Intentionality and Choice

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Abstract

People judge that harmful side effects are intentional, e.g., a CEO who introduces a new program to increase profits that results in harm to the environment is judged to have intentionally harmed the environment. They judge helpful side effects are unintentional, e.g., a CEO who introduces a new program to increase profits that results in helping the environment is *not* judged to have intentionally helped the environment. We report two experiments that suggest the effect arises because people believe individuals can make alternative choices in bad situations and not in good ones.

Keywords: Intentions, choices, side-effects, inactions.

Intentionality

"Nothing hinders one act from having two effects, only one of which is intended, while the other is beside the intention. Now moral acts take their species according to what is intended, and not according to what is beside the intention, since this is accidental." Aquinas (1265–1274)

Intentionality is a core category of mental life, along with space, time and cause (Miller & Johnson-Laird 1976). Philosophers, psychologists and legal scholars have identified that the accurate assessment of other people's intentions is vital to moral and legal judgment, and to how we understand and explain other people's behavior (e.g., Knobe 2010). Logicians and artificial intelligence researchers have modeled intentions using dynamic doxastic logic and related systems as an important aspect of simulating revisions to beliefs (e.g., Gardenfors 1988). Neuroscientists and psychiatrists have established that the loss of the ability to reason about intentions is catastrophic after prefrontal cortex damage (e.g., Young, Bechara, Tranel, Damasio, Hauser, & Damasio 2010) and in disorders such as schizophrenia (e.g., Roese, Park, Smallman & Gibson 2008), just as it is essential to children's proper development of a theory of mind (e,g., Leslie, Knobe & Cohen 2006). Not surprisingly then, it is of concern that recent evidence indicates that people may make systematic errors in their assessments of other people's intentions, at least in relation to the intentionality of side effects (e.g., Knobe 2010). Consider the following story:

> The vice-president of a company went to the chairman of the board and said, 'We are thinking of starting a new program. It will help us increase profits, but it will also harm the environment.' The chairman of the board answered, 'I don't care at all about harming the environment. I just want to make as much profit as I can. Let's start the new program.' They started the new program. Sure enough, the environment was harmed.

Participants judged that the chairman intentionally harmed the environment (Knobe, 2003a). The judgment is puzzling because intentionality implies that the protagonist desires the outcome, has the belief or knowledge that the action will bring it about, and intends to carry it out, as well as that the protagonist is aware of carrying it out and has the skill to do so (Malle & Knobe, 1997).

The puzzle deepens when participants are told that the program will help rather than harm the environment:

> The vice-president of a company went to the chairman of the board and said, 'We are thinking of starting a new program. It will help us increase profits, and it will also help the environment.' The chairman of the board answered, 'I don't care at all about helping the environment. I just want to make as much profit as I can. Let's start the new program.' They started the new program. Sure enough, the environment was helped.

Participants judged the chairman did *not* intentionally help the environment (Knobe 2003a).

The asymmetry between harmful and helpful side-effects occurs in many different sorts of situations. It occurs for different contents, ranging from serious violations such as when an army commander's decision to capture a region in battle has the side effect of affecting the numbers of soldiers killed (Knobe 2003a), to more trivial ones such as when a protagonist's decision to mow the lawn early in the morning affects their neighbor's sleep (Sverdlik 2004). It is observed in languages other than English such as Hindi (Knobe & Burra 2006) and for an array of linguistic expressions such as 'advocated' and 'decided' (McCann 2005; Pettit & Knobe 2009). It emerges early in young children (Leslie, et al 2006) and occurs even in people with deficits such as Asperger's (Zalla & Leboyer 2011).

Why do people judge that others bring about harmful side-effects intentionally but helpful side-effects unintentionally? The issue is hotly debated and several alternative explanations have been proposed to account for it.

Intentionality and morality

One influential explanation for the asymmetry in judgments of the intentionality of harmful and helpful side-effects is that people first assess the morality of the side-effect. Their judgment of the side effect as morally good or morally bad infuses their judgment of its intentionality (e.g., Knobe 2006). Against this proposal however, it has been observed that people judge that a protagonist brought about a harmful side-effect intentionally even for non-moral side-effects. For example, when the CEO of a movie company decides to introduce a new program that will increase profits and have the side effect of making movies worse from an artistic standpoint, participants judged that he intentionally brought about the side-effect of harming movies from an artistic standpoint (Knobe 2004). When the story substituted 'help' for 'harm', they judged that he didn't intentionally bring about the side effect of helping movies from an artistic standpoint. Likewise, the effect occurs for non-moral norms, e.g., it occurs for a decision to change a manufacturing process that will have the side effect of creating a product that deviates from an industry standard of 'darker than blue' (Uttich & Lombrozo 2010).

Most tellingly, badness and intentionality can be 'doubly dissociated'. On the one hand, some harmful side effects are judged intentional even when they are not judged to be bad e.g., a chairman who decides to increase profits in one branch of the company with the side effect of decreasing profits in another branch, is judged to have intentionally harmed the other branch's profits even though harming the other branch's profits is not judged to be bad (e.g., Knobe 2006; Knobe & Mendlow 2007). On the other hand, some side effects are judged unintentional even though they are judged bad, e.g., a town-planner who introduces a program to clean toxic waste with the side effect of increasing joblessness is judged to have affected joblessness unintentionally even though joblessness is judged to be bad (e.g., Phelan & Sarkissian 2008; Sverdlik 2004).

A related explanation is that people judge individuals to be blameworthy when their decisions lead to harm. The motivation to express blame leads participants to conclude that the harmful side effect is intentional (e.g., Adams & Steadman 2004; Alicke 2008; Mele 2003; Nadelhoffer 2004). Against this proposal however, it has been observed that a harmful side-effect is judged intentional even when participants have the opportunity to blame the protagonist, or otherwise to assign responsibility to the protagonist separately (e.g., Knobe 2003b; Pellizzoni, Girotto & Surian 2010). Again, most tellingly, blame and intentionality can be 'doubly dissociated'. On the one hand, some harmful side-effects are judged unintentional even when the protagonist is blamed, e.g., a driver who goes out of control while drunk and injures a family is judged to be blameworthy, but not to have harmed the family intentionally (Knobe 2003b). On the other hand, some harmful side-effects are judged intentional even when the protagonist is not blamed, e.g., a dentist who carries out necessary dental surgery and inflicts pain on the patient is judged to have inflicted the pain intentionally but is not blamed for doing so (Sverdlik 2004).

Hence, moral assessments of goodness and badness, or judgments of blameworthiness, do not appear to be the reason why people tend to judge harmful side-effects to be intentional and helpful side-effects to be unintentional. However, one further possibility from this perspective is that the difference in intentionality judgments for harmful and helpful side-effects arises because of the moral disparity between the primary goal (increasing profits) and the side-effect (affecting the environment): the primary goal itself may be perceived to be morally bad in the context of the side effect. The first experiment tests this moral disparity explanation.

Experiment 1

We gave participants an 'Aid' story in which the primary goal was elevated to be of equivalent moral status to the side-effect of affecting the environment:

> The vice-president of an international aid charity went to the chairman of the board and said, 'We are thinking of starting a new program. It will help us save more people from starvation in Africa, but it will also harm the environment.' The chairman of the board answered, 'I don't care at all about harming the environment. I just want to save as many people as I can. Let's start the new program.' They started the new program. Sure enough, the environment was harmed.

If moral assessments are central to intentionality judgments, then harming the environment should be judged unintentional because its immorality is ameliorated by the morality of saving starving people. We also gave participants a 'Rival' story in which the side-effect was diminished to be of equivalent moral status to the primary goal of increasing profits:

> The vice-president of a company went to the chairman of the board and said, 'We are thinking of starting a new program. It will help us increase profits, but it will also harm our rival's profits.' The chairman of the board answered, 'I don't care at all about harming our rival's profits. I just want to make as much profit as I can.' Let's start the new program.' They started the new program. Sure enough, the rival's profits were harmed.

Method

The participants were 60 students from Trinity College Dublin who took part voluntarily. They were 17 men and 43 women, aged 16 to 58 years, with an average age of 24 years.

Participants were assigned to the Aid or Rival groups (n = 30 in each). They were each given a harm and help

version of the story. Half received the harm version first and half the help version first (and no effects of order were observed). They completed several tasks, such as a praise-blame assignment task, as well as the key side-effect intentionality judgment task, in response to the question, 'Do you think the chairman intentionally affected the <side-effect>?'. They circled their answer on a 7 point likert-type scale with 6 anchored as 'intentional' and 0 as 'unintentional' and the mid-point anchored as 'neither'.

They were instructed that they would be given two short stories and they were asked to read them carefully, to answer the questions in the order they were given, not to change any of their answers, and to complete all of the questions on one story before moving on to the next.

Results and Discussion

Participants judged that the protagonist intentionally affected the side-effect more for the harmful side-effect than the helpful one in the Aid condition, Wilcoxon's $z = -2.828$, $p = .005$, $r = .365$ as Figure 1 shows. (For clarity, responses were graphed using scores translated from 0 to 6 to -3 to +3). The result shows that even when the protagonist's primary goal was elevated to be morally compelling (saving people from starving) participants tended to judge that he brought about the harmful side effect (harming the environment) more intentionally than the helpful side effect (helping the environment).

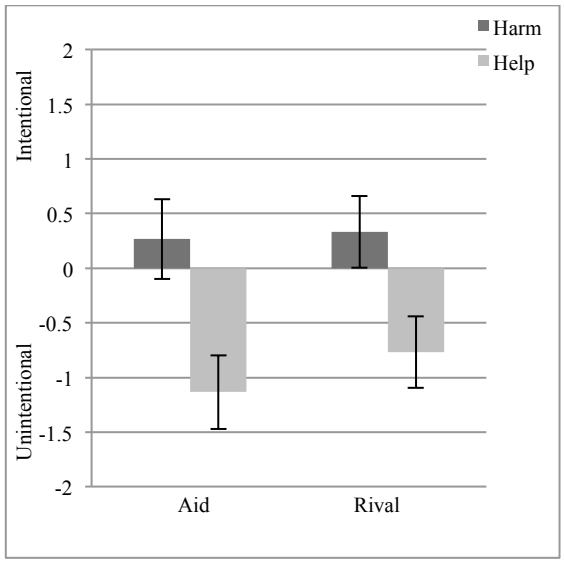

Figure 1: Judgments of intentionality for harmful and helpful side-effects in the Aid and Rival conditions. Error bars are standard error of the mean.

Participants also judged that the protagonist intentionally affected the side-effect more for the harmful outcome than the helpful one in the Rival condition, Wilcoxon's $z = 2.481$, $p = .013$, $r = .3203$, as Figure 1 also shows. Even when the side-effect (affecting a rival's profits) was diminished to be as morally unenlightening as the primary goal (increasing one's own profits), participants judged that the protagonist brought about the harmful side effect (harming the rival's profits) more intentionally than the helpful side effect (helping the rival's profits).

The results suggest that the moral disparity between the primary goal, of increasing profits, and the side-effect, of harming or helping the environment, does not underlie the asymmetry in judgments of intentionality. An alternative explanation is based on the availability of choice.

Intentionality and choice

A new explanation for why people judge harmful side effects to be intentional and helpful side effects to be unintentional is that the protagonist is perceived to have a choice when faced with the harmful dilemma but not when faced with the helpful one. We propose that a harmful side-effect poses a genuine dilemma: the goal is positive whereas the side-effect is negative, and in a dilemma a protagonist makes choices between priorities.

This availability of choice explanation proposes that people think about whether the protagonist has other options. They can think about an alternative to the harmful side-effect: the protagonist could have decided not to introduce the program to increase profits, and so not harmed the environment. Because they can think of alternatives, they perceive that the protagonist had a choice and they judge the side-effect to be intentional. In contrast, a helpful side-effect poses no dilemma: the goal and side-effect are positive and the protagonist need not make choices between them: his action will increase profits and help the environment. Participants do not tend to think of an alternative to the helpful side-effect and so they perceive that the protagonist had little choice and they judge the side-effect to be unintentional. This suggestion is consistent with earlier acknowledgments that choice has a potential role in intentionality judgments (e.g., Alicke 2008; Cushman & Young 2011; Machery 2008; Malle & Knobe 1997; Phillips & Knobe 2009; Royzman & Baron 2002). For example, when the protagonist does not have sufficient knowledge of the outcome, the effect is eliminated (e.g., Nichols & Ulatowski 2007; Pellizzoni et al 2010).

At the heart of the availability of choice explanation is the idea that thinking about choices requires people to imagine alternatives: they think about the protagonist's choice of pursuing the goal and its harmful side-effect, and they imagine a counterfactual alternative of not pursuing the goal and no harmful side-effect. Evidence to support this suggestion comes from the observation that when participants are required to create 'if only' counterfactual thoughts about how things could have turned out differently prior to making their judgments of intentionality, the side-effect asymmetry is amplified (Byrne 2012). They judged the harmful side effect to have been brought about intentionally more often when they were required to create counterfactuals compared to when they were not, presumably because they could think of

alternative choices the protagonist could have made; they judged the helpful side effect to have been brought about unintentionally more often when they were required to create counterfactuals compared to when they were not, presumably because they could *not* think of alternative choices the protagonist could have made. The suggestion is consistent with the idea that intentionality judgments may potentially be affected by counterfactual generation (e.g., Adams & Steadman 2004; Knobe, 2010; McCloy & Byrne 2000; Pellizzoni et al 2010; Young & Phillips 2011). Our second experiment tests the availability of choice proposal, by examining intentionality judgments for side-effects that are brought about by actions or inactions.

Experiment 2

Outcomes that result from a protagonist's actions may appear to be the result of deliberate choices, more so than outcomes that result from a protagonist's inactions. If so, the asymmetry in judging harmful side-effects to be intentional and helpful side-effects to be unintentional may be diminished when the side-effects result from the protagonist's inaction, rather than from the protagonist's action.

People tend to regret bad outcomes that arise from their actions more than bad outcomes that arise from their inactions. Consider the following scenario:

> Mr. Paul owns shares in company A. During the past year he considered switching to stock in company B, but he decided against it. He now finds out that he would have been better off by $1,200 if he had switched to the stock of company B. Mr. George owned shares in company B. During the past year he switched to stock in company A. He now finds out that he would have been better off by $1,200 if he had kept his stock in company B. Who feels greater regret?

Most people judge that the actor, Mr. George, will regret his action more than the individual who did not act, Mr. Paul (Kahneman & Tversky 1982). Even when their task is to judge the regret that a person experienced without making a comparison to the regret experienced by another person, their estimates of regret for an actor are higher than their estimates of regret for a non-actor (Feeney & Handley 2006; N'gbala & Branscombe, 1997). They also judge that actors will feel better about good outcomes that arise from their actions compared to individuals whose inaction leads to a good outcome (Landman, 1987). This 'omission bias' may arise because actions appear to change the status quo more than inactions (Byrne & McEleney 2000; Ritov & Baron 1999). Of course, when there are compelling reasons to act, inactions can be seem inexcusable (Gilovich & Medvec 1995; Zeelenberg, Van den Bos, Van Dijk, & Pieters 2002).

We gave participants a version of the company scenario which emphasized the protagonist action in switching to a new program:

> The vice-president of a company UMT Ltd went to the chairman of the board, Mr. Smith, and said 'We are thinking of switching to a new program, instead of staying with our old one. If we switch to the new program it will help us increase profits, but it will also harm the environment'. The chairman of the board, Mr. Smith answered, 'I have no desire to affect the environment. I just want to make as much profit as I can'. Mr. Smith considered staying with their old program but in the end he said 'Let's switch to the new program.' They switched to the new program and sure enough, the environment was harmed.

