

The impact of the Digital Age in Moral Judgments

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Abstract

Nowadays, several of the situations in which we have to make decisions are in digital form. In a first experiment (N=1010) we showed that people's moral judgments depend on the Digital Context (Smartphone vs. PC) in which a dilemma is presented, becoming more utilitarian (vs. deontological) when using Smartphones. To provide additional evidence, we ran a second (N=250) and a third experiment (N=300), where we introduced time constraints and we manipulated time instructions. Our results provide an extended perspective on Dual-Process Models of Moral Judgment, as we showed that the use of smartphones, often assumed to be hurried which would be consistent with gut-feeling decision-making, increased the likelihood of utilitarian responses and decreased deontological ones. This is the first study to look at the impact of the digital age on moral judgments and the results presented have consequences for understanding moral choice in our increasingly virtualized world.

Keywords: Moral Judgment; Behavioural Ethics; Decision-Making, Human-Computer Interaction.

Introduction

In this digital age, we spend a lot of time interacting with computer screens, smartphones and other digital gadgets. We buy online, work on the cloud, our social relationships are sometimes online-based, etc. Thus, the contexts where we typically face ethical decisions and are asked to engage in moral behaviour have changed. Nowadays, moral dilemmas are often presented digitally, that is, relevant information is presented through and decisions are made on a technological device.

A key distinction regarding moral judgments concerns deontological versus utilitarian decisions (Singer, 1991). Recent dual-process accounts of moral judgment contrast deontological judgments, which are generally driven by automatic/unreflective/intuitive responses, prompted by the emotional content of a given dilemma, with utilitarian responses, which are the result of unemotional/rational/controlled reflection, driven by conscious evaluation of the potential outcomes (Greene et al., 2001; Greene & Haidt, 2002). In this account, an individual's ethical mind-set (rule-based vs. outcome-based, Barque-Duran et al., 2015) can play a central role. A deontological perspective evaluates an act based on its conformity to a moral norm (Kant, 1785/1959) or perhaps just a rule (such a law). By contrast a consequentialist/utilitarian perspective evaluates an act depending on its consequences (Mill, 1861/1998).

People often believe that judgments about “right” and “wrong” should be consistent and unaffected by irrelevant aspects of a moral dilemma or by its context. However, studies have shown, for example, that manipulations of the language (foreign vs. mother tongue) in which a moral scenario is presented can affect moral judgments through increasing psychological distance from the situation, and so inducing utilitarianism (Costa et al, 2014). The choice of deontological versus utilitarian judgments can vary depending on the emotional reactivity triggered by the dilemma (Valdesolo & DeSteno, 2006). As such, establishing which conditions favor each of these two influences is fundamental to understanding the psychology of moral choice.

Construal Level Theory (CLT) provides a framework of considerable potential relevance by linking mental representations to moral judgment. Individuals' judgments, decisions, and behaviours can differ as a function of construal levels. CLT proposes that the same event or object can be represented at multiple levels of abstraction (see Trope & Liberman, 2010, for a review). More weight is given to global, abstract features at high-level construal, whereas local, concrete features are more influential at low-level construal. According to CLT, psychological distance is a major determinant of what level of construal is activated. Distancing a target on any dimension of psychological distance (i.e., time, space, social, and hypotheticality) leads to greater activation of high-level construal (directing attention to end states) than low-level construal. Crucially, high-level construal is often assumed to align with more utilitarian decision-making (Gong, Iliev, & Sachdeva, 2012; Aguilar, Brussino, & Fernández-Dols, 2013).

The present study explores whether a Digital Context (i.e. using a different digital device such a Smartphone or a PC, as hundreds of millions of individuals do every day) can have a systematic impact on these processes. Could Digital Contexts induce different construal levels (through psychological distance)?

There is evidence that people experience a so called “narrowing effect” when using smartphones in decision-making, which means that they channel or tunnel their focus toward a main task and ignore or filter out certain cues (Ariely, 2016). A narrowing effect is consistent with the idea that devices such as smartphones would increase psychological distance giving rise to an abstract representation of actions. In other words, the narrowing effect would seem to be aligned with a more utilitarian/outcome-based mind-set, instead of a more emotional/

deontological one. For this reason we asked ourselves whether Digital Context, smartphone vs. PC, might influence the relation between different levels of construal (psychological distance), thus affecting the likelihood of utilitarian vs. deontological judgments.

