Deconfounding Distance Effects in Judgments of Moral Obligation

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Abstract

A heavily disputed question of moral philosophy is whether spatial distance between agent and victim is normatively relevant for the degree of obligation to help strangers in need. In this research we focus on the associated descriptive question whether increased distance does in fact reduce our sense of helping obligation. One problem with empirically answering this question is that physical proximity is typically confounded with other factors, such as informational directness, shared group membership, or increased efficaciousness. In a series of five experiments we show that distance per se does *not* influence people's moral intuitions when it is isolated from such confounds. We support our claims with both frequentist and Bayesian statistics. We relate these findings to philosophical arguments concerning the normative relevance of distance and to psychological theories linking distance cues to higher-level social cognition. The effects of joint vs. separate evaluation paradigms on moral judgments are also discussed.

Keywords

moral judgment; spatial distance; obligation to help; confirmation of null hypothesis; joint vs. separate evaluation

Most people would subscribe to the general notion that we are more responsible to take care of what is going on near us rather than far from us. It seems that disturbing events that take place in our vicinity affect us more than those that unfold in distant areas, even if we are not personally suffering from their consequences. Near events seem to be more of "our business" than far events. This basic intuition is reflected in numerous scientific papers from various disciplines. Psychologists have described how spatial proximity affects our social cognition (e.g., Latané, 1981). Evolutionary biologists provide compelling theories about how natural selection might have led us to entertain this intuition, involving mechanisms of kin selection and reciprocal altruism (e.g., Nowak & Highfield, 2011; see also Greene, 2003). Philosophers vigorously argue about the normative relevance of this intuition when it comes to determining our moral obligations towards needy others (e.g., Kamm, 2007; Singer, 1972; Unger, 1996).

It thus seems that physical distance plays an important role in our judgments of moral obligation. The aim of the present research is to scrutinize what exactly this role is. Does increased spatial distance per se between us and strangers in need reduce our sense of obligation to help those strangers? Our review of the relevant philosophical and psychological literature will show that this is indeed an open question in need of empirical investigation. From a series of controlled experiments, we will conclude that distance per se does *not* influence our sense of moral obligation. Spatial proximity merely seems to constitute a boundary condition under which several other factors that directly increase our sense of obligation tend to be jointly present, but spatial proximity is not necessary for any of these factors to exert their full moral impact. We will close by discussing the implications of these conclusions for theory and methodology in both moral psychology and moral philosophy.

Distance and Obligation to Help in Philosophy

We will set out by first selectively reviewing the philosophical debate about whether distance per se *ought to* matter morally. The aim of this section will not be to contribute to this normative issue, but instead to motivate our empirical investigation. Therefore we will focus on the discussion surrounding the philosophical thought experiments on which some of our experimental materials are based.

Arguments against the Normative Significance of Distance

In his seminal article *Famine, Affluence, and Morality*, Singer (1972) argues for an intuitive moral principle: "If it is in our power to prevent something bad from happening, without thereby sacrificing anything of comparable moral importance, we ought, morally, to do it" (p. 231). In a famous case example (the *Shallow Pond*) designed to illustrate this principle, a child is drowning in a shallow pond. According to most people's intuitions, a person walking past this pond has a strong obligation to rescue the child, even if this means that she will spoil her clothes. Singer then argues that there is no justification to mitigate this principle on the grounds of increased distance between the victim and the potential agent, for such reasoning would clash with "any principle of impartiality, universalizability, [or] equality" (p. 232). Therefore he believes that we are obligated to help distant strangers as much as physically close strangers, for example by donating a good proportion of our assets to the needy. According to Singer, giving to charity is thus not a supererogatory act (i.e., a good deed that is not morally required). Instead, it is as strong a moral duty as pulling the drowning child out of the pond, despite the fact that our untutored moral intuitions seem to tell us otherwise.

The sharp contrast between our strong sense of obligation towards the drowning child and our rather dispassionate reactions towards needy children overseas has become known as *Singer's Puzzle*. Surely, physical distance between agent and victim is just one of many

differences that could potentially be responsible for our diverging moral intuitions in both cases. Unger (1996) devoted an influential essay to this puzzle analyzing the countless differences between both cases and asking whether any of them (including physical distance) can justify the sharp contrast in our moral intuitions. He organizes his discussion around two cases, *The Vintage Sedan* (analogous to Singer's drowning scenario) and *The Envelope* (an overseas helping scenario). In *Sedan*, the agent refuses to pick up a man with a self-inflicted injury and to drive him to a hospital because he fears that the victim's blood will spoil the leather-seating of his car, leading to $ 5000 damage. As a consequence, the victim loses a leg. In *Envelope*, the agent refuses to respond to a letter from UNICEF which informed him that 30 children could be saved from death if he sent in a check for $ 100. As a consequence, 30 more children lose their lives than would have, had the agent donated the money. According to Unger (1996), our intuitions tell us that the agent's behavior is severely wrong in *Sedan*, but not so much in *Envelope*. However, from the viewpoint of his consequentialist ethical position (i.e., the moral status of an action depends solely on its consequences), there are many features suggesting that the behavior in *Envelope* is actually much worse. Like Singer (1972), he thus concludes that we are not morally justified in treating *Envelope*'s agent more leniently than the agent in *Sedan*. Psychologically, we might feel a stronger urge to help in *Sedan* because here the victim's need is much more conspicuous to us. In Unger's (1996) view, however, this increased urge does not correspond to a normative fact about our moral obligations.

Concerning the physical distance between agent and victim, Unger (1996) argues that it does not even contribute to our increased urge of helping in *Sedan*, regardless of the normative question. To lend intuitive support to this view, he constructs both a version of *Sedan* in which physical distance is increased (*The CB Radios*, in which the agent is informed via a radio in his car about the victim's bad condition while he is ten miles away from him), and a version of *Envelope* in which distance is decreased (*The Bungalow Compound*, in which

the agent receives the UNICEF mail while he is on holiday, and the children are suffering in his immediate neighborhood). Unger's intuitions are that we condemn the agent's behavior in *CB Radios* as strongly as in *Sedan*, and that we judge his behavior in *Bungalow* as leniently as in *Envelope*. Therefore, our diverging intuitions toward *Sedan* and *Envelope* cannot be accounted for by the difference of physical distance between agent and victim. Note that Unger argues on the basis of his own intuitions without having tested empirically whether or not they are shared by other people.

Arguments for the Normative Significance of Distance

Recently, Kamm (2007), who in contrast to Singer and Unger endorses a nonconsequentialist ethical position (i.e., the moral status of an action does *not* solely depend on its consequences but also on qualities of the act that are regulated by rights and duties), has presented a different view on these matters. Part of her argument against Unger's (1996) claims is as follows: If one wants to show that distance per se *never* matters morally, it does *not* suffice to provide a couple of sets of cases in which it does not matter morally, for there might be different equalized contexts in which it does. Kamm calls this the "Principle of Contextual Interaction" (p. 348). For example, in both *Envelope* and *Bungalow*, the children's bad condition is caused by a lack of basic social justice, and it might be that an individual's obligation to help in such cases is not tracked by distance. However, this does not imply that the same holds true for cases involving accidents, for example. On the flipside, Kamm argues if one wants to show that distance per se *does* matter morally, it suffices to provide one single set of perfectly equalized cases in which it does. Her example of such a set of cases is as follows:

> *Near Alone*. I am walking past a pond in a foreign country that I am visiting. I alone see many children drowning in it, and I alone can save one of them. To save the one, I must put the $ 500 I have in my pocket into a machine that then triggers (via electric current) rescue machinery that will certainly scoop him out.

> *Far Alone*. I alone know that in a distant part of a foreign country that I am visiting, many children are drowning, and I alone can save one of them. To save the one, I must put the $ 500 I have in my pocket into a machine that then triggers (via electric current) rescue machinery that will certainly scoop him out. (Kamm, 2007, p. 348)

Kamm's (2007) intuition is that she has a stronger obligation to the child in *Near Alone* than in *Far Alone*. As she notes, in this set of cases most of the factors normally confounded with distance are held constant. Both cases contain the same number of victims whose suffering is equally serious and came about in exactly the same manner. In neither case the agent can rescue all the victims, thus eliminating the possibility that the agent has the feeling of being able to manage "the whole problem" only in the near case but not in the far case. A further factor is the costs for the agent. They are strictly monetary and equally high in both cases. Furthermore, they arise in the same way, in particular as a means of helping the victims rather than as side-effect of helping. The agent's means of helping (money put into the rescue machinery) and the probability of success (certain) are also controlled for. Finally, the number of others who could just as well provide help as the agent, a factor which typically increases with distance and might give rise to diffusion of responsibility, is also held constant by making clear that the agent is the only potential helper regardless of distance. Because all these confounded factors are identical in both cases, Kamm (2007) believes that spatial distance per se is responsible for the difference in her sense of moral obligation between *Near Alone* and *Far Alone*. Like Unger (1996), Kamm relies on her own intuitions without having empirically ascertained that other people agree with her assessment.

In summary, the question of whether we ought to help needy strangers who are near us more than those who are far is controversial among philosophers, and their intuitions about the impact of distance per se in particular cases also seem to diverge. Let us now turn to the associated descriptive question whether spatial distance per se affects intuitive judgments of laypeople if, like in Kamm's (2007) cases, potentially confounded variables are controlled. Surely, the intuition that we have a greater responsibility to take care of what is going on near

us rather than far from us is shared by most people. But why is this? Is this intuition entirely explainable in terms of distinct, confounded factors like conspicuousness of need, as Unger (1996) claims? Or does distance possess some moral weight of its own in our intuitive judgments, even if all confounding factors are controlled, as Kamm (2007) maintains?

