



Individual differences, judgment biases, and theory-of-mind: Deconstructing the intentional action side effect asymmetry

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ABSTRACT

When the side effect of an action involves moral considerations (e.g. when a chairman's pursuit of profits harms the environment) it tends to influence theory-of-mind judgments. On average, bad side effects are judged intentional whereas good side effects are judged unintentional. In a series of two experiments, we examined the largely uninvestigated roles of individual differences in this judgment asymmetry. Experiment 1 indicated that extraversion accounted for variations in intentionality judgments, controlling for a range of other general individual differences (e.g. working memory, self-control). Experiment 2 indicated that extraversion's influence was partially mediated by more specific variations in intentional action concepts. A priming manipulation also provided causal evidence of judgment instability and bias. Results suggest that the intentional action judgment asymmetry is multiply determined, reflecting the interplay of individual differences and judgment biases. Implications and the roles of individual differences in judgment and decision-making research are discussed.

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1. Introduction

Theory-of-mind is by many accounts a uniquely human capacity that is essential to modern social functioning and cultural development (Gallagher & Frith, 2003; Tomasello, Kruger, & Ratner, 1993). One fundamental and ubiquitous aspect of theory-of-mind involves the assessment of the intentionality of others' actions. Recent research on intentional action judgments has revealed that these assessments can be influenced by the moral valence of an event (Knobe, 2003a; Knobe & Burra, 2006; Leslie, Knobe, & Cohen, 2006; Nichols, 2004). Theoretically, a number of candidate mechanisms such as affective biases and multistage search processes have been proposed to account for this effect (Knobe, 2006). However, research has largely neglected potential contributions of individual differences—a tendency that is not uncommon in the broader context of

psychology science (Cronbach, 1957; Funder, 1991, 1995, 2001; Revelle, 1987). Indeed, several interesting variations such as cultural differences are known to affect general theory-of-mind processes (Lillard, 1997, 1998). What can individual differences reveal about the mechanisms of intentional action judgments?

1.1. The intentional action side effect asymmetry

Knobe (2003a, 2006) has demonstrated that some people's theory-of-mind judgments are influenced by the "goodness" or "badness" of the side effects of their actions. Side effects of actions are typically taken to be consequences of actions that are foreseen but not intended. People tend to make asymmetric judgments wherein bad side effects are judged as being brought about intentionally yet good side effects are judged as being brought about unintentionally. To illustrate, consider this variant of the paradigmatic cases that evoke the intentional action side effect asymmetry (Knobe, 2003a)¹:

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

¹ These are the exact scenarios used in Experiments 1 and 2. Participants were asked to what degree they agree on a 7 point Likert scale (1 = disagree, 4 = neutral, 7 = agree) with one of the two following relevant statements: "The chairman intentionally harmed (or helped) the environment."

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help us increase profits for this year's balance sheet, but in 10 years it will start to (harm/help) the environment." The chairman answered, "I don't care at all about (harming/helping) the environment. I just want to make as much profit for this year's balance sheet as I can. Let's start the new program." They started the new program. Sure enough, ten years later, the environment started to be (harmed/helped) (Cushman & Mele, 2008).

The only difference is whether the side effect of the chairman's action is 'good' or 'bad'. However, when participants are asked to indicate how much they agree with the statement "the chairman intentionally harmed/helped the environment," their judgments for help versus harm cases are qualitatively different (help is unintentional, harm is intentional). This variation has proven robust and is present in different cultures (Knobe & Burra, 2006), ages (Leslie, et al., 2006), and side effect scenarios (Cushman & Mele, 2008; Knobe, 2003a, 2003b, 2004a, 2004b, 2006; Mele & