the lens of dual systems approaches to cognition (e.g., Stanovich, 1999) and as moral conflict applies to Moral Foundations Theory (Haidt & Joseph, 2008). We then utilize the cognitive load paradigm to study dual systems as they apply to the processing of moral conflict specifically, and more broadly, the relevance of the cognitive load paradigm to real situations. Ultimately, we lay out our study that uses cognitive load to understand how moral conflict narratives are processed and how they affect us. In study one we examine whether the presence of moral conflict influences the extremity of moral judgements made by participants and the amount of moral reasoning elaboration they use. Study two utilizes a cognitive load manipulation to test how

System 1 vs. System 2 processing influences moral judgement and moral reasoning.

1.1 Cognitive Processing of Moral Conflict

Moral conflict is present when we are met with a situation where one basic moral principle (for example, cause no harm to others) comes into conflict with some other strongly held moral principle (for example, justice should be served). Although not about moral conflict, per se, recent conceptualizations of media processing have laid the groundwork for a clearer understanding of how we process various mediated messages, including moral conflict. Hartmann (2011, 2012) proposed a general dual-system model of media processing that itself is grounded in a dual systems approach to overall cognitive processing. He argued that individuals process media based on two distinct information-processing systems. These systems operate in parallel with one another with the slower, rational, more reflective rule-based system engaged when audiences try to make sense of plot information, character motives and story lines. On the other hand, the quick, intuitive and reflexive system is engaged to process basic level visual information and to make effortless judgements, including, as will be argued presently, moral judgements.

According to the dual-system model of media processing, both systems operate in parallel and at times may derive similar outcomes or, alternately, conflicting or ambiguous ones, such as when someone experiences a real fear response to an actually harmless mediated image of a snake. In addition, moral judgements (the action was wrong) may result in subsequent rational seeming reasoning, or a moral judgement may come from a gut response (i.e., it just seems wrong), when no logical reason emerges after the fact. This point becomes important as we argue below that moral judgements of content we are exposed to in the media may not be influenced by cognitive load (because the judgements themselves are reflexive); whereas moral reasoning for those judgements, which is more reflective, may in fact be influenced by cognitive load.

1.2 Moral Foundations Theory

According to Moral Foundations Theory (MFT), our moral judgements are based on fundamental intuitions; the overall approach taken by MFT can be summarized in four claims. The first claim of MFT is that there is a *draft* of the innate moral mind, selected through evolution because certain moral judgements allowed for survival value. This innate mind, however, is argued to be edited through experience (Marcus, 2009).

The second claim is that one's proximal culture and environment shape this initial draft of the moral mind (see Graham et al., 2013). Graham and colleagues (2013) point out that, if culture and environment did not play an additional role in moral development, morality would be similar across the world; values and beliefs would be largely the same.

The third claim of MFT states that when faced with a moral decision, moral intuitions and judgements come first and that moral reasoning, or the rationale offered for those judgements comes second. Thus, the intuition(s) sparked by the dilemma inform our judgement prior to reasoning through that judgement. For example, Haidt, Bjorklund, and Murphy (2000) found that participants were willing to make up reasons post-hoc to explain why they made a certain quick and intuitive moral judgement, even when

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those reasons were not possible given the scenario they were presented with.

The final claim of MFT is that moral thought is based on moral foundations, or cognitive modules, that are present in all humans. The moral foundations identified are care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, and purity/degradation (Graham et al., 2013). Liberty/oppression has been suggested as a sixth possible foundation, and while preliminary research supports the addition (Haidt, 2012), only the original five dimensions are definitively supported in the literature.

