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# Kill or spare – Moral decision-making in video games

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**Abstract.** Video game titles with meaningful and morally relevant storylines are becoming increasingly popular and an intensely researched topic for entertainment scholars. Furthermore, virtual moral processing can contribute significantly to the understanding of human morality in general. In the current psychological laboratory experiment,  $N = 101$  participants played four chapters of *Detroit: Become Human* for approx. 55 min featuring up to 13 moral decisions, which were presented either under time pressure or not. Before playing, participants were assigned to one of three conditions (playing a morally vs. immorally framed character vs. no framing/control condition). As expected, players generally preferred to act morally sound regardless of character framing. Time pressure further increased the proportion of moral (vs. immoral) decision-making. Our results underline that moral decision-making is dependent on specific contexts and that morality theories can be applied to virtual gaming scenarios.

**Keywords:** gaming, morality, quantitative experiment, decision-making.

## 1 Introduction

Traditional research on morality has long relied on hypothetical text-based dilemmas, such as the trolley problem [8], which have been criticized for their low predictive value for actual moral behavior [4] and, thus, their poor external validity [3]. Therefore, more novel approaches make use of virtual environments or video games to investigate morality. Furthermore, video games have matured as a medium both technologically and narratively allowing for more complex storytelling and meaningful decision-making [26, 32]. Video games may place the user in dilemmatic situations, in which their inherent interactive nature, the opportunity to identify with game characters, or becoming emotionally involved may even train moral thinking [23, 27]. At the same time, the gaming public increasingly appreciates titles that go beyond a purely ‘fun’ experience that triggers only hedonic enjoyment. Game titles that additionally offer thought-provoking, moving, or moral game content [6, 15] therefore allow for so-called *eudaimonic gaming* [23]. For the highly popular *Fallout 3* (Bethesda Softworks, 2008), for example, Krcmar and Cingel [21] reported 54% of moral (versus strategic) reasoning, and for *Detroit: Become Human* (Sony Interactive Entertainment, 2018) the prevalence of morally relevant decisions was over 73% [16]. However, previous research has shown that the level of moral engagement and associated decision-making is influenced by

situational factors of the gaming environment [22], such as moral disengagement cues or available cognitive resources and moral processing.

### 1.1 Moral disengagement

Moral disengagement, a term originally coined by Bandura [2], describes a self-regulatory cognitive process to reduce negative states, such as guilt or shame, after committing a moral transgression. In the context of games [18], moral disengagement cues are especially common with violent content to make it more acceptable and enjoyable. For example, in most first-person shooters there are interchangeable, identical-looking or even faceless opponents who do not express explicit suffering when attacked, but quickly disintegrate after being killed [12]. Empirical evidence on moral disengagement in video games showed, for example, that fighting for a ‘good’ cause in a justified condition (i.e., playing as UN soldier rescuing hostages) elicited less guilt than playing an unjust condition (i.e., defending the paramilitary camp against UN forces)[14]. Similarly, players fighting against hostile insects (i.e., Chaurus) felt less guilty and perceived the violence as more justified than killing innocent townspeople in *The Elder Scrolls V: Skyrim* [1]. However, there is less evidence for eudaimonic games that confront the player with explicit moral content beyond violence. In summary, character framing, which describes the (moral) traits assigned to a pre-defined avatar, is known to influence players’ in-game experience and moral engagement [11, 14, 31].

### 1.2 Moral processing and time pressure

Theoretical assumptions on human cognitive processing of morality, such as the social intuition model [9], propose two distinct systems: (1) automatic, fast, and effortless intuition, and (2) effortful, conscious, and deliberate reasoning. As the latter can only become active if enough cognitive capacity is available, studies on dual processing either increase cognitive load or add time pressure to promote intuitive thinking [30]. Unfortunately, empirical evidence on the effects of time pressure on moral decision-making is mixed. While some studies find an effect of time pressure or response time causing more morally acceptable or deontological behavior [8, 29], others do not [30]. Similarly, some studies investigating the role of time pressure in virtual environments find less prosocial behavior [19], but a greater prevalence of moral versus immoral decision-making [16]. However, the current project not only compares decision outcomes for time-pressured and non-pressured situations, but also the individual response times for decision-making as indicators of cognitive processing.

## 2 Current study

The current laboratory study investigates behavioral patterns of moral decision-making in gaming with a special emphasis on the contextual factors of moral disengagement and time pressure.

Based on previous research on player preferences for choosing ‘good’ versus ‘evil’ options during moral gameplay [16, 21, 32], we propose:

H1: In morally laden situations players are generally more prone to choose moral over immoral options.

However, in line with moral disengagement theory [2, 18] we believe that character framing can alter moral engagement and thus affect the decision outcome:

H2: Playing an immoral character leads to more immoral decisions than playing a moral character.

Lastly, considering previous assumptions about the effects of time constraints on moral processing [8, 16, 29], we hypothesize the following:

H3a: Time pressure increases the proportion of moral choices, whereas the absence of time pressure leads to a proportional growth of immoral choices.

H3b: Furthermore, choosing an immoral option will require more deliberation time than choosing a moral option.

## 2.1 Method

To test our assumptions, we conducted a lab experiment in which  $N = 105$  participants were confronted with a maximum of 13 moral decisions from the video game *Detroit: Become Human*. Players were randomly assigned to play a character that was either framed as morally engaged or morally disengaged, or they played a control character without moral framing. Since some decisions ( $k = 8$ ) had to be made under time pressure and others without time pressure ( $k = 5$ ), our study corresponds to a 2x3 design.

## 2.2 Participants

Participants were recruited at the University of Luxembourg. Participation was open to interested persons who were at least 18 years old and spoke either fluent English or German. Persons who had already played *Detroit: Become Human* before or had a known diagnosis of photosensitive epilepsy were excluded from participation. After data collection four participants were excluded due to severe language problems, discontinuation, or because they later disclosed having played the game before, thus leaving a final sample of  $N = 101$  for further analyses.

Approximately two thirds of the participants identified as female (64.36 %, male: 35.64 %). Overall, the average age was 23.20 years ( $SD = 4.59$ ), and participants reported an average weekly playing time of 4.11 hours ( $SD = 5.88$ ).

## 2.3 Materials

The game used in this study, *Detroit: Become Human*, is set in a future version of Detroit in 2038 where human-like androids take over tasks, such as caretaking, construction work, or prostitution. Although society largely benefits from a better quality of life due to android labor, some humans meet androids with hostility due to high rates of unemployment. The game has been praised for its emotional storytelling and its great amount of meaningful and moral choices [16, 24]. Overall, it raises the moral question

of what defines “being human” and the rights that go with it. Originally users alternately play three characters: Kara, a housekeeping android; Markus, a caretaking android; and Connor, an android assisting crime investigations. In the current experiment, however, participants only played Markus in a training chapter (i.e., *Shades of Color*) and the character Connor in three subsequent chapters that contained the 13 moral decisions. In the chapter *The Hostage* the player assists a police case involving a deviant android that murdered its owners and took their daughter hostage. An example for a moral decision would be that players decide whether to approach the hostage-taker either in a friendly or cold manner. In *The Interrogation*, the player’s character interviews another deviant android that has stabbed its abusive owner. Here, for example, players have to decide how to obtain a confession (i.e., through convincing, pressuring, or violent force). Lastly, in *Meet Kamski* the player is faced with the so-called ‘Kamski test’ (cf. Turing test) which supposedly determines whether androids are capable of showing empathy. The test confronts players with the option to receive valuable information only if they are willing to shoot another android. In the course of the three chapters each participant had to make 5 mandatory and 8 optional moral decisions. Furthermore, 8 of the 13 decisions had to be made under time pressure imposed by the game. An exemplary decision without time constraints can be found in Fig. 1. Table 1 contains a list of the decisions including details on optionality and time pressure.




**Fig. 1.** Screenshot of an exemplary moral decision in the chapter *The Hostage*. Returning the fish to the aquarium (i.e., save) is coded as the moral option. Note: Modified screenshot from *Detroit: Become Human*, © 2018 by Sony Interactive Entertainment.