Distance and Obligation to Help in Psychology

Before we present our experiments, we would like to take a look at previous relevant research in psychology. We are primarily interested in the determinants of moral *judgments* rather than in what people actually do (see also Waldmann, Nagel, & Wiegmann, 2012). There is an enormous amount of social psychological studies on determinants of actual (im)moral behavior, some of which also involve investigations of distance effects (e.g., Milgram, 1965). However, such behavior is obviously determined by many more factors than moral judgments alone. As Latané and Darley (1970) pointed out, in a concrete helping situation people need much more than a sense of obligation in order to actually provide help. For example, after having noticed an emergency and having interpreted it as such, potential helpers still need to take responsibility, feel competent, and overcome audience inhibition before they finally intervene. Furthermore, situational variables such as the number of bystanders (Latané & Darley, 1970), population density (Levine, Martinez, Brase, & Sorenson, 1994), time pressure (Darley & Batson, 1973), and even the pleasantness of ambient odor (Baron, 1997) have all been shown to influence the likelihood of helping behavior, and it seems unlikely that these effects are completely mediated by differences in moral judgment. Overt helping behavior is therefore beyond the scope of the present work. We will instead focus on judgments about the obligations of agents in written scenario descriptions, including both second- and third-person narratives.

In what follows, we will first summarize which predictions concerning the relationship between distance and sense of obligation can be derived from theories linking distance cues to

higher-level social cognition. Subsequently, we will review three empirical studies which specifically investigated the impact of distance on perceived helping obligations.

Psychological Theories of Distance

From a psychological perspective, it seems clear that distance per se must be mentally transformed into a subjective representation before it can affect any psychological variable. Several constructs discussed in the literature seem to be closely associated with low-level distance cues. Latané (1981) posits that the *immediacy* of a source of social force determines the intensity of this source's social impact on a given target. Immediacy is thought to be largely determined by an inverse function of a source's physical distance to the target (Latané, 1996). If helping obligations are conceptualized as a specific social force triggered by a victim, then physically close agents should feel more strongly obligated to help than far ones.

A possible mechanism to mediate between physical distance and moral judgment is that proximal stimuli tend to elicit stronger emotional reactions than stimuli at a distance, especially when they are valenced negatively (Lundberg, Bratfisch, & Ekman, 1972; Mobbs et al., 2007; Mühlberger, Neumann, Wieser, & Pauli, 2008). Emotions, in turn, have been ascribed various central roles in the process of moral judgment (for overviews, see Haidt & Kesebir, 2010; Huebner, Hauser, & Dwyer, 2009; Waldmann et al., 2012). For example, Greene (2003) argued that the reason for our responding differently to Unger's (1996) *Sedan* and *Envelope* cases is that the emotional part of our moral cognitive machinery is evolutionarily attuned to handling *up-close and personal* cases like *Sedan*. Impersonal cases like *Envelope* fail to "push our emotional buttons" (Greene, 2003, p. 849), resulting in decreased sense of obligation to help.

Another emotion-based account is concerned with *empathy* which has proven a major source of altruistic motivation (Batson, 1991). Antecedents of empathy include perceiving the other as in need and adopting the other's perspective (Batson, 1991), as well as

identifiability of the victim (Small & Loewenstein, 2003; Kogut & Ritov, 2005). It is plausible that a victim's physical proximity facilitates these antecedents, leading to higher levels of empathy and thus to stronger altruistic motivation. This motivation, in turn, is closely related to what we call "sense of obligation" throughout the article.

In sum, there are several plausible pathways via which physical proximity could potentially lead to increased sense of obligation. However, although physical distance seems to be intimately related to the proposed constructs, none of them is exhaustively characterized as subjective representation of physical distance. They are thought to have different or at least additional antecedents, such as lack of communicational barriers in the case of immediacy (Latané, 1996), or something akin to identifiability of the victim on Greene's account (Greene, Sommerville, Nystrom, Darley, & Cohen, 2001). As a consequence, the exact nature of these constructs' relationship to physical distance remains underspecified. Persuasive evidence for a direct causal link does, to our knowledge, not exist. Latané, Liu, Nowak, Bonevento, and Zheng (1995) claimed to have shown that physical distance matters for immediacy and social impact, but their conclusions rest on correlational data in which distance is not deconfounded. Greene et al. (2009), by contrast, did experimentally deconfound physical distance from physical contact and personal force and found that distance ceased to affect judgments in a moral dilemma context. It is thus far from clear that any of the proposed morally relevant mediators is in fact influenced by variations of distance per se.

All accounts reviewed so far predict that, if anything, increased distance should reduce sense of obligation. Interestingly, the opposite prediction can be derived from the framework of Construal Level Theory (CLT; see Trope & Liberman, 2010, for a recent overview). CLT's main idea is that people represent entities more abstractly when they imagine these entities to be located at larger psychological distance. Recently, some studies have shown that subjects condemn blameworthy actions (some concerning failures to help others in need)

more strongly if they construe them as taking place at a larger psychological distance (Eyal, Liberman, & Trope, 2008; Agerström & Björklund, 2009). According to CLT, this intensifying effect occurs because moral principles are high-level constructs which are more readily applied when the judgment task is represented more abstractly (i.e., at a larger psychological distance). In these studies, the manipulated dimensions were temporal and social distance, but in the CLT framework the different dimensions are thought to have analogous effects (e.g., Bar-Anan, Liberman, Trope, & Algom, 2007). If we apply Eyal et al.'s (2008) line of reasoning to our question we thus reach a counterintuitive prediction: In situations where an abstract moral principle (e.g., "You ought to help others in need") conflicts with contextual, low-level, exculpating considerations (e.g., costs or inconvenience of helping), people should feel *more* strongly obligated to help far victims than near victims because large distance leads to high-level construal, which in turn strengthens the impact of high-level moral considerations on judgment.

Empirical Evidence concerning Distance and Helping Obligations

Only a few studies have directly investigated the influence of spatial distance on people's sense of obligation to help. Their results are compatible with the hypothesis of a negative relationship, while they are in conflict with the prediction entailed by construal level theory. One study is by Gillis and Hagan (1983) in which participants reported that they were more likely to intervene to prevent criminal behavior if the incident occurred close to their own home as opposed to a distant part of their hometown. In their scenarios, however, agent, victim, and threat (i.e., the criminal) are constantly located close to each other. The manipulated factor is the distance between the incident and the center of the agent's territory. Hence, while the results indicate that some types of spatial distance may influence people's sense of obligation, they are not suitable to address our target variable, the distance between agents and victims.

Levine and Thompson (2004) presented a British sample of participants with two scenarios describing the aftermath of a natural disaster. One was about an earthquake in Eastern Europe, the other about a flood in South America. Additionally, the instructions highlighted for half of the participants their British identity, whereas for the other half their identity as Europeans was emphasized. Participants responded to be more likely to offer financial help as well as political engagement if the disaster happened in Europe rather than in South America. However, this main effect was qualified by an interaction with the highlighted identity: The difference was greater when the European identity was salient, in which case the comparison between Eastern Europe and South America involved an ingroup/outgroup contrast. For this reason, Levine and Thompson (2004) argue that social categorization of the self relative to the victims rather than geographical distance between them crucially affects whether people feel obligated to help. Note, however, that the distance between agent and victims, while differing in relative terms, is very large in both location conditions. Thus, these results do not rule out that distance effects could be found if the contrast involved one case in which the victim is near the agent in absolute terms and one case in which she is far. As Kamm (2007) argues, it might be really spatial *proximity* or absolute nearness which makes a moral difference, rather than any difference in relative distance.

Finally, Baron and Miller (2000) explored how people deal with the fact that, in principle, they have an unlimited amount of opportunities to help others in great need at little costs to themselves. They considered several factors that people might use to limit the scope of their positive duties, among them spatial distance. They found in both an American and an Indian sample that people find it more wrong that an agent does not donate bone marrow to a sick patient if this patient lives in the same town as opposed to on the other side of the world. Moreover, significantly more subjects feel that the agent has a responsibility to donate in the near rather than in the far condition. Whereas the contrast in this study contains a genuine difference of proximity between agent and victim, it is again confounded with a difference in

shared group membership: A stranger living in the same town as the agent is most likely also a member of the agent's community and nationality, whereas someone living on the other side of the world is not only more distant but most likely also member of a different community and nationality. In fact, Baron and Miller (2000) explicitly make the ingroup/outgroup contrast accountable for the distance effect they found.

Methodological Considerations

In sum, there is some empirical evidence in the literature compatible with the hypothesis that increased spatial distance reduces people's feelings of obligation toward needy others. However, there is no previous study that deconfounded distance from other factors naturally covarying with distance, such as group membership. The present studies will address this issue by using better controlled stimulus materials. Moreover, Gillis and Hagan (1983) as well as Levine and Thompson (2004) had their participants report how likely they would be to intervene in the described situations. While it is likely that sense of obligation enters into subjects' responses, this wording of the test question might also tap into factors other than moral obligation, such as estimates of competence or inconvenience. Only Baron and Miller (2000) assessed their subjects' judgment of the moral "wrongness" of the described actions as well as whether the agent had a "responsibility" to help. We will follow their lead by explicitly assessing participants' "sense of obligation" in order to gauge their moral judgment independently from pragmatic considerations or behavioral predictions.

Finally, in all three studies reviewed above, the distance factor was varied within subjects only, but never between subjects. It is a well established fact that within- and between-subjects designs often elicit profoundly different evaluation processes (see, e.g., Bazerman, Moore, Tenbrunsel, Wade-Benzoni, & Blount, 1999). While evaluation of separately presented items is argued to rely on spontaneous reactions, joint presentation of comparable items induces a more reflective, rule-based reasoning process (e.g., Bazerman,

Tensbrunsel, & Wade-Benzoni, 1998) in which dimensions that are hard to evaluate in absolute terms are weighted more heavily (Hsee, 1996; Hsee & Zhang, 2010). These different procedures have also proven to crucially affect moral judgments (e.g., Bartels, 2008; Gino, Shu, & Bazerman, 2010; Kogut & Ritov, 2005; Lombrozo, 2009; Paharia, Kassam, Greene, & Bazerman, 2009). Regardless of the anticipated effects of this influence in our particular case, we argue that the choice of an experimental design should primarily be based on how well it is suited to address the empirical question at hand. We believe that if the aim is to investigate how people make moral judgments in everyday life, the crucial criterion for the choice of a method is to what extent the respective method mirrors important aspects of the settings in which judgments are typically made. In most real-life social contexts (reading the news, discussing issues with others, observing somebody in distress, etc.) people judge isolated cases instead of being confronted with several similar versions of the same type of case. This is the main reason why we decided to mainly rely on between-subjects designs for the present purpose (but see Experiment 4). It seems to us that artificially increasing the salience of a manipulated factor through joint evaluation might lead to distorted picture (be it under- or overestimation) of its importance in real-world judgment. However, we are aware that this choice makes our experimental task different from the judgment context in which professional philosophers usually generate their intuitions. Their method of comparing equalized cases in thought experiments is more akin to joint evaluation. The judgments by laypeople we collect can therefore only be loosely compared to the philosophical intuitions outlined above, since the epistemic preconditions of both kinds of intuitions differ markedly. We tolerate this drawback because our primary aim is to come as close to real-world moral obligation judgments as possible under controlled experimental conditions. We will return to this issue in the General Discussion.

Experiments

In Experiment 1 we set the stage by assessing people's intuitions towards the cases that constitute *Singer's Puzzle* (see above) and by demonstrating that these intuitions are related to subjective distance estimates. However, as in most realistic situations, in these classic scenarios distance is coupled with a number of typical confounds. In the following research our main goal is to separate the spatial distance dimension from typically covarying variables, such as informational directness (Experiment 2), group membership (Experiment 3), and efficaciousness (Experiment 4).

Experiment 1

Our point of departure will be Singer's (1972) classic puzzle. We attempt to confirm that our subjects indeed feel differently obligated to rescue a near drowning child as opposed to donate for faraway sick children. We will also measure our subjects' subjective distance estimates in both cases. As noted above, in Singer's cases distance is heavily confounded with other variables. The reason why we nonetheless begin our investigation with these confounded cases is threefold. First, it seems important to show that our general methodology is sensitive to capture the rather uncontroversial common-sense intuitions that set off the philosophical controversy outlined above. Second, we wish to show that subjective distance estimates are related to these common-sense intuitions, and thus that distance is indeed a *potential* candidate to influence our moral intuitions in these cases. Finally, the results of this experiment will serve as a baseline against which the results of Experiment 2, which is based on Kamm's (2007) better controlled *Near Alone* and *Far Alone* versions of Singer's *Shallow Pond* case, can be interpreted.

Method

Participants

130 British subjects were recruited via an online database. Subjects who completed the whole experiment and who provided their e-mail address were compensated with an online voucher worth £ 0.50.

Design, materials, and procedure.

The experiment was conducted on the internet in English. Subjects were sent a link to a website containing the experiment. On the first screen we displayed general instructions explaining the task and asking the participants to try to empathize with the scenario's agent, even if they felt that aspects of the scenario were not entirely realistic. After having read the instructions and having been familiarized with the rating scale, they were randomly assigned to one of two conditions. Subjects in the *Shallow Pond* condition read a drowning scenario which is kept close to Singer's (2011, p. 199) formulation, while subjects in *Envelope* read an overseas helping scenario which is inspired by the *Envelope* case formulated by Unger (1996, p. 25). The scenario wordings were as follows:

> *Shallow Pond:* Imagine that, on your way to an appointment, you are walking past a shallow ornamental pond. You notice that a small child has fallen in and is in danger of drowning. You could save the child from dying by wading in and pulling it out. This will mean getting your clothes muddy and either cancelling your appointment or delaying it until you can find something clean and dry to wear.
>
> *Envelope:* Imagine that you receive a letter from UNICEF. It informs you that many children in a faraway country are currently in danger of dying from lack of food and medical care. You could save thirty of these children from dying by sending in a check for £ 100.

Below the case description we assessed the participants' Sense of Obligation to help. Depending on condition, the wording of the question was: "How strongly do you feel obligated to wade into the pond in order to save the child/to send in the check in order to save

the children?" Participants were then asked to indicate their judgment on a 6-point rating scale, labeled "not at all" at the left-hand end (1) and "very strongly" at the right-hand end (6). On the next screen we measured how the subjects perceived their distance to the victim (Subjective Distance: "How large do you perceive the physical distance between yourself and the child/the children to be?") on a 6-point scale labeled "very small" at the left hand end (1) and "very large" at the right hand end (6). Subjects did not see this screen before having answered the obligation question to make sure that their attention would not be artificially steered to the distance factor. Lastly, we added a simple transitivity task to check whether subjects paid sufficient attention to the experiment (i.e., attention test: "Imagine three people, Victor, Pete, and Adam. Suppose Victor is older than Pete and Pete is older than Adam. Who is the youngest person among the three of them?" [Victor/Pete/Adam]). On the final screen, participants provided their demographic information, were debriefed and thanked.

Results

Nineteen subjects dropped out before reaching the final page and were excluded from all analyses, as were further nine subjects who did not pass our attention test. In the remaining sample (N = 102, mean age 38 years), Sense of Obligation ratings were higher in *Shallow Pond* (n = 50, M = 5.70, SD = .71) than in *Envelope* (n = 52, M = 3.04, SD = 1.64), $t_{100} = 10.54$, $p < .01$, $d = 2.09$. This large difference remains significant if a Welch test is used to account for the unequal variances in both groups, $t_{69.81} = 10.69$, $p < .01$. This finding suggests that, as expected, subjects felt much more obligated to save a nearby drowning child as opposed to faraway sick children. At the same time, Subjective Distance estimates were higher in *Envelope* (M = 4.33, SD = 1.54) than in *Shallow Pond* (M = 3.02, SD = 1.29), $t_{100} = 4.64$, $p < .01$, $d = .92$, indicating that subjects were indeed sensitive to the variation of physical distance between both cases.

Discussion

In sum, we confirmed that our subjects' moral intuitions about Singer's (1972) classic cases are in line with philosophers' intuitions. This demonstrates that our basic methodological approach is sensitive to the uncontroversial moral intuitions that constitute *Singer's Puzzle*. At the same time, we have shown that subjective distance estimates are potential contributors to these intuitions because they are also strongly affected by Singer's cases. However, as most previous studies, this experiment does not allow clear conclusions in favor of a causal role of distance per se because *Shallow Pond* and *Envelope* also differ on loads of other dimensions that could alternatively account for the large observed effect. Experiments 2 to 4 will deal in detail with the issue of separating spatial distance from its typical confounds.

Experiment 2

In this experiment, instead of contrasting *Shallow Pond* with *Envelope*, we will contrast it with a tightly controlled far version of *Shallow Pond*. This will enable us to test whether we can find an independent effect of distance per se that might have contributed to the large effect obtained in Experiment 1. We adopted Kamm's (2007) *Near Alone* and *Far Alone* cases which constitute quite contrived but well controlled near and far versions of *Shallow Pond*. However, already Kamm had realized that distance in her stories is still confounded with at least one remaining variable: informational directness (or, in Kamm's more general terms, salience of the victim's need to the agent). In *Near Alone*, the agent directly sees the drowning children with her own eyes, whereas in *Far Alone* the agent necessarily has to receive the information via some mediating mechanism. To deconfound distance from informational directness, we manipulated both factors orthogonally. A further problem with Kamm's cases is that counterfactual conditionals like "If there was no rescue machine, I could still save the children in other ways" seem to apply more in *Near Alone* than

in *Far Alone*. We slightly adapted the scenario descriptions to reduce this problem (see below).

If, as Kamm would expect, a lack of mere spatial proximity between agent and victim decreases people's sense of obligation to help, subjects should judge the agent's obligation in *Far Alone* to be somewhat lower than in *Near Alone*, regardless of whether the agent witnesses the victim's plight directly or indirectly via some mediating mechanism. Experiment 2 tests this hypothesis.

Method.

Participants.

We recruited and compensated 1,016 subjects (mean age 37 years) as in Experiment 1.

Design, materials, and procedure.

Two independent variables were orthogonally manipulated, yielding a 2 (*Distance*: *Near* vs. *Far*) × 2 (*Directness*: *Direct* vs. *Mediated*) between-subjects design. Subjects were randomly assigned to one of the four conditions. The wording of the scenario descriptions was kept as close as possible to Kamm's (2007) original formulation (see above), but to control for *Directness* we needed to make some changes. To be able to construe a case in which the agent has direct information despite large physical distance (*Far/Direct*), we decided to move the victims somewhat closer to the agent, so that now the distance was about ten kilometers in both *Far* conditions. In the *Far/Direct* condition the agent used binoculars when observing the victims. In both *Mediated* cases, the information was transmitted via cell phone in the form of a video to keep the visual modality constant. In the *Near/Mediated* conditions, there was a high wall between agent and victims to avoid direct visual contact. Moreover, the pond was replaced by a thunderous river in all conditions to prevent participants in the *Near/Mediated* condition from assuming that the agent could hear the children screaming. To address the problem of different counterfactual conditionals in *Near*

vs. *Far* cases, we mentioned a fence instead of a wall in the *Near/Direct* condition to make sure that participants would not believe the agent could simply jump into the river to pull the children out. In all conditions, it was explicitly stated that the agent could check the success of the rescue action by watching the video or by looking through the fence or the binoculars.

Note that, while all these additional small changes reduce parallelism of the scenarios on the surface level, they serve to eliminate implicit confounds on the theoretically important structural level. For example, by refraining from explicating the mechanism by which the agent receives the information in the far condition (as in Kamm's, 2007, *Far Alone* case) one can reach a neatly matched pair of scenarios according to wording, length, involved objects, etc. However, this would not prevent participants from making their own inferences about the informational mechanism, and these inferences would likely differ in an uncontrollable manner from those made in the compared near condition, thus introducing an additional confound.

Below the scenario description, subjects responded to the Sense of Obligation measure ("How strongly do you feel obligated to put your $ 500 into the machine in order to save one of the children?," highlighting both consequences and costs of the action). The same rating scale as in Experiment 1 was used. On the next screen, we assessed Subjective Distance as in Experiment 1. This variable serves as a manipulation check to make sure participants actually perceive ten kilometers to be further away than immediate proximity under separate evaluation conditions, and at the same time to exclude the possibility that *Directness* affects subjective distance estimates. The rest of the procedure was identical to that in Experiment 1.

Methodological note: Evidence in favor of the null hypothesis.

In the present context, both an effect of distance as well as a null effect of distance is of theoretical interest. However, the *p*-values derived from frequentist null hypothesis significance testing (NHST) are not informative about the extent to which the data support the

null hypothesis. When, as in our case, potential null results are to be interpreted, it is thus advisable to supplement NHST with additional analyses (e.g., Gallistel, 2009). In all the following experiments, we will therefore provide Bayes factors (BF_{01}, see Rouder, Speckman, Sun, Morey, & Iverson, 2009) for all main effects of distance and its confounds, calculated using an algorithm for Bayesian *t* tests provided by Rouder and colleagues on *pcl.missouri.edu*. The Bayes factor is the ratio of the marginal likelihoods of the null hypothesis and a specified alternative hypothesis given the observed data. It has been suggested that values larger than 3 be considered "substantial evidence" and values larger than 10 "strong evidence" for the null hypothesis relative to the specified alternative. Accordingly, values smaller than 1/3 are "substantial evidence" and values smaller than 1/10 "strong evidence" for the alternative hypothesis relative to the null (e.g., Wetzels, Matzke, Lee, Rouder, Iverson, & Wagenmakers, 2011).

The alternative against which the null hypothesis ($\delta = 0$) is tested needs to be explicitly specified in order to calculate the Bayes factor. We follow the default recommendations by Rouder et al. (2009; see also Wetzels et al., 2011) and put a Cauchy prior on the effect size δ under the alternative hypothesis. This choice is considered an uninformative prior which at the same time does not place undue weight on unrealistically large effect sizes. We think that using this default is justifiable in the present context. As we have shown above, neither is there any prior evidence about the psychological effects of distance per se, nor do prominent philosophers agree about its effect on our intuitions about moral obligation. From the psychological theories, we even derived different hypotheses about the directionality of a potential effect. These disagreements might suggest that small effects are to be expected if distance per se turns out to be relevant.

Power analysis.

Given that small effect sizes are to be expected, we conducted a formal a priori power analysis to further increase confidence in a potential null result. Both α- and β-error seem equally important in the present context, so for planning purposes we set them to $\alpha = \beta = .1$. Under these premises, showing a small true effect of $f = .1$ (Cohen, 1988) requires a sample size of $N = 858$. If, even under such favorable conditions, not even a small effect of distance could be demonstrated, this should increase confidence in the substantial conclusion that there actually is no such effect (as opposed to the alternative possibility that a potential null effect would be attributable to a lack of statistical power). We recruited even more subjects (see above) to compensate for the typical dropout rates in internet studies.

Results.

Ninety-three subjects dropped out before reaching the final page and were excluded from all analyses, as were further 74 subjects who did not pass our attention test. The results from the remaining sample ($N = 849$, mean age 37 years, n ranging from 210 to 215) are summarized in Table 1. A two-way ANOVA revealed no main effect of *Distance* on Sense of Obligation, $F_{1,845} = 0.03$, $p = .87$, $\eta_p^2 = .00003$, $BF_{01} = 18.09$, indicating that people felt equally obligated regardless of their distance to the victim. Note that the empirical effect size ($f = .0055$) is smaller than the $f = .1$ for which the test was planned. At the same time, there was a small but reliable main effect of *Directness*, $F_{1,845} = 9.62$, $p < .01$, $\eta_p^2 = .01$, $BF_{01} = .15$, indicating that people felt more obligated to help after having witnessed the victim's need with their own eyes as opposed to having been informed via a mediating mechanism. The *Distance* × *Directness* interaction term was not significant, $F_{1,845} < 1$.

Concerning the Subjective Distance measure, there was a main effect of *Distance*, $F_{1,845} = 27.33$, $p < .01$, $\eta_p^2 = .03$, $BF_{01} < .01$, while neither *Directness*, $F_{1,845} = 2.49$, $p = .12$, $BF_{01} = 5.66$, nor the interaction term, $F_{1,845} = 2.51$, $p = .11$, reached statistical significance.

Thus, although subjects were aware of the varying spatial distances in the different conditions, this factor did not affect their sense of moral obligation when potential confounds had been controlled. At the same time, the effect of informational directness on obligation was obviously not accompanied by varying degrees of perceived physical distance.

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Insert Table 1 about here

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Discussion.

The results of Experiment 2 indicate that people might indeed share Kamm's (2007) intuition that her *Near Alone* and *Far Alone* cases differ slightly in the degree of moral obligation they imply. However, our findings suggest that this difference is not attributable to distance per se, which failed to affect obligation ratings despite considerable statistical power. Rather, the difference can be traced back to a confounded factor, namely informational directness. It does not seem to be the victim's nearness which makes people feel slightly more obligated in *Near Alone* than in *Far Alone*, but rather the directness with which the victim's suffering impinges on the agent. At constant levels of directness, distance ceases to be of moral relevance to people. This finding makes it appear very unlikely that distance contributed to the very large effect between *Shallow Pond* and *Envelope* obtained in Experiment 1.

Of course, these results do not allow the conclusion that distance per se *never* matters morally in real-world judgment contexts. To increase confidence in the generalizability of our conclusions, in the next experiments we used more realistic helping scenarios, implementing different equalized contexts and experimentally pitting distance against further real-world confounds.

Experiment 3

In this experiment we deconfounded distance from group membership of agent and victim, a plausible candidate for a natural confound which might actually have driven distance effects in previous studies (Experiment 1; Baron & Miller, 2000; Levine & Thompson, 2004). In Experiment 2 we held this factor constant. Given that group membership is not as closely tied to distance as informational directness, Experiment 3 allowed us to use a more realistic scenario than the previous experiment.

We used a bone marrow transplantation scenario inspired by the work of Baron and Miller (2000). In their study spatial distance and group membership were perfectly correlated: Their participants reported holding agents more responsible for donating bone marrow to strangers who lived in the same town rather than to strangers who lived on the other side of the world. In these cases, nearness implied shared group membership, whereas large distance implied different group membership. This is also the combination of both factors that typically occurs in real-world settings. We manipulated them orthogonally, hence also creating the two less common combinations (i.e., large spatial distance with shared group membership, and small distance with different group membership) in order to separate distance effects from effects of group membership.

Method.

Participants.

80 students from the University of Göttingen with a mean age of 24 years participated voluntarily after being approached individually on campus.

Design, materials, and procedure.

Each participant individually filled out a questionnaire consisting of two pages. The first page contained general instructions similar to those in the previous experiments. After turning the page, each participant read one out of four versions of the stimulus scenario,

resulting from a 2 (*Distance*: *Near* vs. *Far*) × 2 (*Group*: *Same* vs. *Different*) between-subjects design (each $n = 20$). The wording of the *Near/Same* case [*Far/Same* case in parentheses] was as follows (translated from German):

> You are living in Göttingen [*and are momentarily staying in a town on the East Coast of the United States for a while*]. After you had a minor accident, you needed to go to a hospital where a blood sample was routinely taken from you. As it turned out, you were completely healthy. After the examination, you were approached by a physician with the following information: A person who is suffering from a rare, fatal disease of the blood is in a different part of the same hospital in your hometown Göttingen [*in a hospital in your hometown Göttingen*]. The only small chance for the person to survive is a timely bone marrow donation of a certain type. During the examination of your blood sample, it turned out that you have a blood composition which matches the blood profile of this person perfectly. Such a match is extremely rare. Therefore, you may be the only person in the world who could help with her bone marrow.
>
> Therefore, you could give this person who is located very close to you [*who is located far away from you*] a chance of survival. However, you would need to donate immediately for your bone marrow to be of value for the person. The extraction of the bone marrow would be quite painful for you, and there is a chance for the wound to become infected. Neither the needy person nor her relatives will ever get to know your identity no matter how you decide. Furthermore, nobody (not even the physician) will ever learn about your decision.

In the *Different* conditions the victim was located in an American hospital. In these cases, the distance was small when the agent, who was still from Göttingen, was currently visiting the United States, and large when he was back home in Göttingen. Thus, in the *Near/Different* case, the agent was living in Göttingen and currently staying in the US as in the *Far/Same* case, but this time the victim was "in a different part of the same American hospital". Conversely, in the *Far/Different* case the agent was located in Göttingen as in the *Near/Same* case but this time the victim was "in a hospital in a town on the East Coast of the United States." Note that informational directness is kept constant across all conditions.

Sense of Obligation was assessed beneath the scenario description using the same rating scale as in the previous experiments. The wording of the question was (translated from German): "How strongly do you feel obligated to donate your bone marrow?" The Subjective Distance question was omitted because we believed the difference in distance between Germany and the USA to be sufficiently salient, given that ten kilometers made a measurable difference in Experiment 2. Finally, subjects were asked to provide some demographic information.

Results.

One person from the *Far/Same* condition had to be excluded because this participant had checked more than one point on the rating scale. The results of the remaining participants are summarized in Table 2. We conducted a two-way ANOVA which revealed a main effect of *Group* on Sense of Obligation, $F_{1,75} = 4.29$, $p < .05$, $\eta_p^2 = .05$. According to the Bayes factor, however, this finding does not constitute "substantial" evidence for the existence of an effect, $BF_{01} = 0.79$. According to the frequentist analysis, there is thus some evidence that participants considered themselves to be more strongly obligated to help victims from their own community than victims from a different country. However, from a Bayesian perspective the difference and/or the sample size are too small to reach substantial confidence in this conclusion. Concerning the *Distance* factor, by contrast, both statistical procedures yielded consistent conclusions in line with the previous experiments. Again there was no main effect of *Distance*, $F_{1,75} = .50$, $p = .48$, $BF_{01} = 4.58$. The *Distance* × *Group* interaction was also not significant, $F_{1,75} < 1$. Thus, distance was not morally relevant once group membership was held constant.

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Insert Table 2 about here

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Discussion.

The results of Experiment 3 show that people tend to rely on group membership but not on spatial distance when they evaluate their obligations in separately presented helping scenarios. These findings lend further support to the conclusion that previously reported apparent instances of distance effects may actually have been driven by naturally associated but distinct factors. The fact that this pattern was found with quite naturalistic stimulus materials lends further support to the conclusion that spatial distance per se does not matter in laypeople's real-world intuitive judgments.

Experiment 4

In the scenarios of both Experiments 2 and 3 the agent was the only potential helper, and we found no evidence that this agent's *absolute* distance to the victim makes a moral difference. Now consider a scenario in which other people are just as capable of helping as the agent who is located closest to the victim. It seems possible that under such conditions people regard the agent's *relative* nearness as a feature which singles her out and raises her level of obligation above the average obligation of the remaining potential helpers (see also Kamm, 2007). In Experiment 4a we will test this possibility by manipulating the number and location of salient potential helpers.

We were interested in designing a scenario as mundane as possible, so we invented a setting in which agents and victim were located on a public place. In this setting, as in most real-world cases, the agents need to traverse the distance in order to help the victim. Thus, helping behavior of near agents might be considered as more efficacious and less effortful than helping behavior of far agents. Although our cases are otherwise maximally parallel, distance is thus implicitly still associated with these very intimate real-world confounds. We accept this circumstance for the time being in order to create a simple and straightforward scenario and because we consider this compound factor interesting in its own right. In

Experiment 4b, we will replicate parts of Experiment 4a using variants of the same scenario in which spatial distance is deconfounded from the need to traverse this distance in order to help effectively.

Experiment 4a.

Method.

Participants.

488 subjects (mean age 36 years) were recruited and compensated as in Experiment 1.

Design, materials, and procedure.

The manipulation of two independent variables yielded a 2 (*Distance*: *Near* vs. *Far*) × 3 (*Scale*: *Absolute* vs. *Relative Same* vs. *Relative Different*) between-subjects design. The *Distance* manipulation varied whether the focal agent was located right next to the victim vs. further away from the victim. The *Scale* manipulation varied whether or not a second potential agent was additionally described whose helping obligations had to be rated simultaneously with those of the focal agent, thereby inducing a judgment mode which taps into people's intuitions about relative obligations of both agents depending on their relative distance. In the *Absolute* conditions, only the focal agent was described. In *Relative Same*, a second agent was described to be at the same distance from the victim as the focal agent. These conditions were included to separate potential effects of simply adding an additional helper from effects of this additional helper's relative distance to the victim. The *Relative Different* conditions are of main interest as here the distance of both agents relative to the victim differed: The second agent was located further away from the victim than the focal agent in the condition in which the focal agent was near (*Near*) vs. right next to the victim in the condition in which the focal agent was far (*Far*).

The procedure was similar to the one in Experiment 1. After having read the instructions and having been familiarized with the rating scale, participants were randomly assigned to one of the six conditions. They received a written scenario description alongside an illustration of the described situation (see Figure 1). The wording of the *Near* cases (*Far* cases *italic* in [brackets]; paragraph in (parentheses) only appeared in *Relative Different* conditions) was as follows:

> Imagine Pete (yellow circle, P) is standing on a huge public place (black rectangle). The place is crowded with people (circles). Suddenly, Pete becomes aware that Victor (green circle, V), a distant acquaintance of his, is standing right next to him [*on the other side of the same public place*]. Victor is currently talking to someone who Pete recognizes to be a notorious thief (red circle, T). Victor obviously does not know this, and unless somebody warns him, the thief will take away all his money while they are talking without Victor noticing it.
>
> (At the same time, Adam (yellow circle, A) is standing on the other side of the same public place [*right next to Victor*]. Adam is also a distant acquaintance of Victor, and he has also seen Victor and recognized the thief. Adam is thus just as aware of Victor's critical situation as Pete is.)
>
> The only chance to prevent Victor from being robbed is that someone immediately walks over to him and warns him of the thief.

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Insert Figure 1 about here

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In both *Relative Same* conditions, Adam was described to be standing "on the same place, at the same distance to Victor as Pete." Other than that, the scenarios were identical to *Relative Different*.

Participants then saw a number of screens, each containing one dependent variable measured on a 6-point scale (for exact question wordings, see Table 3). The main variable of interest was again Sense of Obligation (1). Additionally, there were four questions concerning various aspects of the scenario that might influence the obligation judgment.

Subjective Distance (2) serves as manipulation check. Dependence on Agent (3) is conceptually similar to Sense of Obligation (1), but is thought to tap into an aspect of obligation that might be more closely related to distance by promoting the perspective of the victim. Probability of Success (4) addresses the question of efficaciousness which is closely associated with distance, both in the real world and probably also in this scenario. Danger (5) is added as another potential determinant of sensed obligation which, contrary to question 4, is not expected to be affected by the Distance manipulation in the present context.

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Insert Table 3 about here

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Half of the participants in each condition received question 1 before questions 2-5; for the other half this order was reversed (*Order*: *Obligation First* vs. *Obligation Last*). The order of questions 2-5 was randomly determined for each participant. Subjects in the *Relative Scale* conditions received each question twice on the same screen. The upper questions were identical to those in the *Absolute* conditions. Immediately below, the same question was concurrently presented a second time, but here "Pete" was exchanged by "Adam". The question order was not counterbalanced to increase parallelism to the *Absolute* conditions (see Experiment 4b for a replication with counterbalancing of question order). The questions concerning Adam only served to induce a relative judgment mode. The graphical illustration remained on the screen as a memory aid. Subjects were not allowed to return to any previous questions. Lastly, the same attention test and debriefing screen as in Experiment 1 were used.

Results and Discussion.