1.3 Moral Judgement and Moral Reasoning

In order to further understand how we process moral media and how it might influence us, it is important to distinguish between two key terms relevant in the literature on media and moral processing. Specifically, past research on moral development and processing (e.g., Krcmar & Valkenburg, 1999; Krcmar & Cooke, 2003) has made the distinction between moral *judgement* where participants rate how good/bad an action is and moral *reasoning* where they explain the reasoning behind their judgements. Both are important to our understanding of moral processing and both are thought to function differently. Several scholars (e.g., Haidt & Joseph, 2004; Tamborini, 2013) have taken a dual systems approach and suggested that moral judgements are quick, reflexive and intuitive; whereas moral reasoning is slower, more reflective and effortful. In fact, "moral dumbfounding" is a phenomenon whereby individuals have strong and immediate moral reactions, but then fail to establish any kind of rational principle to explain their reaction (McHugh, McGann, Igou, & Kinsella, 2017). Moral dumbfounding is thus taken as one type of evidence for the reflexive and intuitive nature of moral responses. Interestingly, Tamborini (2013) has pointed out that the slower, more reflective reasoning that follows quick, reflexive judgements is not even sensical at times, contradicting the information provided. Thus, in many cases, participants seem to use reflective, post-hoc reasoning to explain their reflexive judgements, rather than reasoning through moral situations and then coming up with judgements. Consistent with past distinctions, then, these strong moral reactions can be thought of as moral judgements, occurring via System 1 processing; whereas moral reasoning is a slower, more reflective process that occurs via System 2.

2. Study One

2.1 Rationale

Moral *judgements* are typically quick and intuitive, drawing upon one of the five domains (Tamborini, 2013). However, when moral conflict exists, as might appear in a media narrative or in complex social and political situations, moral judgements typically become more effortful and deliberative because more than one domain is made salient and greater use of System 2 is needed (Haidt, 2001; Tamborini, 2013). As a result, individuals must weigh potentially conflicting intuitions to reach a moral judgement (Haidt, 2001). Given, then, that the MIME argues that narratives with moral conflict result in more effortful or reflective processes, we expect moral conflict to have differing effects on moral judgement and moral reasoning.

Judgement and reasoning. How might the presence of moral conflict influence moral judgement and

moral reasoning? Consider evidence that suggests that the presence of moral conflict in a narrative results in greater levels of appreciation, conceptualized as a thought-provoking experiential state; whereas enjoyment, a less thought-provoking state, is lessened through the presence of moral conflict. Specifically, Lewis et al. (2014) presented readers with short narrative scenarios presented as storylines for movies with differing degrees of moral conflict. Overall, narrative scenarios with conflict were rated higher on appreciation but lower on enjoyment than scenarios without conflict. Consistent with the MIME (Tamborini, 2013), it seems likely that moral reasoning, a System 2 process, might also be enhanced through moral conflict. In other words, moral conflict is likely to encourage more elaborate moral *reasoning*, a "higher order" cognitive process which "requires an audience member to sublimate the drive to satisfy some need(s) in order to profit from the satisfaction of others" (Lewis et al., 2013, p. 399). Elaborate moral reasoning is likely to demonstrate itself by offering more reasons for their moral judgements. Therefore,

> H1a: Participants who read an entertainment narrative with the presence of moral conflict will offer more reasons for their judgements than participants who read a narrative without moral conflict.

Like the experience of enjoyment, MIME would suggest that moral judgements are reflexive and typically occur via system 1. They might therefore be reflexive and more extreme (i.e., on either end of a judgement continuum). However, when moral conflict is present, system 2 is more likely to be engaged, thus resulting in less extreme moral judgement. Therefore, we would expect that:

> H1b: Presence of moral conflict in an entertainment narrative will result in less extreme moral judgement as compared to narratives that contain no conflict.

2.2 Method

Design. Study 1 was a two-group (no conflict [$n = 65$] vs. presence of moral conflict [$n = 63$]) experimental design with a number of dependent variables, including various moral decision making variables. 2 attention check items were included in the online questionnaire, and participant data was removed if these questions were missed.