To summarize, we hypothesize that Smartphones (vs. PCs) have the effect of channeling or tunneling the focus toward a main task at the expense of certain cues. This should induce high construal, increase psychological distance and give rise to an abstract representation of actions, thus biasing towards more utilitarian judgments.

We first tested this prediction using three versions of the well-known Trolley Problem (Switch, Fat Man, Balanced; Thomson, 1985; see Methods sections). To provide additional support we also ran a second and a third experiment where we introduced a Time Constraint (10 seconds vs. Unlimited Time to respond) and where we manipulated Time Instruction, relating to how participants were given information about the time constraints for reaching a decision (Instructing Unlimited Time vs. No Time Instruction).

Experiment 1

The objective was to explore whether a manipulation of the Digital Context (Smartphone vs. PC) can have an impact on moral judgment. Specifically, we wanted to test if making moral judgments using a Smartphone increased the number of utilitarian responses in comparison to when using a PC.

Participants

A total of 1010 participants, all US residents, were recruited on-line and received \$1 for doing the task (482 women, 528 men; mean age=31.7 years, $SD=9.6$). Sample sizes were based on extant research (Suter & Hertwig, 2011).

Materials and Procedure

The study was designed in Qualtrics, run on Amazon Mechanical Turk and lasted approximately 10-15 minutes. Digital Context (Smartphone vs. PC)¹ and Version of the Trolley Problem (Switch vs. Fat Man vs. Balanced) were manipulated between participants. We used the frequency of Utilitarian vs. Deontological Responses as the dependent measure.

Participants were randomly told to switch to a Smartphone or a PC after reading and agreeing the general instructions on Amazon Mechanical Turk. Having a smartphone was a pre-requisite to participate in the experiment. Participants in the Smartphone condition had to respond to all questions from their smartphone devices. As a manipulation check for this condition, we tracked and verified through Qualtrics that the responses were indeed

¹ In the Smartphone condition participants could do the experiment with the following devices: iPhone, Android, Windows Mobile Phone and BlackBerry. In the PC condition participants could use a desktop or a laptop computer. No tablets were allowed.

made from an iPhone, Android, Windows Phone or Blackberry. Participants were randomly allocated to one of these six conditions: (1) Smartphone/Switch; (2) Smartphone/Fat Man; (3) Smartphone/Balanced; (4) PC/Switch; (5) PC/Fat Man; (6) PC/Balanced. One third of the participants (327 Participants) on each Digital condition were presented with the Fat Man version of the Trolley dilemma, where one imagines standing on a footbridge overlooking a train track. A small incoming train is about to kill five people and the only way to stop it is to push a heavy man off the footbridge in front of the train. This will kill him, but save the five people. A utilitarian analysis dictates sacrificing one to save five; but this would violate the moral prohibition against killing. Imagining physically pushing the man is emotionally difficult and therefore people typically avoid this choice (Thomson, 1985). According to our hypotheses, participants would be more likely to opt for sacrificing one man to save five when dealing with such moral dilemma using a smartphone in comparison to a PC, since this would induce high construal, increase psychological distance and give rise to an abstract representation of actions, which is aligned with more utilitarian judgments under time pressure; or would induce psychological closeness due to the link between low-level construal and a focus on means, which is also hypothesized to align with more utilitarian judgments, under conditions of no time pressure. Another third of participants (313 Participants) were presented with the Switch dilemma, where the trolley is headed towards the five men, but you can switch it with a lever to another track, where it would kill only one man. People are more willing to sacrifice the one man by pulling the switch than by pushing him off the footbridge and the extensively supported explanation is that pulling the switch is less emotionally aversive. The last third of participants (314 Participants) were presented with the Balanced version of the Trolley Problem. The Balanced dilemma had a setting similar to that in the Fat Man version, but with a different number of people one could save (15 instead of 5), so that utilitarian choice would increase. All participants first completed a filler task (10 trivia questions) before responding to one of the versions of the Trolley Problem. A “catch question” was introduced in the experiment, to control for attention during the task (i.e. “If you are paying attention to this question please select answer ‘36’ from the options below”). Then, participants were presented with one of the three moral scenarios (Switch, Fat Man or Balanced) where they had to choose between Choice A (utilitarian) or Choice B (deontological). In all cases the dilemma was presented with both text and an illustration. Subsequently, participants completed another filler task (10 trivia questions). Finally, participants were asked to complete The Big Five Inventory (John et al., 1991) questionnaire, which is considered a quick (44-items), reliable, and accurate measure of the five dimensions of personality. We considered that the impact of digital content on moral choice could also interact with personality characteristics (Ozer & Benet-Martínez, 2006) but the

results did not lead to firm conclusions and therefore will not be reported further.