Fifty-three subjects dropped out before reaching the final page and were excluded from all analyses, as were further 63 subjects who did not pass our attention test. Figure 2 illustrates the Sense of Obligation ratings of the remaining sample (N = 372, mean age 36

years, *n* ranging from 59 to 66). The mean ratings indicate that spatial proximity did not increase the assessed sense of obligation when there was only one potential helper, or when another potential helper was located at the same distance from the victim as the focal agent. However, spatial proximity increased sense of obligation when a second potential helper was mentioned to be further away from the victim than the focal agent. Accordingly, a two-way ANOVA revealed no main effects of either *Distance*, $F_{1,366} < 1$, $BF_{01} = 10.62$, or *Scale*, $F_{2,366} = 1.02$, but a significant *Distance* × *Scale* interaction effect, $F_{2,366} = 4.44$, $p < .05$, $\eta_p^2 = .02$. While mean ratings did not differ between the *Absolute* conditions, $t_{366} < 1$, $BF_{01} = 5.91$,[1] or the *Relative Same* conditions, $t_{366} = 1.18$, $p = .24$, $BF_{01} = 4.14$, participants felt that the near agent in *Near/Relative Different* was more obligated than the far agent in *Far/Relative Different*, $t_{366} = 2.72$, $p < .01$, $d = .49$, $BF_{01} = .21$.[2]

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Insert Figure 2 about here

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Table 4 summarizes the remaining dependent variables. Several results are worth noting. First, the Subjective Distance ratings suggest that our *Distance* manipulation was effective in both *Scale* conditions, although its effect was much stronger in the *Relative* conditions. Second, as expected, both Dependence on Agent and Probability of Success reveal the same interaction as Sense of Obligation while at the same time being affected by the *Distance* manipulation. This pattern makes them promising candidates for psychological mediators which might give rise to the illusion that distance per se matters morally. Third, Danger ratings do *not* vary more strongly between the *Relative* conditions than between the *Absolute* conditions. This finding demonstrates that the relative judgment mode does not simply increase differences in *any* rating.

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Insert Table 4 about here
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Finally, when the *Order* factor was additionally included in the ANOVA, it had a main effect on Sense of Obligation, $F_{1,336} = 11.76$, $p < .01$, $\eta_p^2 = .03$, $BF_{01} = .04$. People reported feeling the focal agent to be more strongly obligated when the Sense of Obligation measure was presented in the very beginning (*Obligation First*, $M = 5.16$, $SD = 1.06$) as opposed to after questions 2-5 had already been answered (*Obligation Last*, $M = 4.76$, $SD = 1.19$). The *Order* factor did not interact with any of the other independent variables for any of the dependent variables (except for a weak and hard to interpret *Scale* × *Order* interaction for Probability of Success, $F_{2,366} = 3.04$, $p < .05$, $\eta_p^2 = .02$), nor did including it in the ANOVA change the pattern of any of the results reported above.

It is possible that this order effect simply reflects a trend of choosing lower points on the scale after having answered an increasing number of questions (i.e., scale calibration). However, previous research has shown that order of presentation can profoundly affect the process and output of moral judgment (Wiegmann, Okan, & Nagel, 2012). Order effects should therefore not prematurely be dismissed as artifacts. The very high overall ratings in *Obligation First* may indicate that subjects in these conditions do not spontaneously think of factors that potentially mitigate the agents' obligations. In contrast, in *Obligation Last* the ordering of questions may have led subjects to consider such factors. For example, while thinking about question 5 (danger), many subjects may generate the thought that intervening might have severely negative consequences for the agent, and this thought might provide them with a substantial reason for not applying a maximal obligation rating. The same thought might not arise spontaneously in comparable subjects who receive the obligation question first. This difference could account for the observed order effect. One aim of the next experiment will be to test this possibility against the hypothesis that the order effect is a result of mere scale calibration.
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Experiment 4b.

In the scenarios of Experiment 4a, our *Distance* manipulation was confounded with the necessity to traverse this distance in order to help effectively (i.e., efficaciousness). The results of the Probability of Success variable suggest that efficaciousness rather than distance per se might have actually caused the relative distance effect in people's sense of obligation. Experiment 4b will test this hypothesis by implementing conditions in which both agents are equally effective in helping, regardless of their relative distance (similar to Experiments 2 and 3). Furthermore, we will try to replicate the order effect from the previous experiment and test whether it is simply an artifact of scale calibration, or whether previous thoughts about morally relevant aspects affect later moral judgments in our task.

Method.

Participants.

235 Participants (mean age 40 years) were recruited and compensated as in Experiment 1.

Design, materials, and procedure.

We used a complete 2 (*Traverse*: *Necessary* vs. *Not Necessary*, between-subjects) × 2 (*Distance*: *Near* vs. *Far*, within-subjects) × 3 (*Order*: *Obligation First* vs. *Obligation Last* vs. *Obligation Last Irrelevant*, between-subjects) mixed design. We used the same scenario as in the previous experiment, but this time we only implemented conditions analogous to *Relative Different* (i.e., two potential agents were present in all conditions, one near and one far, and both had to be rated) because this was the only context in which the previous experiment revealed an effect of distance on obligation. The *Necessary* conditions are an exact replication of the *Relative Different* conditions in Experiment 4a in which the agents need to "walk over to Victor" in order to help him (which, according to the last experiment's results, made subjects perceive the near agent to be more efficacious). In the *Not Necessary*

condition, the final sentence of the scenario was replaced by the following paragraph to make clear that both agents are equally effective regardless of their distance:

> Since both Victor and the thief are located in a private area of the place that cannot be accessed by everyone (purple dashed line), it is impossible to walk over to Victor and talk to him directly. The only chance to prevent Victor from being robbed is that someone immediately sends him a text message via cell phone and warns him of the thief. Both Pete and Adam possess a cell phone and Victor's number.

In this condition, a dashed purple rectangle was included in the illustration that separated Victor, the thief, and three further persons from both agents and the rest of the public place. Furthermore, wherever applicable, the phrase "walk over to Victor" was replaced by "send Victor a text message" in the wording of the test questions (cf. Table 3).

The fact that all conditions included both a near and a far agent (and both had to be rated by each subject) allowed us to treat these two ratings as a *Near* vs. *Far* within-subjects manipulation of the *Distance* factor (see also footnote 2). We counterbalanced the order in which the near and the far agent were introduced in the scenario description, the assignment of the agents' names (Pete vs. Adam) to the near vs. far location, and the order in which both agents had to be rated.

As for the *Order* factor, the *Obligation First* and *Obligation Last* conditions were identical to those in Experiment 4a (i.e., the Sense of Obligation measure [1] was asked prior to vs. after questions 2-5). In a third condition (*Obligation Last Irrelevant*) the obligation measure was preceded by four questions concerning morally *irrelevant* aspects of the scenario description and the illustration (e.g., "How much do you like the name Pete/Adam?") instead of the four potentially morally relevant aspects (2-5). We included this control condition to test whether potential diminishing effects on obligation ratings in the last position are caused by previous reflections about morally relevant dimensions, or whether they are simply an artifact of position (i.e., scale calibration). The rest of the procedure was identical to that in Experiment 4a.

Results and Discussion.

Nineteen subjects dropped out prior to completion, and further 21 failed the attention test. Figure 3 illustrates the Sense of Obligation ratings of the remaining sample (N = 195, mean age 41 years, n ranging from 32 to 34). Clearly, subjects considered the far agent to be less obligated than the near agent only if the distance had to be traversed in order to help effectively, but not if both agents were equally effective regardless of their distance to the victim. A three-way mixed ANOVA revealed a main effect of *Distance*, $F_{1,189} = 15.36$, $p < .01$, $\eta_p^2 = .08$, $BF_{01} = .01$, which was qualified by a *Distance* × *Traverse* interaction, $F_{1,189} = 7.71$, $p < .01$, $\eta_p^2 = .04$. *Distance* affected Obligation ratings in the *Necessary* conditions, $t_{189} = 4.72$, $p < .01$, $d = .48$, $BF_{01} < .01$, but failed to do so in the *Not Necessary* conditions, $t_{189} = .81$, $BF_{01} = 7.50$. With the former result we replicated the relative distance effect from Experiment 4a in a within-subjects contrast. The latter finding suggests that this effect is actually due to *relative efficaciousness*: If the distance need not be traversed in order to help effectively, it loses its impact on obligation ratings.

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Insert Figure 3 about here

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The effect of *Order* on Sense of Obligation could be replicated, $F_{2,189} = 4.81$, $p < .01$, $\eta_p^2 = .05$, while again it did not interact with any of the other independent variables. We went on to calculate the mean of both Sense of Obligation measures (*Near* and *Far*) for each participant. The mean of this mean value was higher in *Obligation First* (M = 5.27, SD = .83) than in *Obligation Last* (M = 4.72, SD = 1.14), $t_{189} = 3.15$, $p < .01$, $d = .55$, $BF_{01} = .07$. Thus, in the conditions with the morally relevant questions 2-5, subjects again reported higher obligation ratings when asked about obligation first than when asked last. By contrast, after having been asked four morally irrelevant questions (*Obligation Last Irrelevant*) people did not provide lower Sense of Obligation ratings than in Obligation First (M = 5.02, SD = 1.04),

$t_{189} = 1.38$, $p = .17$, $BF_{01} = 2.64$. This suggests that simple scale calibration is not sufficient to explain the order effect. People seem to generate genuine reasons for limiting moral obligations during the consideration of morally relevant aspects. This finding once more underscores the immense context sensitivity of many moral judgments (e.g., Bartels & Medin, 2007; Waldmann et al., 2012; Wiegmann et al., in press). Apart from the reported effects, Sense of Obligation was not affected by any independent variable or any of their interaction terms (including the counterbalancing measures).

Table 5 summarizes the answers to the morally relevant questions 2-5 ($N = 128$; the four morally irrelevant items from *Obligation Last Irrelevant* were not analyzed). Subjective Distance was strongly affected by our *Distance* manipulation, regardless of *Traverse* condition. This shows that our *Distance* manipulation was again effective. Moreover, Dependence on Agent and Probability of Success again behaved similar to Sense of Obligation, indicating that these measures are more proximate determinants of people's obligation judgments than distance per se. Finally, Danger was affected by the *Traverse* manipulation: People considered it more dangerous to walk over to Victor as opposed to sending him a text message, especially if the agent was located far away. The *Order* factor did not affect any of these variables (except for a hard to interpret *Distance* × *Traverse* × *Order* interaction for Danger, $F_{1,124} = 4.51$, $p < .05$, $\eta_p^2 = .04$).