Participants. Participants in this study consisted of a convenience sample of 35 male and 91 female (with 2 respondents declining to respond) respondents from throughout the US. Participants ranged from ages 18 to 79, with a mean age of 39.42 years ($SD = 16.24$). The primary ethnic background self-identifications showed over three quarters (82.0%, $n = 105$) identified as White, with the next largest groups identified as Asian (6.3%, $n = 8$) and Hispanic/Latino (4.7%, $n = 6$), respectively, while a small proportion (6.3%, $n = 8$) identified as multiethnic, and one (0.8%, $n = 1$) participant declined to respond. Some of the participants who were students were given extra credit in exchange for participation in the study.

Stimulus Material. The stimulus materials used for the study were two narratives adapted from previous research on the cognitive effects of moral conflict in news sources (Knop-Hülß et al., 2017). While the original materials presented the narrative as a news article, researchers adapted the materials for the present study by presenting the narrative in a fictional short story form. After translating from the original

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German, portions of the story were also changed for clarity and to better fit the needs of the present study. The final stimulus materials included two versions of a story in which a female child is assaulted by a family friend and the ways in which her parents cope with the tragedy. In the control narrative, where no moral conflict is present at the end of the story, the perpetrator receives punishment in a court of law, suggesting a balance of justice relative to the harm he caused. In the conflict condition, in which there is ultimately a conflict concerning the "right thing to do," a legal technicality lets the perpetrator walk free, and the girl's father, Jon, causes physical harm to the perpetrator as a result.

Procedure. Two primary methods of recruitment were used to obtain participation in the study. First, students from undergraduate communication courses at a university in the Southeast were emailed an explanation of the research and a link to the study, and they were offered a nominal amount of extra credit for participating in the study. Second, a post explaining the purpose of the research and a link to the study was shared on researchers' respective social media pages. The same post was distributed to members of an e-mail listserv for academic professionals within the field of communication. Clicking on the survey link brought all participants to the same online questionnaire hosted on Qualtrics which they could complete in approximately 20 minutes in a location of their choosing.

Once clicking on the survey link, participants gave their informed consent before seeing any questions. After completing the first set of measures on demographics, media consumption, and moral decision-making, participants were randomly assigned to the conflict or no conflict narrative condition. After reading, participants completed measures of enjoyment; an attention check question; moral judgements of the girl's father; and moral reasoning. Upon completing the survey, participants were thanked for their time and students who were receiving extra credit were directed to a separate Google Form to record their information for their professors.

2.3 Measures

Story condition. Participants were randomly assigned to read either a narrative with the presence of moral conflict or a narrative without moral conflict. Nearly half of the participants (50.8%, *n*= 65) read the narrative without conflict, and the other half (49.2%, *n*= 63) read the narrative with moral conflict.

Attention check. Two one-item attention check measures were included to assess whether participants read the story. The questions asked "In this story, was there a conflict about what the 'right' thing to do was?" and "What was the gender of the child in the story?" Those who did not correctly answer the attention check questions were eliminated from the study.

Moral judgement. Researchers developed a three-item, seven-point Likert scale to assess moral judgement of the main character, Jon, in the story. The three items include: "Jon did the right thing," "Jon was morally correct in the choice he made," and "Jon made the most ethical choice." The anchors were (1) Strongly disagree and (7) Strongly agree to maintain consistency with other measures on the questionnaire. Simple *moral judgement* was constructed by averaging the 3 likert-items (*M*= 4.79, *SD*= 1.65), and the scale was reliable ($\alpha = .94$).

Extremity of moral judgement. To add further nuance to the moral judgement ratings, researchers

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computed a new variable termed *extremity of moral judgement* to assess the intensity of moral judgements made of a character. The extremity variable was created by recoding and creating an extremity score where 0 indicated that the participant answered "neutral" and 1-3 indicated how far away responses were from the neutral point on the scale, with higher numbers indicating greater extremity. Thus, the higher the number, the greater the distance from the neutral midpoint, regardless of the direction of the judgement. This allows the researchers to look at how extreme a judgement is, regardless of which tail of the distribution it falls under. The 3 items were then averaged (*M*= 1.65, *SD*= .92).

Moral reasoning. To measure how participants formed their moral judgements of the characters, they were asked to fill in a free response form with the prompt, for example, "In your own words, was Jon right or wrong? Please explain how you came to this conclusion." Two of the authors collaborated on a code book devised in a deductive approach grounded from the five innate moral foundations described by Haidt & Joseph (2008), with one author acting as the lead collaborator. Using this coding schema, the two authors independently coded each free response item. The coders were blind to condition. In a few instances when coders assigned different codes to a given unit of text, researchers discussed the discrepancy until there was a consensus and intercoder agreement.

The coding process resulted in three distinct variables. First, dichotomous variables were created referencing each of the five moral foundations. For each participant's response explaining his/her moral reasoning, reference to any one of the five foundations was recorded. For example, the response "acting against laws that govern us was wrong because they are the only things keeping us from chaos" references only one dimension, authority/subversion, and would be coded as a 1; whereas, the response "prosecuting perpetrators is necessary, even if they are people that are close to us" references two dimensions: "prosecuting perpetrators" references authority/subversion and "people who are close to us" references loyalty/betrayal, and thus would be coded as 2. The total number of foundations cited in a given response was calculated for each participant, with higher numbers indicating more morally complex responses. This variable was labeled *moral reasoning complexity*. It is worth noting that assessing the degree of moral complexity of a participant's reasoning was distinct from our measure of whether or not the participants recognized the moral conflict in the story. This latter dichotomous question was used as a manipulation check only. Lastly, researchers examined whether or not participants made a decisive judgement about the character being right or wrong, termed *moral definitiveness*. This was a dichotomous variable that reflected if a participant made a decision (e.g., "He did the wrong thing") or did not make a decision (e.g., "I think he was both wrong and right").

An interrater reliability analysis using Cohen's *kappa* statistic was performed for the two independent coders to check for agreement between the coders on each of the five foundations and whether or not there was a decision. Results of the tests indicated an acceptable level of agreement for all variables (*kappa* > .85). An exact report of the level of agreement for each variable can be found in Table 1.

Table 1. Results of Interrater Reliability Tests for Moral Reasoning Variables

Variable	K	CI (95%)	P-Value	Interpretation
Harm/Care	.61	.31 to .91	.001	Substantial agreement
Fairness/Cheating	.51	.02 to 1.00	.007	Moderate agreement
Loyalty/Betrayal	.78	.37 to 1.00	.000	Substantial agreement
Authority/Subversion	.52	.25 to .79	.002	Moderate agreement
Purity/Degradation	1.00	-	.000	Perfect agreement
Decision Made	1.00	-	.000	Perfect agreement

2.4 Results

Hypotheses 1a and 1b predicted that the presence of moral conflict would influence moral judgement and moral reasoning. Specifically, H1a predicted that exposure to the entertainment narrative with moral conflict would result in participants offering *more* reasons for their judgments than exposure to narratives without moral conflict and H1b predicted that moral conflicts would also result in *less* extreme moral judgements. To test this, the number of reasons cited in the coded open-ended responses were totaled, so that higher numbers indicated more moral reasoning complexity. This variable was used as the dependent variable in testing H1a. The extremity of judgement of Jon, the main character in the narrative, was utilized as the dependent variable in testing H1b. A multivariate ANOVA was conducted to test both hypotheses at once, with presence of conflict as the independent variable.

The overall multivariate test utilizing Wilk's Lambda, was significant, F (2, 116)=11.01, p<.05. Specifically, the presence of conflict had a significant effect on both moral reasoning F (2, 116)=4.56, p <.05., and on extremity of judgement, F (2, 116)=19.91, p<.01. Consistent with hypothesis 1a, those who read the morally complex narrative offered more reasons (M=1.57, SD=.15) than those who read narratives without moral conflict (M=1.22, SD=.15), indicating greater reliance on System 2 processing. Consistent with hypothesis 1b, those who read the narrative that had moral conflict provided less extreme (M=1.31, SD=.11) moral judgements than those who read the narrative without moral conflict (M=2.06, SD=.11), suggesting greater reliance on System 1 processing. Thus, both hypotheses were supported.

2.5 Discussion

Overall, this study found that those who read the morally complex narrative offered more reasons than those who read narratives without moral conflict, indicating greater reliance on System 2 processing. Furthermore, they provided less extreme moral judgements than those who read the narrative without moral conflict suggesting greater reliance on System 1 processing. Thus, morally complex narratives appear to produce less extreme judgements and more complex reasoning than those narratives that do not contain moral conflict. From a theoretical and methodological perspective, study 1 found that aspects of moral processing may occur differently based on the outcome being considered. On one hand, moral judgements are processed quickly and effortlessly by System 1; whereas moral reasoning occurs via

System 2. However, two vital issues remain, first, methodologically speaking, the results discussed above rely on an *assumption* of System 1 and System 2 processing. Thus, a second study is needed in order to more closely examine the mechanisms of System 1 vs. System 2 processing of moral conflict. Thus, a cognitive load manipulation is introduced to further manipulate system 1 and system 2 processing. In addition, the cognitive load manipulation offers a potential way to consider the effect of distraction on processing of moral conflict and the resulting effect on moral judgement and moral reasoning.

3. Study Two

3.1 Rationale

Despite the fact that both systems are likely engaged during media consumption, there are factors that likely influence whether and when System 2 overrides System 1. For example, in cases where an initial response such as fear is found, additional information (e.g., no real threat is present), engages system 2 and the initial response can be overridden. However, and importantly, the availability of cognitive capacity, which is a necessary source of System 2 processing, can influence whether or not this override can occur. After all, as Evans and Stanovich (2013) argue, "the inhibition of type 1 responses *takes* cognitive capacity" (p. 235). Thus, strain on System 2 from external distractions, excessive information or information complexity can "overload" System 2, thus making the use of System 1 more likely. In other words, any cognitive load, whether experimentally manipulated, or as a result of competing information (e.g., pop up ads while reading the news), is likely to result in more reflexive processing System 1 processing.

Busselle and Bilandzic have shown that higher cognitive load does in fact enhance the relative importance of System 1 processing (2008). However, how might this be related to processing of a moral conflict? We first argue that overloading the rational system encourages reliance on the intuitive system. Second, we argue that moral responses are intuitive. As a result, the typical reliance on System 1 should result in moral *judgements* that, when combined with cognitive load, will result in even more extreme moral judgements. *In the case of moral reasoning,* overloading System 2 should also make it less likely that moral reasoning can be effectively engaged, and, as a result, individuals are likely less able to think in morally complex ways. In other words, participants will provide fewer different moral reasons for their judgements. Thus:

> H1: High cognitive load will lead to more extreme moral judgements than those made under low load.
> H2: High cognitive load will lead to participants offering fewer reasons for their judgements than participants in the low load condition.

3.2 Method

Design. Study 2 was a two-group experimental design with the same dependent variables as Study 1. After completing the portion of an online questionnaire that measured a number of constructs including

demographic information, media consumption, and the ways in which they make moral decisions, participants were randomly assigned to one of two (Low Cognitive Load [$n = 62$] and High Cognitive Load [$n = 70$] experimental conditions in which they watched a 10-minute stimulus video containing moral conflict. They then answered questions about the video that measured enjoyment, previous viewing of the stimulus video source, transportation, moral judgements of the two main characters in the video, and moral reasoning. One attention check and one manipulation check were included in the questionnaire, and participant data was removed if these questions were missed.

Participants. Participants in this study consisted of a convenience sample of 132 (35 male and 97 female) respondents from throughout the US. Participants ranged from ages 18 to 68, with a mean age of 29.11 years ($SD = 13.42$). The primary ethnic background self-identifications showed nearly three quarters (74.4%, $n = 100$) identified as White, with the next largest groups identified as Hispanic (7.8%, $n = 10$), African-American (6.3%, $n = 8$), and Asian (3.9%, $n = 5$), respectively, while a small proportion (4.8%, $n = 6$) identified as multiethnic, and two participants (1.6%) declined to respond.

Stimulus material. The video used for this study was a 10-minute edited clip of the 2007 Academy Award nominated film *Gone Baby Gone*. The movie was edited down to contain the core conflict of the narrative, which is that a small girl has been kidnapped from her home and a private investigator hired to find her to supplement the police investigation. Over the course of the film, it is revealed that the mother was largely unfit to take care of the child, is addicted to crack, and regularly neglected the child and put her in harm's way by bringing her to drug deals. At the end, it is revealed that the police captain staged the kidnapping of the child and took her himself as an attempt to save her from a life of abuse and intended to raise her with his wife in a safe and loving home. Upon discovering this, the private investigator must decide if he will let the girl stay with the police captain in a loving home or will turn in the crooked police captain for his crime and return the girl to the unfit mother who he promised to help. By pitting numerous moral foundations against each other, such as harm/care, cheating/fairness and authority/subversion, the film allows us to depict moral conflict in a convincing narrative.

Procedure. The same recruitment methods used in Study 1 were utilized in recruitment for Study 2. Participants were allowed to take part in both studies. The procedure once participants clicked on the link to the online survey largely followed that of Study 1, though in Study 2 participants were randomly assigned to a high or low cognitive load condition. In the high load condition, subjects were asked to memorize a 7-digit series of random numbers and told to keep the number in their head without writing it down while viewing the stimulus material. Low load condition subjects were given a simpler number (1234567) to memorize and remember. Participants watched the 10-minute video clip and directly afterwards were asked to type in their assigned number as they remembered it. Participants then completed the same measures as in Study 1, though the manipulation and attention check measures were altered to reflect the narrative in the video. They also completed an additional measure to determine the degree to which they attempted to remember their assigned number. Participants were also asked whether or not they had seen the film before. Completion of the study mirrored the description in Study 1.

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3.3 Measures

Cognitive load manipulation. Participants were grouped by load assignment. Additionally, researchers assessed the degree to which participants factually attempted to remember their assigned number. Participants completed a single item, seven-point manipulation check that asked "I attempted to remember this number when I was watching the video" from "(1) Strongly disagree" to "(7) Strongly agree." Data from participants assigned to the low load condition remained grouped in the low load condition, regardless of their answer because we reasoned that [12345] elicited low load regardless of how much they reported trying to remember it. On the other hand, if participants assigned to the high load condition reported a (1) through (4) indicating that they did not attempt to remember the number, their data was removed, since trying to keep the complicated number in mind is the means by which we can ensure they watched the video stimulus in a high cognitive load state. After these changes, the high cognitive load condition accounted for 41.5% of participants ($n = 49$), and the low load condition accounted for the rest (58.5%, $n = 80$).

Seen. To check whether participants had previously seen the film *Gone Baby Gone*, participants were asked "Prior to this study, had you seen this movie before?" and were able to select Yes, No, or Other (please explain). Only nine participants (7.1%) reported having seen the film before the study.

Attention check. A one-item attention check measure was included to assess whether participants watched the video. The question asked "What gender was the missing child?" Those who did not answer the question correctly were eliminated from the study. All participants remembered correctly.

Moral judgement. Researchers used the previously described three-item, seven-point Likert scale to assess moral judgement of the main character in the video, the police captain Jack Doyle. The scale measuring moral judgement of Jack was reliable ($M = 2.91$, $SD = 1.24$, $\alpha = .87$).

Extremity of moral judgement. *Extremity of Moral Judgement* was calculated in the method described in Study 1. For Jack, the extremity score had a mean of 1.40 ($SD = .90$).