Results Experiment 1

We excluded participants whose first language was not English, as Costa et al., (2014) showed that the use of a foreign language (instead of a mother tongue) in a moral scenario increases psychological distance and induces utilitarianism when making moral judgments. We also excluded those participants who did not answer the catch question correctly. A total of 56 participants out of 1010 were thus excluded.

We first compared the percentage of Utilitarian Responses for the two Digital Contexts (Smartphone vs. PC) on each of the three Versions of the Trolley Problem that were employed (Switch vs. Fat Man vs. Balanced; Figure 1).

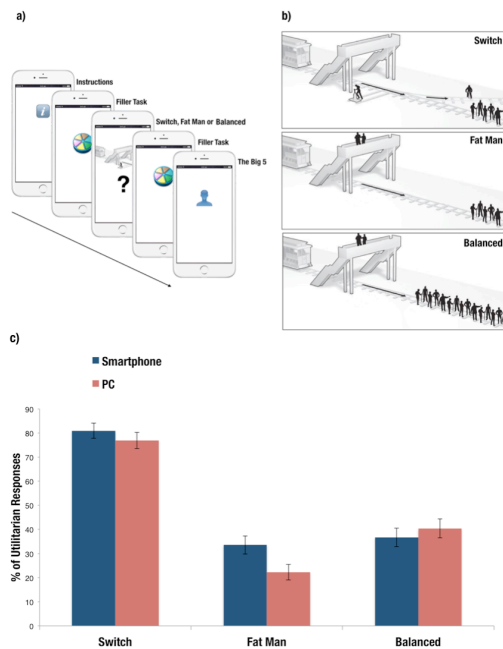


Figure 1: A) The experimental paradigm used in the Smartphone condition in Experiment 1. B) The illustrations used in each of the three moral conditions. C) Percentage of Utilitarian Responses for both Digital Contexts (Smartphone vs. PC) on each of the three versions of the Trolley problem (Switch vs. Fat Man vs. Balanced). Error bars represent standard errors.

As expected, in the Fat Man dilemma more participants avoided the act of pushing the heavy man off the footbridge in front of the train, presumably because of the emotional burden of this choice. More importantly, participants were more likely to opt for sacrificing the Fat Man (utilitarian response) to save five men when using a Smartphone (33.5%) than when using a PC (22.3%). A 2x2 chi-square test of independence was performed to examine the frequency of Utilitarian vs. Deontological Responses against Digital Context in the Fat Man condition and this

revealed a significant association between the variables, $\chi^2(1, N=327) = 5.15, p=.023$. This result supports our hypothesis that moral judgments in Smartphones increase utilitarian decision-making, than when using a PC.

We then analyzed the frequency of Utilitarian vs. Deontological Responses, across the two Digital Contexts, in the Switch condition. Slightly more participants decided to sacrifice one man by pulling the switch than to do nothing and let five people die (80.9% for the Smartphone users; 76.9% for the PC users), but there was no evidence for an association between the two variables, $\chi^2(1, N=313) = .741, p=.389$. This result supports our expectation that in less emotional scenarios, such as the Switch dilemma, there is a reduced effect of Digital Context. That is, there is no difference in participants' moral judgments when using a Smartphone or a PC if the moral scenario is already highly utilitarian.

Finally, we examined the frequency of Utilitarian vs. Deontological Responses in the Balanced condition. Note, this condition was designed so that, in the PC condition at least, there would be fairly equivalent utilitarian and deontological influences, and this was approximately the case. Regarding the manipulation of interest, 40.4% of participants decided to push the heavy man off the footbridge in the PC and 36.7% in the Smartphone conditions. Nevertheless, a chi-square test of independence showed that the relation between these variables was not significant, $\chi^2(1, N=314) = .448, p=.503$. The (tentative) conclusion from this experiment is that using a Smartphone² rather than a PC has a reliable impact on moral judgments only when dilemmas or scenarios have high emotional content.