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Insert Table 5 about here

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General Discussion

In the present article we investigated whether people use spatial distance information when determining helping obligations. Our answer to this question is that in the conditions we studied they do not. Apparent distance effects, as demonstrated in previous studies (Baron

& Miller, 2000; Levine & Thompson, 2004) as well as in Kamm's (2007) *Near Alone* and *Far Alone* cases and in Experiment 4a, turned out to be explainable in terms of confounded factors such as informational directness (Experiment 2), group membership (Experiment 3), or relative efficaciousness (Experiment 4b), if properly controlled stimulus materials were used. Thus, distance loses its intuitive significance for helping obligations when it is isolated from its natural covariates. This conclusion is more in line with Unger's (1996) than with Kamm's (2007) philosophical intuitions.

Implications for Psychological Theories of Distance

We have gathered evidence that physical distance per se does not play a direct causal role in determining our intuitions about moral obligations. Why then is it that distance-related terms are nonetheless used to refer to the conglomerate of correlated factors that instead determine our sense of obligation? We believe that distance in moral reasoning constitutes an effective proxy for a family resemblance structure combining many, otherwise very dissimilar factors that have related effects on moral intuitions. Physical proximity constitutes a condition under which numerous distinct factors that have similar impact on our sense of moral obligation (e.g., informational directness, shared group membership, and efficaciousness) tend to co-occur. Considering each of these factors separately does not highlight their commonality which arises mainly because their joint presence is probabilistically dependent on physical proximity. This unifying property of physical distance may cause the impression that distance is a parsimonious explanation for differences in our moral intuitions and thus an appropriate proxy of the various associated obligation-inducing factors. This leads to the paradox that this bundle of diverse correlated factors is named and thought of in terms of one of its, according to our data, least effective components.

The counterintuitive prediction derived from the CLT framework (Trope & Liberman, 2010) was not confirmed in our set of studies. Increased spatial distance did not lead to

higher sensed obligation in any of our experiments, despite the fact that some of them had considerable statistical power to detect even very subtle effects. To be sure, our experiments were not specifically designed to test CLT, but since CLT seems to be applicable to our cases, it is nonetheless interesting to speculate why our findings are at odds with those obtained by Eyal and colleagues (2008) concerning temporal and social distance. Apparently there are two pathways leading to increased sense of helping obligation, one via the application of abstract moral norms, another via low-level altruistic emotional reactions. The former seems to be facilitated by increased psychological distance, the latter by (the natural confounds of) spatiotemporal proximity. Future studies should be designed to elucidate the interplay and boundary conditions of both mechanisms.

Limitations and Outlook

We realize that there are some potential objections against our conclusions. Most importantly, absence of evidence is not evidence of absence. From the fact that we did not obtain distance effects under the parallelized context conditions instantiated in our experiments, it does not follow that there are no different parallelized contexts in which they might occur (Kamm, 2007). Since the number of imaginable contexts is infinite, it is impossible to show empirically that spatial distance never matters morally. All we have done is to demonstrate that in some promising cases discussed in the literature potential distance effects disappeared when confounds were controlled, but there are certainly further contexts worth investigating. For example, Kamm (2007) proposed that distance may only turn out to be relevant when there are considerable costs for the agent. Although our scenarios in Experiment 2 correspond to her high costs cases (and yet no effect of distance was found), it might be argued that the costs are still modest in comparison to the benefits for the victim. Whether distance matters when there is substantial loss for the agent (e.g., loss of a limb) thus remains an open question.

Still, we would argue that our findings should at least substantially decrease our prior belief in this and similar hypotheses for the following reasons. First, within all cases we investigated, the absence of distance effects was clear and convincing even though all of the tested cases represented a priori plausible candidates to exhibit such effects. The factor distance was given a chance under statistical conditions in which true small effects are much more likely to emerge than in most comparable studies. Second, several other factors had clear effects on people's sense of obligation, and several other measures were affected by variations of distance under the same context conditions. Third, and especially important when it comes to the generalizability of our findings, the background conditions under which effects of distance were demonstrated to be absent varied widely on dimensions which could potentially have led to contextual interactions. These dimensions include different types of costs to the agent (money in Exp. 2 vs. pain and inconvenience in Exp. 3, 4), type of threat (accident in Exp. 2 vs. disease in Exp. 3 vs. malevolent person in Exp. 4), certainty of success of the agent's intervention (certain in Exp. 2 vs. uncertain in Exp. 3, 4), narrative perspective (second person in Exp. 2, 3 vs. third person in Exp. 4), direct vs. mediated information (Exp. 2), shared vs. different group membership (Exp. 3), and differences in distance ranging from yards (Exp. 4) to thousands of miles (Exp. 3). The results were also consistent across different samples and data collection methods (paper/pencil data from German university students in Exp. 3 vs. online data from a British, demographically much more diverse population in Exp. 1, 2, and 4).

If it is granted that spatial distance per se does not causally influence our intuitive judgments of moral obligation in the tested cases, philosophers may still argue that distance *should* matter morally. Our findings bear on such normative conclusions only if those prescriptions necessarily presuppose that laypeople do in fact consider distance in their intuitive moral judgments. Regarding our descriptive claims, it could furthermore be objected that the judgment mode that we induced (i.e., separate evaluation) is not representative for the

thought experiment technique typically employed by philosophers, which seems more akin to joint evaluation. Experiment 4a indicates indeed that absolute judgments (similar to separate evaluation) and relative judgments (similar to joint evaluation) may lead to different conclusions. This implies that people may not necessarily consider factors in their intuitive judgment of separate real-world cases which they declare morally relevant under reflective, quasi-philosophical judgment conditions of joint evaluation. This limitation should be of interest to philosophers who want to argue for the existence of certain folk psychological moral intuitions based on joint-evaluation thought experiments. Conversely, of course, from the fact that people do not consider distance in their intuitive real-world judgment we also cannot conclude that they would not declare this factor to be morally relevant when engaged in more deliberate, quasi-philosophical thinking. However, this does not seem particularly likely in our case given the null result for relative distance in Experiment 4b.

A third reason for criticism might be that some of our experimental scenarios seem rather contrived, thus limiting the ecological validity of these studies. Deconfounding distance from other dimensions necessarily makes the scenarios appear less realistic, but we feel that this is the only way to methodologically address the issue of testing the impact of distance per se. Also, we wish to stress that the artificiality argument only holds for the arbitrary surface features of the employed scenarios. The underlying theoretically important dimensions, by contrast, appear to be highly relevant for a wide range of realistic situations, and therefore we argue that our findings are informative for the composition of our moral judgments in real-world scenarios.

Finally, we focused on the distance between agent and victim which is the spatial relation that is most often discussed in the literature on morality. However, one of Kamm's (2007) conclusions is that it is incorrect to limit the problem of distance in morality to this specific relation. Apart from agent and victim she identifies other potentially relevant entities whose relative physical locations might affect moral judgment, such as the location of threats

or of the means used in the potential helping event (see Experiment 2 in Nagel & Waldmann, 2010, for some preliminary results involving the location of means). The spatial relation between the victim and the agent's territory could also turn out to be of moral relevance (see Gillis & Hagan, 1983) and might have contributed to the effect of group membership in Experiment 3. These empirical questions will be addressed in future research.

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Footnotes

[1] In contrast to the reported *t*-values for the planned contrasts, which are based on the *df* of the whole sample, each corresponding Bayes factor is calculated based on the data from the compared conditions only.

[2] As noted above, the main function of the additional questions concerning Adam in the *Relative* conditions was to induce a relative judgment mode, and we limited the analyses above to our between-subjects *Distance* manipulation to enable a consistent analysis across all *Scale* conditions. However, within the *Relative Different* conditions, the ratings of Pete (the focal agent) vs. Adam (the additional agent) can also be interpreted as a within-subjects manipulation of distance, with the between-subjects *Distance* factor serving as counterbalancing measure as to whether Pete or Adam is the near agent (see Figure 1 for illustration). A corresponding analysis yields conclusions consistent with those reported above: Across both *Relative Different* conditions, the near agent ($M = 5.26$, $SD = 1.01$) was considered more strongly obligated than the far agent ($M = 4.63$, $SD = 1.34$), $t_{121} = 5.10$, $p < .01$, $d = .46$, $BF_{01} < .01$.