Moral reasoning. Participants were asked to fill in a free response form with the prompt, for example, "In your own words, was Captain Doyle (Morgan Freeman) right or wrong? Please explain how you came to this conclusion." Responses were coded in the same deductive approach grounded in Moral Foundations Theory described in Study 1 and were coded by the same researchers who were blind to condition. *Moral reasoning complexity* was calculated by adding the total number of different foundations cited and *moral definitiveness* (whether or not the participant reached a decision) was a dichotomous variable indicating if they decided that Jack made the right moral decision in kidnapping the child.

3.4 Results

Hypothesis one

To test hypothesis one, that high cognitive load will lead to more extreme moral judgements than those made under low load, an independent samples t-test was run with extremity of moral judgement as the dependent variable. This was not significant for the moral judgement scores, indicating no significant

difference between the two conditions on the extremity of the judgement, regardless of cognitive load. In order to further test this hypothesis, a second independent samples t-test was calculated to determine if there was a significant difference between the load conditions on whether or not participants made definitive moral judgements at all within their moral reasoning free responses. This is described in the method section and referred to as moral definitiveness. Results of the t-test regarding Jack (the kidnapping policeman) support the idea that those in the high load, or System 1 processing condition, were more likely to have made a moral decision (M= .90, SD = .30) about the character than those in the low load condition (M= .73, SD = .44), and this difference was significant (t = 1.72, df = 100, p < .05). Thus, participants experienced greater moral definitiveness in the high load condition when relying on System 1 processing.

Hypothesis two

Reasoning complexity. To test the hypothesis that high cognitive load will lead to participants offering fewer reasons for their judgements than participants in the low load condition, an independent samples t-test was run with moral reasoning complexity (i.e., number of moral foundations mentioned) as the dependent variable. Results indicated that there was a significant difference between cognitive load condition groups. Specifically, those in the high load condition, that is those using System 1 processing, gave fewer reasons (M= .81, SD = .81) about the character than those in the low load condition (M= 1.22, SD = .94), and this difference was significant (t = 2.26, df = 100, p < .05).

3.5 Discussion

Overall, this study presents several relevant findings. First, participants who were under cognitive load relied on System 1, or quick, intuitive processing. As a result, they demonstrated greater moral definitiveness. Second, those in the high load condition gave significantly fewer reasons for their judgements than in the low load condition, suggesting that when relying on System 1 processing, moral reasoning complexity is diminished. That is, when processing moral conflict, participants suppressed their reflective processing and relied on quick, intuitive processing, resulting in diminished moral elaboration.

Taken together with results from Study 1 that found that those who read the morally complex narrative offered more reasons than those who read narratives without moral conflict, and they provided less extreme moral judgements than those who read the narrative without moral conflict, we can draw some clear methodological, theoretical, and practical conclusions. First, consistent with past research (Lewis, Tamborini, Grizzard, Weber, & Prabhu, 2012) articulation of moral conflict encourages reflective, system 2 processing. Second, under high cognitive load, participants appear to rely on System 1 processing. Third, under high cognitive load, they make more definite and extreme judgements. This phenomenon is precisely as suggested by the dual systems approach which argues that when making fast and automatic judgements, we are likely less open to nuance and multiple perspectives. Fourth, cognitive load and the resulting reliance on System 1 resulted in less morally complex reasoning.

In sum, these studies verify that methodologically, cognitive load can be used to experimentally

manipulate system 1 and system 2 processing. Theoretically, this study suggests that moral judgements and moral reasoning typically occur in different systems but can be shifted to more the more reflexive system 1 when cognitive load is increased. Simply overtaxing our cognitive capacity seems to result in a diminished ability to see moral complexity. The practical applications of these findings may be even more obvious. In a media saturated environment, where sources of stimuli fight often for our attention, processing systems are likely to become overloaded and result in an oversimplification of moral complexity in our sense-making of narratives. Given the vital importance of systematic and reflective thinking in narratives about moral conflict, this area of study is not only ripe for additional study, but in need of an application of the findings.

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