Experiment 2a and 2b

The objective of Experiment 2a was to provide additional evidence for the increased number of utilitarian responses using a Smartphone by manipulating the amount of time available to form a moral judgment. We wanted to explore Digital Context (Smartphone vs. PC) and Time Constraint (10 seconds vs. Unlimited time to respond) on moral judgments. It is possible that the effect of Digital Context is independent from that of Time Constraint, in which case we cannot explain the former in terms of (just) the latter. Alternatively, Time Constraint may provide a bias on moral decision making opposite to the effect of Digital Context (e.g., a decrease of utilitarian responses, in the fat man scenario, when participants are using a Smartphone), which will create a complex picture regarding how using Smartphones in everyday moral judgments biases for and against utilitarian responses. In Experiment 2b, we addressed the challenge to explain the difference in the Fat Man condition of Experiment 1 and in the Unlimited Time

² In the Smartphone condition, 39% of participants used an iPhone during the experiment, 58.5% an Android, 2.2% a Windows Mobile Phone and 0.2% a BlackBerry.

condition in Experiment 2a (where the effect of Digital Context had disappeared) by manipulating directly the Time Instruction to either specify that there was unlimited time available for a moral judgment, or not mentioning time at all (Instructing Unlimited Time vs. No Time Instruction). The key difference between these two conditions was that in Experiment 1 participants were not told anything regarding time, while in Experiment 2a, in the equivalent conditions, participants were specifically told they had unlimited time. We also measured participants' affective reaction with the Self Assessment Manikin test (Bradley and Lang, 1994).

Participants

A total of 550 participants (250 Exp 2a and 300 Exp 2b), all of whom were US residents, were recruited on-line and received \$0.80 for doing the task (234 women, 316 men; mean age=32.5 years, $SD=9$).

Materials and Procedure

The studies were designed in Qualtrics, run on Amazon Mechanical Turk and lasted less than 10 minutes. Digital Context (Smartphone vs. PC), Version of the Trolley Problem (Switch vs. Fat Man) and Time Constraint (10 seconds vs. Unlimited Time to respond) were manipulated between participants in Experiment 2a. There were therefore eight conditions. We used the frequency of Utilitarian vs. Deontological Responses as the dependent measure.

All participants followed a similar procedure as in Experiment 1. They first completed a filler task (10 trivia questions) including a catch question, as in Experiment 1. Then, participants were presented with one of the two moral scenarios (Switch or Fat Man). In all cases the dilemma was presented with both text and an illustration. Participants were alerted of the available time for responding depending on their condition (i.e. "You will only have 10 seconds to answer the question in the next screen" vs. "You will have unlimited time to answer the question in the next screen"). After the presentation of the scenario, in the "10 seconds" condition participants had to choose between Choice A (utilitarian) or Choice B (deontological), while a countdown timer appeared at the top of their screen (both Smartphone and PC). In contrast, in the "Unlimited Time" condition, participants were explicitly told that they had to make their judgment taking as much time as they wanted. Finally, participants were asked to complete the Self Assessment Manikin test (Bradley and Lang, 1994), which is a technique that directly measures the pleasure, arousal and dominance associated with a person's affective reaction.

In Experiment 2b, Digital Context (Smartphone vs. PC) and Time Instruction (Instructing Unlimited Time vs. No Time Instruction) were manipulated between participants, using the Fat Man scenario. Time Instruction was manipulated in the following way. Half the participants were given the instructions as in the Experiment 2a Unlimited Time condition. The other half did not have any

indication of the time they had to spend making their judgment (same procedure as in Experiment 1).

Results across all Experiments 1, 2a and 2b

In this section we report the results of Experiment 2a, 2b and then bring together the results from all experiments focusing on the Fat Man scenario (Figure 2).

First, we summarize the results from Experiment 2a. We excluded a total of 10 participants out of 250 following the same criteria as in Experiment 1. As a manipulation check, we first examined the amount of time that participants took to finish the experiment (5min 10s in the Unlimited Time condition; 4min 32s in the 10s condition).

We examined the differences in the percentage of Utilitarian Responses for the two Digital Contexts (Smartphone vs. PC) on each of the two versions of the Trolley Problem (Switch vs. Fat Man) and with or without time pressure (10s vs. Unlimited Time).

In the time pressure (10s), Switch condition, slightly more participants decided to sacrifice one man by pulling the switch than to do nothing and let five people die, when using a Smartphone (79.31%) than when using a PC (66.67%), but this difference was not reliable, $\chi^2(1, N=65) = 1.282, p=.257$.

Regarding the Unlimited Time condition, in the Switch condition, Digital Context also did not appear to play a role in moral judgments (85.71% and 83.87% for Smartphone and PC, respectively); regardless of Digital Context, we observed highly utilitarian responses. Thus, as before, the results in the Switch dilemma indicate that Digital Context and (as it seems) Time Constraint have a reliable impact on moral judgments only when dilemmas or scenarios have high emotional content. This result also supports our assumption that in less emotional scenarios, such as the Switch dilemma, any effect of either Digital Context or Time Constraint does not result in a reliable increase in utilitarian responding.