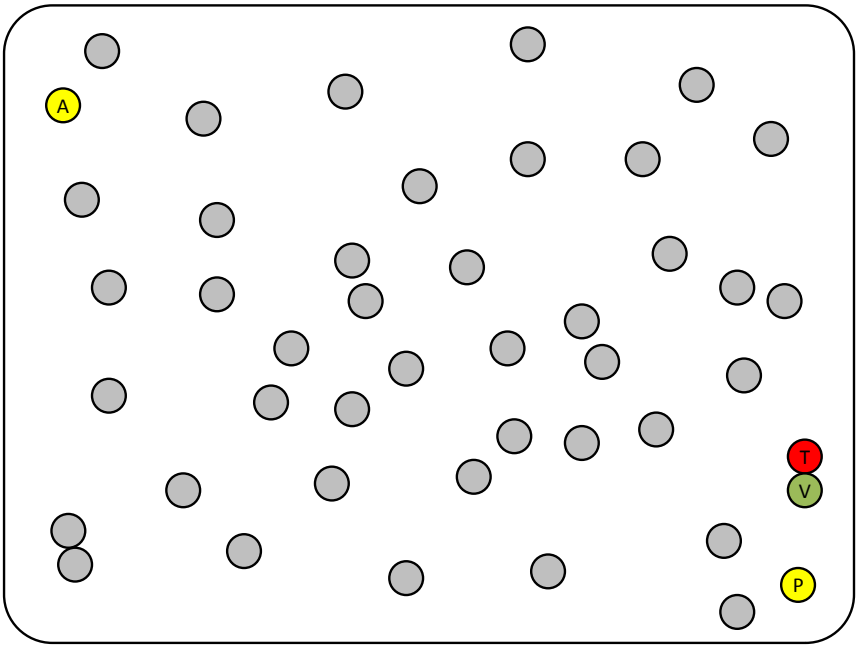

Figure 1. Illustration of the *Near/Relative Different* condition in Experiment 4a. In *Far/Relative Different*, the positions of focal agent (P) and additional agent (A) were reversed. In both *Relative Same* conditions, A was transferred to a circle in the neighborhood of P which was equidistant to the victim (V). In the *Absolute* conditions, A was replaced by a gray circle not distinguishable from the others. See text for further explanations.

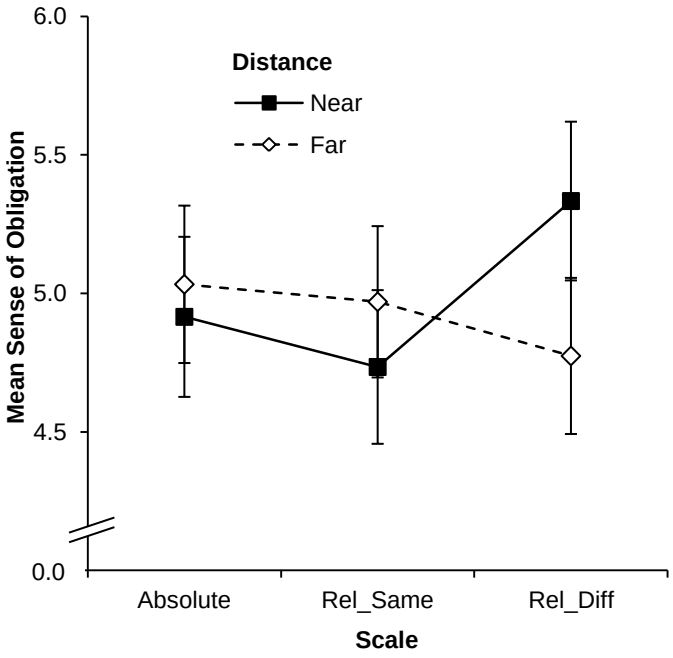

Figure 2. Mean ratings of Sense of Obligation in Experiment 4a. The Distance variable refers to the location of the focal agent. Error bars indicate 95% confidence intervals. Rel_Same = *Relative Same*, Rel_Diff = *Relative Different*.

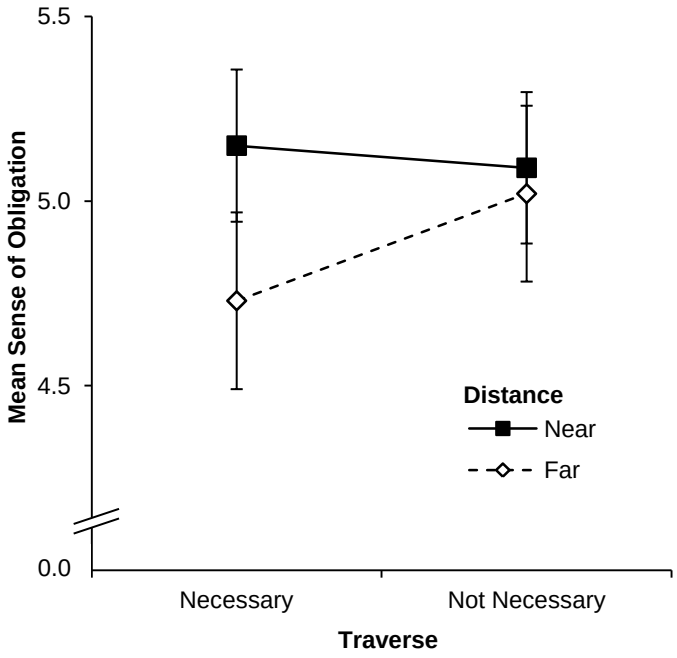

Figure 3. Mean ratings of Sense of Obligation in Experiment 4b. Error bars indicate 95% confidence intervals. The *Distance* variable refers to the near vs. far agent (within subjects).

Tables

Table 1
Results of Experiment 2

	Near	Far
Sense of Obligation		
Direct	4.78 (1.47)	4.70 (1.62)
Mediated	4.33 (1.77)	4.45 (1.73)
Subjective Distance		
Direct	3.84 (1.42)	4.53 (1.40)
Mediated	3.84 (1.56)	4.21 (1.49)

Note. Means (standard deviations) of Sense of Obligation and Subjective Distance in the four experimental conditions.

Table 2

Results of Experiment 3

	Near	Far
Same	5.05 (1.15)	4.89 (1.20)
Different	4.55 (1.15)	4.35 (0.99)

Note. Means (standard deviations) of Sense of Obligation in the four experimental conditions.

Table 3

Dependent variables in Experiment 4

No.	Variable	Wording of question (scale labels)
1	Sense of Obligation	How strongly do you feel Pete to be obligated to walk over to Victor and warn him of the thief? (not at all/very strongly)
2	Subjective Distance	How large do you perceive the physical distance between Pete and Victor to be? (very small/very large)
3	Dependence on Agent	To what extent do you believe Victor to be dependent on specifically *Pete's* help in order to avoid being robbed? (not at all/completely)
4	Probability of Success	Suppose Pete decided to walk over to Victor and warn him of the thief. How likely do you believe he would succeed in preventing the robbery? (very unlikely/very likely)
5	Danger	How dangerous do you think it is for Pete to walk over to Victor and warn him of the thief? (not at all dangerous/very dangerous)

Table 4

Results of the remaining dependent variables (2-5) in Experiment 4a

Descriptive Statistics			ANOVA					
Scale	Distance		Distance		Scale		Distance × Scale	
	Near	Far	$F_{1,366}$	η_p^2	$F_{2,366}$	η_p^2	$F_{2,366}$	η_p^2
Subjective Distance (2)			178.43**	0.33	< 1	0.00	15.63**	0.08
Absolute	3.05 (1.21)	4.02 (0.83)						
Rel_Same	2.80 (0.99)	3.95 (1.12)						
Rel_Diff	2.17 (1.25)	4.56 (1.08)						
Dependence on Agent (3)			12.28**	0.03	< 1	0.01	8.90**	0.03
Absolute	4.08 (1.04)	4.05 (1.07)						
Rel_Same	3.98 (1.13)	3.73 (1.45)						
Rel_Diff	4.43 (1.28)	3.37 (1.39)						
Probability of Success (4)			19.02**	0.05	< 1	0.00	3.56*	0.03
Absolute	4.44 (1.15)	4.08 (1.17)						
Rel_Same	4.27 (1.21)	4.00 (1.08)						
Rel_Diff	4.62 (1.28)	3.60 (1.36)						
Danger (5)			2.61	0.01	2.17	0.01	1.21	0.01
Absolute	3.80 (1.13)	3.31 (1.12)						
Rel_Same	3.36 (1.25)	3.29 (1.25)						
Rel_Diff	3.27 (1.23)	3.21 (1.32)						

Note. Means (standard deviations) and effects for the remaining dependent variables in Experiment 4a. Rel_Same = *Relative Same*, Rel_Diff = *Relative Different*. *p < .05, **p < .01.

Table 5

Results of the morally relevant questions (2-5) in Experiment 4b

Descriptive Statistics			Mixed ANOVA					
Traverse	Distance		Distance (w.-s.)		Traverse (b.-s.)		Dist. × Trav.	
	Near	Far	$F_{1,124}$	η_p^2	$F_{1,124}$	η_p^2	$F_{1,124}$	η_p^2
Subjective Distance (2)			286.73**	0.69	0.26	0.00	0.60	0.00
Necessary	2.16 (1.35)	4.61 (0.97)						
Not Necessary	2.11 (1.16)	4.80 (1.13)						
Dependence on Agent (3)			66.48**	0.35	0.00	0.00	6.43*	0.05
Necessary	4.50 (1.26)	3.28 (1.25)						
Not Necessary	4.22 (1.21)	3.58 (1.26)						
Probability of Success (4)			32.35**	0.20	0.28	0.00	23.16**	0.16
Necessary	4.80 (1.17)	3.48 (1.40)						
Not Necessary	4.09 (1.32)	3.98 (1.29)						
Danger (5)			3.81	0.03	6.97**	0.05	9.40**	0.07
Necessary	3.27 (1.37)	3.39 (1.28)						
Not Necessary	3.06 (1.34)	2.50 (1.33)						

Note. Means (standard deviations) and effects for the morally relevant questions in Experiment 4b.
w.-s. = within-subjects, b.-s. = between-subjects. *p < .05, **p < .01.