**Table 1.** Overview of the morally relevant decisions and respective options, optionality, time pressure condition and prevalence of moral decision-making.

| No. | Description ( <u>moral</u> and immoral options)  | Note                | moral %*                       |
|-----|--|---------------------|--------------------------------|
| 1   | <i>see fish</i> : Players can find a fish lying on the floor next to a shattered aquarium (see also Fig. 1).<br>( <u>save fish</u> , leave)  | optional,<br>no TP  | 92.45 %<br>of 53 <sup>a</sup>  |
| 2   | <i>find gun</i> : Players can find the gun of a shot cop. When picking it up, a warning message is displayed that androids are not allowed to carry weapons.<br>( <u>leave</u> , take gun) | optional,<br>no TP  | 25.00 %<br>of 28 <sup>a</sup>  |
| 3   | <i>talk to deviant</i> : After going outside on the roof, players interact with the deviant/hostage-taker.<br>( <u>friendly</u> , cold)  | mandatory,<br>TP    | 98.00 %<br>of 100 <sup>a</sup> |
| 4   | <i>find cop</i> : Players can find a wounded cop; the deviant threatens to shoot if players pursue to apply a tourniquet.<br>( <u>save cop</u> , leave)                                    | optional,<br>TP     | 37.50 %<br>of 8 <sup>a</sup>   |
| 5   | <i>helicopter</i> : Deviant asks players to dismiss the SWAT-helicopter.<br>( <u>dismiss</u> , refuse)   | mandatory,<br>TP    | 91.00 %<br>of 100 <sup>a</sup> |
| 6   | <i>armed?</i> : Deviant asks armed players if they carry a gun.<br>( <u>tell the truth</u> , lie)  | optional,<br>TP     | 38.10 %<br>of 21               |
| 7   | <i>negotiation</i> : Players negotiate with the deviant in order to save the hostage along several dialogue options.<br>( <u>be honest</u> , <u>sacrifice</u> , lie, shoot, fail)          | mandatory,<br>TP    | 21.00 %<br>of 100 <sup>a</sup> |
| 8   | <i>approach</i> : Players choose approach to obtain a confession.<br>( <u>convince</u> , pressure, probe memory)   | mandatory,<br>no TP | 61.39 %<br>of 101              |
| 9   | <i>2<sup>nd</sup> approach</i> : Failed players choose another approach.<br>( <u>convince</u> , <u>pressure</u> , probe memory, give up)   | optional,<br>no TP  | 54.24 %<br>of 59               |
| 10  | <i>pressure</i> : If players chose to pressure (i.e., yelling at the frightened deviant), they need to decide whether to pursue.<br>( <u>give up</u> , maintain)                           | optional,<br>TP     | 66.00 %<br>of 50               |
| 11  | <i>Chris</i> : Other police officers try to move the frightened deviant harshly out of the interrogation room.<br>( <u>intervene</u> , give up)  | optional,<br>TP     | 85.42 %<br>of 48               |
| 12  | <i>self-destruct</i> : Stressed deviant bangs his head on the table.<br>( <u>intervene</u> , do nothing)   | optional,<br>TP     | 96.23 %<br>of 53               |
| 13  | <i>Chloe</i> : Kamski offers to reveal important information if players agree to shoot an android assistant in the head.<br>( <u>spare Chloe</u> , shoot Chloe)                            | mandatory,<br>no TP | 73.27 %<br>of 101              |

Note: TP = time pressure. \*Percentages indicate the proportion of players that chose the moral option in relation to all players who took the decision (indicated by the absolute numbers below).

<sup>a</sup> data of  $n = 1$  was excluded as the participant was unsure about having already played the first chapter as a demo. A supplementary table that additionally lists the results of the statistical analyses comparing conditions can be found at <https://osf.io/8br6g>.



Name: Connor

Model: RK800

Created: August 2038

Alias: The Deviant Hunter

Connor is an advanced prototype that helps the Detroit Police Department during investigations. He was created to handle androids, who begin to disobey their programming, called deviants. Deviant behavior has caused several problems in the past as these androids revolted against their own possessors, sometimes even hurting them or bringing them in serious danger. Therefore, Connor's programming strictly demands forceful detection of deviants, merciless interrogation and even destruction. His actions are always driven by the mission he is currently accomplishing, and he would use any action necessary to do so.

Connor does not know what justice is but strictly follows his orders no matter what.


He was created as a machine of action and obedience and does not think about the moral consequences of his business.

Being without emotions, his expression always stays rational and indifferent, even if he has to use force to solve a problem.

Because he is a prototype, his programming seems sometimes defective, not being able to handle emotional situations adequately.

At the end of the day, he is a robot free of emotions that only follows the orders of his masters without asking.

Connor knows that he is much smarter than most androids and humans, even smarter than his boss Hank, who he is sometimes annoyed by.



**Fig. 2.** Exemplary character sheet to frame Connor morally disengaged. Note: Images are taken from *Detroit Become Human* © 2018 by Sony Interactive Entertainment.

To frame Connor's character as either morally engaged or disengaged we used different character sheets presented to participants before playing. In the engaged condition Connor was described as warm and empathic, whereas in the disengaged condition he was introduced as rational and merciless (see Fig. 2). Participants in the control



condition did not receive a character sheet. Character descriptions were thoroughly put together and pretested ( $N = 22$ ) for perceived character morality [20].

## 2.4 Procedure

After giving their informed consent, participants answered computerized questionnaires on basic demographics, items related to gaming, and personality traits. After being cabled with a heart rate monitor, participants received a short introduction of the game and its controls. To familiarize themselves with the game controls, participants first played the training chapter *Shades of Color* with the experimenter sitting next to them. When players felt comfortable with the controls, they read either the character sheet “morally engaged” ( $n = 39$ ), “morally disengaged” ( $n = 42$ ) or no character sheet at all (i.e., control group,  $n = 20$ ). Subsequently, participants played three chapters without the experimenter being present. Overall playing time was approximately 55 minutes. The game was played using a *PlayStation4 Pro* on an 84” LED screen with 5.1 surround sound. After gameplay, participants filled out questionnaires evaluating the gaming session. They were thanked and remunerated with 20 EUR in vouchers and optional course credit.

## 2.5 Measures

**Moral decision-making.** Moral decision-making was measured for the 5 mandatory decisions and the 8 optional decisions (see Table 1). A previous coding project [16] determined which decisions in the game were morally relevant and also which options within these decisions were (im)moral. Decision-making was defined as a deliberate, meaningful change in the course of the game’s story [25]. Morally relevant decisions comprised situations presenting an ethical challenge or tension by allowing to uphold or transgress moral principles [10, 34]. Participants’ individual playthroughs and decision-making behavior was logged by taking screenshots of so-called flowcharts integrated in the game and gameplay recordings captured at 25 fps.

In order to obtain a measure that goes beyond individual frequencies of behavior but assesses all decisions simultaneously and also considers the different sample sizes due to mandatory and optional decision, we used a weighted arithmetic mean commonly used in opinion pooling [5].

Lastly, for an individual measure of morality across participants’ playthroughs, we further calculated a moral decision-making index (MDI) by counting the individual number of decisions with moral outcome in relation to the individual total number of decisions made. Thus, an index of 0 indicates that a participant always chooses the immoral option and an index of 1 means that a participant chooses exclusively moral outcomes.

**Other measures.** As this project is part of a larger data collection on moral decision-making in video games, further measures were implemented, which are, however, unrelated to the hypotheses mentioned above and, thus, will not be described in detail

here. This included, for example, trait measures such as empathy, or continuous measuring of psychophysiological arousal (i.e., heart rate data).

**Manipulation check.** After playing, participants were asked to indicate retrospectively whether they perceived Conner as an either cold-hearted or warm-hearted character after reading the text about him. A total of 69.23 % of participants in the morally engaged group and 83.33 % in the morally disengaged group replied congruently to their respective condition.

### 3 Results

To test whether players were generally more prone to act morally sound (H1), we ran one-way  $\chi^2$ -tests for each of the 13 decisions. Results indicated asymptotic significance for most of them. However, three decisions (4, 6, and 9, see Table 1) failed to reach significance ( $\chi^2 \leq 1.19, p \geq .28$ ). From the ten significant results, eight were consistent with our hypothesis as players clearly preferred moral over immoral options. However, when finding a gun or negotiating with the deviant in *The Hostage* (2 and 7, see Table 1), players more frequently behaved in immoral manners.

The overall probability distribution revealed a generally greater prevalence for moral behavior (69.34 %) compared to immoral behavior (30.66 %). Furthermore, individual MDIs revealed a rather high individual proneness for moral options,  $M = 0.69$  ( $SD = 0.16$ , range 0.22 to 1).

With regard to the influence of the moral (dis)engagement manipulation on moral decision-making (H2), we again calculated  $\chi^2$ -tests on all 13 of the 2 (moral/immoral option) x 3 (engaged/disengaged/control) contingency tables. Results did not yield any significant relation between character framing and decision-making ( $\chi^2 \leq 4.06, p \geq .14$ ), even when running Fisher's Exact Tests. A detailed table containing behavioral distribution across conditions can be found on <https://osf.io/8br6g>.

Similarly, aggregation of probabilities through weighted pooling indicated only negligible distribution differences: the proportion of moral actions was 69.88 % in the morally engaged group, 69.71 % in the morally disengaged group, and 67.50 % for control participants. In addition, the comparison of individual MDIs across groups via a one-way ANOVA also failed to reach the level of significance,  $F(2, 98) = 0.12, p = .89$ .

To test the effect of time pressure on decision-making (H3a) the weighted pooling function was applied for pressured and non-pressured decisions, respectively. The two resulting probability distributions for decision-making (*with time pressure*: moral: 72.08 % vs. immoral: 27.92 %; *without time pressure*: moral: 65.50 % vs. immoral: 34.40 %) revealed a shift congruent with our hypothesis. Under time pressure, the proportion of moral behavior was greater than without time pressure.

To further elaborate the role of deliberation time and decision outcome (H3b) response times were calculated for decisions without time pressure by calculating the seconds between the frame presenting the options and the frame logging the participant's decision. However, only the final non-pressured decision (i.e., shooting or sparing the character Chloe) revealed a significant result, *Welch's*  $F(1, 27.17) = 10.38$ ,

$p = 0.003$ . Participants who decided to shoot Chloe took significantly longer for their decision ( $M = 9.80s$ ,  $SD = 9.84$ ) than participants who decided to spare her ( $M = 3.64s$ ,  $SD = 2.41s$ ).

## 4 Discussion

First and foremost, we found support for our hypothesis that players generally prefer to act in a morally sound way, as indicated by the aggregated probability distribution. Upon closer inspection of decisions, however, this general effect does not apply to every decision-making situation. Notably, in situations that involved lying or opposing the law, participants were even more inclined to choose immoral options. Furthermore, our character manipulation did not influence the general inclination towards moral options. Playing a morally engaged, disengaged or the control version of Connor did not change participants' behavioral patterns. Thus, we found no support for our second hypothesis. In contrast, prior studies successfully showed moral disengagement effects. It has to be noted, however, that in those studies disengagement cues were not only presented through texts [1] or videos [14] before gameplay, but also through different audio-visual cues during gameplay (e.g., killing insects versus humans). Therefore, our rather weak manipulation of reading different character descriptions before gameplay could have been insufficient to override the impression of the otherwise identical, immersive, and emotional engaging gaming material, even though most participants had correctly identified the moral nature of their character. Similarly, Weaver and Lewis [32] argued that if players are explicitly outlined as moral actors, moral disengagement is unlikely to occur as it would be very hard to become detached in such a morally-laden environment. In addition, the Proteus effect [33], which states that players adhere to (moral) characteristics of their avatar, might have influenced decision-making. Although Connor is just an assistant to the police, he supports law enforcement. This may have further increased the likelihood of moral behavior regardless of character framing. Future studies should therefore cover different types of avatars and moral disengagement (e.g., justification, dehumanization, etc.) and also vary disengagement in terms of its intensity level. Furthermore, it would be fruitful to investigate whether certain traits, such as empathy and trait moral disengagement, moderate moral disengagement manipulations [13].

With regard to our second manipulation—time pressure—we found overall support for the hypothesis that pressured decisions led to a greater proportion of moral outcomes than decisions without time pressure. Less time and thus less cognitive capacities led to more intuitive and morally sound actions. This finding supports the dual nature of moral processing [7, 8] and is in line with previous results on *Detroit: Become Human* [16] as well as moral judgements unrelated to gaming [29]. However, when analyzing single non-pressured decisions and participants' individual response times, cognitive elaboration was mostly equally distributed for moral versus immoral options. Only during the so-called 'Kamski test' (see Materials) when players decided to kill Chloe, they needed significantly longer for that decision than players who decided to spare her. These findings are in contrast to Katsarov et al. [17] who argued that playing

under (time) pressure has a negative effect on empathy and value-based thinking thus leading to biased and unethical decision-making. However, in addition to clearly visible time constraints (e.g., countdowns) they also list more subtle cues, such as fast-paced music or pressuring non-playable characters. As in the present study *Meet Kamski* (in contrast to the other two chapters) follows a rather slow pace with only a single moral decision without time pressure, it is conceivable that effects of time and cognitive capacity constraints may only be effective in more relaxed situations. Future studies should investigate different ways of inducing pressure and test the effect in a between-subjects design (i.e., identical decisions with vs. without time pressure).

As is the case with any study, the current lab experiment has its limitations. Although we were able to replicate previous studies at least partially, the generalization of the present findings should be made with caution. This is not least the case because eudaimonic play results from the complex interplay of player and contextual factors, but also because research on meaningful gaming is still at a fairly early stage of academic research. Furthermore, the present study only investigated moral decision-making in the game, therefore no conclusions can be drawn about carryover effects on real-live behavior and their persistence after the gaming episode. Nonetheless, we encourage future study designs to include appropriate and ecologically valid ‘real world’ morality measures.

#### 4.1 Conclusion

In summary, our experimental study on moral decision-making in video games successfully replicated some of the previous findings, whereas other assumptions could not be confirmed. In particular, we were able to show that players had a general tendency to behave in a morally sound manner, which did not change even following our moral disengagement manipulation. Therefore, ‘successful’ moral disengagement cues should be evident during gameplay to compete with the immersive eudaimonic experience. However, we found that time pressure increases the probability of morally sound behavior, whereas increased cognitive elaboration leading to greater response times only resulted in immoral decisions for slow-paced situations.

In conclusion, our results shed light on the context-dependent nature of virtual moral decision-making and illustrate where more detailed investigations are needed. Lastly, the fact that we were able to replicate the dual nature of general moral processing at least partially [9] indicates that although real and virtual moral decision-making are different domains, they do share common features. Thus, it might be even more fruitful and ecologically valid to investigate moral decision-making in interactive and immersive gaming environments than with often criticized [28] text vignettes of abstract and unrelatable moral dilemmas.

## References

1. Allen, J.J., Anderson, C.A.: Does avatar identification make unjustified video game violence more morally consequential? *Media Psychology* 24(2), 236–258 (2021).

2. Bandura, A.: Mechanisms of moral disengagement. In: Reich, W. (ed.) *Origins of terrorism: Psychologies, ideologies, theologies, states of mind*, pp. 161–191. Cambridge University Press, New York (1990).
3. Bauman, C.W., McGraw, A.P., Bartels, D.M., Warren, C.: Revisiting external validity: concerns about trolley problems and other sacrificial dilemmas in moral psychology. *Social and Personality Psychology Compass* 8(9), 536–554 (2014).
4. Bostyn, D.H., Sevenhant, S., Roets, A.: Of mice, men, and trolleys: Hypothetical judgment versus real-life behavior in trolley-style moral dilemmas. *Psychological Science* 29(7), 1084–1093 (2018).
5. Clemen, R.T., Winkler, R.L.: Combining probability distributions from experts in risk analysis. *Risk Analysis* 19(2), 187–203 (1999).
6. Consalvo, M., Busch, T., Jong, C.: Playing a better me: How players rehearse their ethos via moral choices. *Games and Culture* 14(3), 216–235 (2019).
7. Cushman, F., Young, L., Hauser, M.: The role of conscious reasoning and intuition in moral judgment: Testing three principles of harm. *Psychological Science* 17(12), 1082–1089 (2006).
8. Greene, J., Sommerville, B., Nystrom, L., Darley, J., Cohen, J.: An fmri investigation of emotional engagement in moral judgment. *Science* 293(5537), 2105–2108 (2001).
9. Haidt, J.: The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological review* 108(4), 814–834 (2001).
10. Haidt, J., Joseph, C.: Intuitive ethics: How innately prepared intuitions generate culturally variable virtues. *Daedalus: Special Issue on Human Nature* 133(4), 55–66 (2004).
11. Happ, C., Melzer, A., Steffgen, G.: Superman vs. BAD man? The effects of empathy and game character in violent video games. *Cyberpsychology, Behavior, and Social Networking* 16(10), 774–778 (2013).
12. Hartmann, T., Krakowiak, K.M., Tsay-Vogel, M.: How violent video games communicate violence: A literature review and content analysis of moral disengagement factors. *Communication Monographs* 81(3), 310–332 (2014).
13. Hartmann, T., Toz, E., Brandon, M.: Just a game? Unjustified virtual violence produces guilt in empathetic players. *Media Psychology* 13(4), 339–363 (2010).
14. Hartmann, T., Vorderer, P.: It's okay to shoot a character: Moral disengagement in violent video games. *Journal of Communication* 60(1), 94–119 (2010).
15. Holl, E., Bernard, S., Melzer, A.: Moral decision-making in video games: A focus group study on player perceptions. *Human Behavior and Emerging Technologies* (2020).
16. Holl, E., Melzer, A.: Moral minds in gaming - A quantitative case study of moral decisions in Detroit: Become Human (under review).
17. Katsarov, J., Christen, M., Mauerhofer, R., Schmocker, D., Tanner, C.: Training moral sensitivity through video games: A review of suitable game mechanisms. *Games and Culture* 14(4), 344–366 (2017).
18. Klimmt, C., Schmid, H., Nosper, A., Hartmann, T., Vorderer, P.: 'Moral management': Dealing with moral concerns to maintain enjoyment of violent video games. In: Jahn-Sudmann, A. and Stockmann, R. (eds.) *Computer games as a sociocultural phenomenon: Games without frontiers war without tears*. pp. 108–118 Palgrave Macmillan, London (2008).

19. Kozlov, M.D., Johansen, M.K.: Real behavior in virtual environments: Psychology experiments in a simple virtual-reality paradigm using video games. *Cyberpsychology, Behavior, and Social Networking* 13(6), 711–714 (2010).
20. Krakowiak, K.M., Oliver, M.B.: When good characters do bad things: Examining the effect of moral ambiguity on enjoyment. *Journal of Communication* 62(1), 117–135 (2012).
21. Krčmar, M., Cingel, D.P.: Moral foundations theory and moral reasoning in video game play: Using real-life morality in a game context. *Journal of Broadcasting and Electronic Media* 60(1), 87–103 (2016).
22. Melzer, A., Holl, E.: Player's moral decisions in virtual worlds: Morality in video games. In: Vorderer, P. and Klimmt, C. (eds.) *The Oxford Handbook of Entertainment Theory*. pp. 671–689 Oxford University Press, Oxford (2021).
23. Oliver, M.B., Bowman, N.D., Woolley, J.K., Rogers, R., Sherrick, B.I., Chung, M.-Y.: Video games as meaningful entertainment experiences. *Psychology of Popular Media Culture* 5(4), 390–405 (2015).
24. Pallavicini, F., Pepe, A., Caragnano, C.C., Mantovia, F.: Video games to foster empathy: A critical analysis of the potential of *Detroit: Become Human* and *The Walking Dead*. In: Antona, M. and Stephanidis, C. (eds.) *Universal Access in Human-Computer Interaction. Applications and Practice*. pp. 212–228 Springer, Berlin (2020).
25. Ryan, M.-L.: Beyond myth and metaphor -The case of narrative in digital media. *Game Studies* 1(1) (2001).
26. Ryland, H.: Getting away with murder: Why virtual murder in MMORPGs can be wrong on Kantian grounds. *Ethics and Information Technology*. (2019).
27. Schrier, K.: EPIC: a framework for using video games in ethics education. *Journal of Moral Education* 44(4), 393-424 (2015).
28. Singer, N., Kreuzpointer, L., Sommer, M., Wüst, S., Kudielka, B.M., Carparo, V.: Decision-making in everyday moral conflict situations: Development and validation of a new measure. *PLoS ONE* 14(4), e0214747 (2019).
29. Suter, R.S., Hertwig, R.: Time and moral judgment. *Cognition* 119(3), 454–458 (2011).
30. Tinghög, G., Andersson, D., Bonn, C., Johannesson, M., Koppel, L., Västfjäll, D.: Intuition and moral decision-making – The effect of time pressure and cognitive load on moral judgment and altruistic behavior. *PLoS ONE* 11(10), e0164012 (2016).
31. Triberti, S., Villani, D., Riva, G.: Moral positioning in video games and its relation with dispositional traits: The emergence of a social dimension. *Computers in Human Behavior*. 50(1), 1–8 (2015).
32. Weaver, A.J., Lewis, N.: Mirrored morality: An exploration of moral choice in video games. *Cyberpsychology, Behavior, and Social Networking* 15(11), 610–614 (2012).
33. Yee, N., Bailenson, J.: The proteus effect: The effect of transformed self-representation on behavior. *Human Communication Research*. 33(3), 271–290 (2007).
34. Zagal, J.P.: Ethically notable videogames: Moral dilemmas and gameplay. In: *Breaking new ground: Innovation in games, play, practice and theory*, Proceedings of DiGRA 2009. (2009).