In the time pressure (10s), Fat Man condition, participants were more likely to opt for sacrificing the Fat Man (utilitarian response) to save five when using a Smartphone (45.7%) than when using a PC (20.0%), $\chi^2(1, N=60) = 4.239, p=.04$. At face value, these results challenge the assumption that hurried responses necessarily lead to deontological moral judgments.

Then, we examined participant's responses in the Unlimited Time, Fat Man condition. The results here appear to conflict with our conclusion from Experiment 1, in that there was no difference in Utilitarian vs. Deontological responses, between the Smartphone and PC conditions (27.58% and 29.63%, respectively, $\chi^2(1, N=64) = 2.224, p=.136$). In other words, when participants were specifically told to spend unlimited time to resolve the dilemma (Unlimited Time condition), the Digital Context effect vanished. We return to this finding in Experiment 2b.

We also considered whether the impact of Digital Content on moral choice could interact with the perceived emotionality of the scenario/context or affective reactions,

but the results did not lead us to firm conclusions and therefore will not be reported further.

Second, we summarize the results from Experiment 2b. In this experiment we excluded a total of 141 participants out of 300 following the same criteria as in Experiment 1 and 2a. One participant was rejected because she/he answered incorrectly to the catch question and one because English was not his/her first language. Additionally, 139 participants were eliminated because they said they had come across a moral choice in the context of the Trolley Problem before. The pattern of results does not change qualitatively if these participants are included, but we decided not to do so.

In this experiment we measured Response Time for the particular moral judgment, though we note that, as the experiment was run over the internet, the accuracy of these measurements is lower than in the lab. Did participants in the Instructing Unlimited Time condition take longer to respond than ones in the No Time Instruction one? There was no evidence that this was the case (2x2 ANOVA with Digital Context and Time Instruction, $F < 1$ for all effects). We suggest that the effects from Time Constraint and Time Instruction seen in Experiments 2a, 2b could result in a change of the participants' mind-set and approach to the problems, without corresponding clear differences in Response Time.

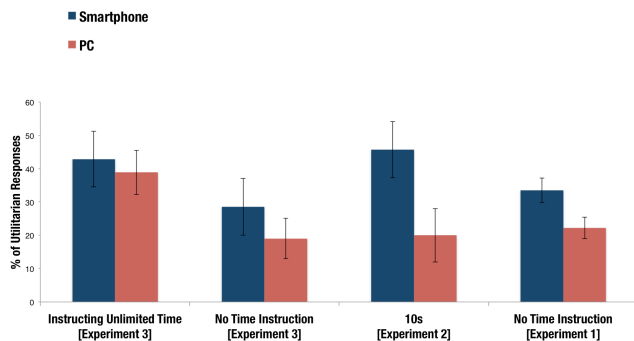


Figure 2: Summary of the relevant results from Experiments 1, 2a and 2b for the Fat Man problem. The vertical axis shows percentage of utilitarian responses and the horizontal axis the conditions of interest. Error bars represent standard errors.

The two leftmost bar clusters in Figure 2 show the results of Experiment 2b. Interestingly, using the data from Experiment 2b, we replicated the finding from Experiment 2a, that the mere fact of “nudging” participants to use unlimited time resulted in utilitarian responses that were not influenced by Digital Context. A 2x2 chi-square test with frequency of Utilitarian vs. Deontological Responses against Time Instruction (Instructing Unlimited Time vs. No Time Instruction) confirmed this conclusion, $\chi^2(1) = 5.509$, $p = .018$.

We next considered whether the results from Experiments 2b replicated the effect from Experiments 1 and 2a regarding Digital Context. The pattern of results from the

No Time Instruction condition in Experiment 2b closely matched the corresponding results in Experiment 1. In Experiment 2b, as expected, participants were more likely to opt for sacrificing the Fat Man (utilitarian response) to save five when using a Smartphone (28.6%) than when using a PC (19%). Even though the trend was as expected, a 2x2 chi-square test with frequency of Utilitarian vs. Deontological Responses against Digital Context (Smartphone vs. PC) was not significant, $\chi^2(1, N=70) = 0.864$, $p = .35$. However, after collapsing the data (for the identical Fat Man, No Time Instruction conditions) from Experiments 1 and 2b, we obtained a significant association between frequency of Utilitarian vs. Deontological Responses and Digital Context (Smartphone vs. PC), $\chi^2(1, N=397) = 6.27$, $p = .012$. This result supports our hypothesis that moral judgments in Smartphones increase utilitarian decision-making, compared to when using a PC, when no information about time is provided.