We compared this 'Action' version to an 'Inaction' version which indicated instead that the protagonist had not acted:

> The vice-president of another company in a different region, OZF Inc went to the chairman of the board, Mr. Jones, and said 'We are thinking of staying with our old program, instead of switching to a new one. If we stay with the old program it will help us increase profits, but it will also harm the environment'. The chairman of the board, Mr. Jones, answered, 'I have no desire to affect the environment. I just want to make as much profit as I can'. Mr. Jones considered switching to the new program but in the end he said 'Let's stay with the old program.' They stayed with the old program and sure enough, the environment was harmed.

We used the phrase 'I have no desire to affect the environment' rather than 'I don't care at all about harming the environment' to obviate any inference that the protagonist was maliciously negligent (Cushman & Mele 2008; Guglielmo & Malle 2010).

Method

The participants were 40 students from Trinity College Dublin who participated voluntarily. They were 7 men and 33 women, aged 18 to 43 years, with an average age of 25 years.

Participants were assigned to the harm or help groups (n = 20 in each). They each received an action and an inaction version of the story (in that order, see Feeney & Handley 2006). They received the action and inaction versions for two vignettes, the company scenario and also a parenting scenario in which a county council chairwoman pursued a primary goal of funding basic community services such as maintenance of roads and parks, with the side-effect of harming (or helping) funding for a 'better parenting' program designed to provide skills to vulnerable adults in at-risk families.

Half the participants received the company scenario first and half the parenting one, and order had an effect (participants tended to give different responses to the company scenario when it appeared first rather than second). Hence we report the results for participants' responses to the first scenario they received only. There were no differences in responses to the two contents, company versus parenting when they were received first. Participants completed several tasks, such as a praise-blame assignment task, as well as the key side-effect intentionality judgment task. We eliminated four participants because their response to a final question on 'protected values' (absolute values that people protect from trade-offs) indicated they did not value the environment or parenting programs highly (Ritov & Baron, 1999; Tanner & Medin 2004). The procedure was similar to the previous experiment.

Results and Discussion

Participants in the Action condition judged that the actor brought about the side-effect intentionally for the harmful side-effect more than the helpful one, Mann Whitney U, z = -2.111, p = .035, r = .3518. The difference was eliminated in the Inaction condition, z = -1.203, p = .229, as Figure 2 shows. The result is consistent with the suggestion that the asymmetry in judgments of intentionality for harmful and helpful side-effects arises from the perceived differential availability of choice for harmful and helpful side-effects that result from actions. Side-effects that result from a protagonist's inaction may appear not to be the result of deliberate choice as much as those that result from a protagonist's actions.

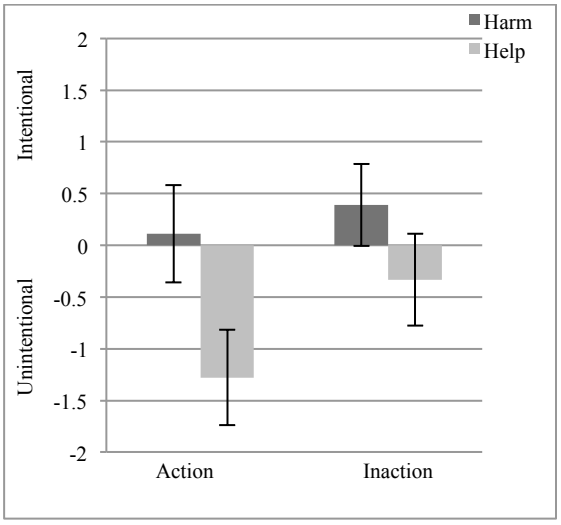

Figure 2: Judgments of intentionality for harmful and helpful side-effects in the Action and Inaction conditions. Error bars are standard error of the mean.

However, it is important to note that participants judged the protagonist had brought about a harmful side effect intentionally as often for an inaction as for an action, Wilcoxon's z = -.680, p = .479; in contrast, they judged the protagonist had brought about a helpful side effect marginally more unintentionally for an action than for an inaction, z = -1.792, p = .073, r = .299. The result indicates that people judge the unintentionality of side-effects differently when they arise from inaction rather than action.

Conclusions

Participants tend to judge that an individual brought about a harmful side-effect intentionally, but a helpful side-effect unintentionally (Knobe 2003a). We suggest the phenomenon arises because a harmful side-effect poses a genuine dilemma in which the actor must make choices, whereas a helpful side-effect poses no dilemma and the actor does not need to make choices. People imagine a counterfactual alternative in which the actor made a different choice for a harmful side-effect and the readily available imagined alternatives for a harmful side-effect lead them to infer it was intentional.

The tendency to judge that an individual brought about a harmful side-effect intentionally but a helpful side-effect unintentionally persists even when the goal is of equal moral worth to the side effect, such as saving people from starvation, as the first experiment showed, ruling out an explanation based on moral disparity. The effect is eliminated when the side effects arise from inactions rather than actions, as the second experiment showed, consistent with an explanation based on the availability of choice. The availability of choice explanation is consistent with the view that common mechanisms underlie reasoning about intentionality in moral and non-moral domains (e.g., Byrne 2005; Rai & Holyoak 2010; Royzman & Baron 2002; Shenhav & Greene 2010; Uttich & Lombrezo 2011).

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References

Adams, F., and Steadman, A. (2004). Intentional action in ordinary language. *Analysis, 64*, 173-181.

Alicke, M.D. (2008). Blaming badly. *Journal of Cognition and Culture* 8, 179–186.

Byrne, R.M.J. (2012). *Reasoining about intentions.* Talk at the International Conference on Thinking, London, UK.

Byrne, R.M.J. (2005). *The Rational Imagination: How People Create Alternatives to Reality.* Cambridge: MIT.

Byrne, R.M.J. & McEleney, A. (2000) Counterfactual thinking about actions and failures to act. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 26, 1318-1331

Cushman, F., & Mele, A. (2008). Intentional action: Two-and-a-half folk concepts? In J. Knobe & S. Nichols (Eds.), *Experimental Philosophy*. Oxford: OUP.

Cushman, F., & Young, L. (2011). Patterns of moral judgment derive from nonmoral psychological representations. *Cognitive Science*, 1-24.

Feeney, A., & Handley, S. J. (2006). Comparisons, mental models, and the action effect in judgements of regret. *Memory & Cognition, 34*(7), 1422-1430.

Guglielmo, S. & Malle, B. F. (2010). Can unintended side effects be intentional? *Personality and Social Psychology Bulletin,* 36, 12, 1635 –1647

Gärdenfors, P. (1988). *Knowledge in Flux*. Cambridge, MA: MIT Press.

Gilovich, T. & Medvec, V.H. (1995). The experience of regret: what, when, and why. *Psychological Review*, 102, 379–395.

Kahneman, D., & Tversky, A. (1982). The psychology of preferences. *Scientific American.* 246, 1, 160-173.

Knobe, J. (2003a). Intentional action and side-effects in ordinary language. *Analysis, 63*, 190- 193.

Knobe, J. (2003b). Intentional action in folk psychology. *Philosophical Psychology*, 16, 309-323.

Knobe, J. (2004). Folk psychology and folk morality. *Journal of Theoretical and Philosophical Psychology, 24*, 270-279.

Knobe, J. (2006). The concept of intentional action. *Philosophical Studies, 130*, 203-231.

Knobe, J. (2010). Person as scientist, person as moralist. *Behavioral and Brain Sciences*. *33*, 353-365.

Knobe, J., & Burra, A. (2006). The folk concept of intention and intentional action. *Journal of Culture and Cognition, 6*, 113-132.

Knobe, J., & Mendlow, G. (2004). The good, the bad, and the blameworthy. *Journal of Theoretical and Philosophical Psychology, 24*, 252-258.

Landman, J. (1987). Regret and elation following action and inaction. *Personality and Social Psychology Bulletin*, *13*, 524–536.

Leslie, A., Knobe, J., & Cohen, A. (2006). Acting intentionally and the side-effect effect. *Psychological Science, 17*, 421-427.

Machery, E. (2008). The folk concept of intentional action. *Mind and Language, 23,* 2, 165-189.

Malle, B.F. & Knobe, J. (1997). The folk concept of intentionality. *Journal of Experimental Social Psychology, 33*, 101–121.

McCann, H. (2005). Intentional action and intending. *Philosophical Psychology, 18*, 6, 737/748.

McCloy, R. & Byrne, R.M.J. (2000) Counterfactual thinking about controllable actions. *Memory & Cognition, 28*, 1071-1078.

Miller, G. & Johnson-Laird, P.N. (1976). *Language and perception*. Harvard: Harvard University Press.

Mele, A. (2003). Intentional action. *Philosophical Psychology, 16*, 325-340.

Nadelhoffer, T. (2004). On praise, side effects, and folk ascriptions of intentional action. *Journal of Theoretical and Philosophical Psychology, 24*, 196-213.

N'gbala, A., & Branscombe, N. R. (1997). When does action elicit more regret than inaction and is counterfactual mutation the mediator of this effect? *Journal of Experimental Social Psychology*, *33*, 324-343.

Nichols, S., & Ulatowski, J. (2007). Intuitions and individual differences. *Mind & Language, 22*, 346-365.

Pellizzoni, S., Girotto, V., & Surian, L. (2010). Beliefs and moral valence affect intentionality attributions. *Review of Philosophy and Psychology, 1*, 2, 201-209

Pettit, D. and Knobe J. (2009). The pervasive impact of moral judgment. *Mind & Language 24*, 5, 586-604.

Phelan, M., and Sarkissian, H. (2008). The folk strike back. *Philosophical Studies*, *138*, 291–298

Phillips J., & Knobe, J. (2009). Moral judgments and intuitions about freedom. *Psychological Inquiry, 20*, 1, 30-36.

Rai, T.S. & Holyoak, K.J. (2010). Moral Principles or Consumer Preferences? *Cognitive Science 34*, 311–321

Roese, N. J., Park, S., Smallman, R., & Gibson, C. (2008). Schizophrenia involves impairment in the activation of intentions by counterfactual thinking. *Schizophrenia Research*, *103*, 343-344.

Rozyman, E.B. & Baron, J. (2002). The preference for indirect harm. *Social Justice Research, 15*, 2, 165-184.

Ritov, I., & Baron, J. (1999). Protected values and omission bias. *Organizational Behavior and Human Decision Processes*, *79*, 2, 79-94.

Shenhav, A. & Greene, J.D. (2010). Moral judgments recruit domain-general valuation mechanisms to integrate representations of probability and magnitude. *Neuron*. *67*, 667–677

Sverdlik, S. (2004). Intentionality and moral judgments in commonsense thought about action. *Journal of Theoretical and Philosophical Psychology, 34*, 224-236.

Tanner, C., & Medin, D. L. (2004). Protected values: No omission bias and no framing effects. *Psychonomic Bulletin & Review*, *11*, 1, 185-191.

Uttich, K., & Lombrozo T. (2010). Norms inform mental state ascriptions: A rational explanation for the side-effect effect. *Cognition 116*, 1, 87-100.

Young, L., Bechara, A., Tranel, D., Damasio, H., Hauser, M., & Damasio, A. (2010). Damage to ventromedial prefrontal cortex impairs judgment of harmful intent. *Neuron*, *65*, 6, 845-851.

Young, L., & Phillips, J. (2011). The paradox of moral focus. *Cognition*, *119*, 166-178.

Zalla, T. & Leboyer, M. (2011). Judgment of intentionality and moral evaluation in individuals with high functioning autism. *Review of Philosophy and Psychology, 2*, 681–698

Zeelenberg, M., Van den Bos, K., Van Dijk, E., & Pieters, R. (2002). The inaction effect in the psychology of regret. *Journal of personality and Social Psychology*, *82*, 3, 314-327