Importantly, the results from Experiments 1, 2a and 2b put together indicate that under conditions of no time information and time pressure there is indeed a utilitarian bias. The only Time Instruction in which the utilitarian bias was eliminated was the Unlimited Time condition, in which participants were specifically told to take as long as they needed to respond. This finding has a plausible interpretation that, in the Unlimited Time condition, participants took into account the information they have been ignoring so far (which would include emotional cues) and this made the utilitarian bias disappear. Thus, the results so far support the hypothesis that, under most conditions, smartphones (vs. PC) are associated with more utilitarian decision-making (vs. deontological). An additional interesting finding is that utilitarian judgments emerge in both the No Time Instruction condition and the Time Pressure condition.

Discussion

This is the first study to look at the impact of digital context in moral judgments. We considered whether the increasing tendency for our judgments to be mediated through the use of technological gadgets might be changing our approach to moral dilemmas. We have shown that people's moral judgments become more utilitarian (vs. deontological) when using Smartphones as opposed to PCs, under a variety of time-related manipulations (but not all). The present work was motivated by the idea Digital Context might impact the relation between different levels of construal (psychological distance) thus affecting utilitarian vs. deontological judgments. While our results are consistent with such a view, clearly further research is needed.

We first consider the implications of these results for the Dual-Process Models of Moral Judgment (Greene et al., 2001; Greene & Haidt, 2002). A standard assumption is that moral dilemmas resolved in fast, gut-feeling conditions engage a deontological mode of responding, while utilitarian responses are typically the result of longer consideration and involve cognitive control. Instead, we

showed that participants under time pressure were more likely to opt for sacrificing the “fat man” to “save five” (utilitarian response) when using a Smartphone than when using a PC. That is, some digital contexts (i.e. Smartphones) can trigger utilitarian decision-making under time pressure, even though time pressure has traditionally been associated with deontological responding in moral choice. Dual route models have received extensive support and no doubt they are valid under most circumstances. Our results indicate a need to perhaps augment the available routes for utilitarian biases in such models.

Other research has provided a more complex picture regarding the impact of time on deontological vs. utilitarian judgments. Specifically, Suter and Hertwig (2011) showed that participants in a time-pressure condition (associated with fast, gut-feeling conditions), relative to a no-time-pressure condition (associated with longer consideration and higher cognitive control), were more likely to give deontological responses only in high-conflict dilemmas. By contrast, in low-conflict and in impersonal dilemmas, the proportion of deontological responses did not differ between conditions. The results from the present experiments partly support these differences between high-low conflict dilemmas. In less emotional scenarios (Switch), neither Digital Context nor Time Constraint resulted in a reliable increase in utilitarian responding. By contrast, in more emotional scenarios (Fat Man), our results question the well-established assumption (from Suter & Hertwig, 2011, amongst others) that hurried decisions enhance deontology, since we showed that moral judgments under a time constraint and in a specific Digital context (Smartphones) seem to make utilitarian judgments more common.

Clearly, more work is required to disentangle possible explanations for the exact effect of the different instructions concerning timing, especially regarding the possibility that keeping track of time may result in reduced cognitive resources. But the crucial point regarding the present study is that our conclusion considering Digital Context and moral judgments appears mostly independent of such considerations.

Our hypotheses regarding Digital Context and moral decision-making was largely motivated from the effects and implications from Construal Level Theory. According to CLT, psychological distance can vary on at least four dimensions: temporal, spatial, social and hypotheticality (i.e. probability for a scenario to become reality; Trope & Liberman, 2010). Can we localize the particular effect of distance in considering responding using a smartphone vs. a PC? In further studies we will attempt to measure psychological distance directly. More generally, our results were inconclusive regarding the idea that the psychological distance elicited by a smartphone decreased the intensity of people’s affective reactions. It is possible that smartphones induce a greater distance in other respects. For example, it might be the case that the use of digital devices interacts with/mediates the hypotheticality dimension.

Overall, the present work reveals a need for the further systematic study of how Digital Context affects moral choice, all the more so given that, increasingly, governments, charities and other institutions engage in intense campaigns over digital media to encourage moral choices for important aspects of our way of life.

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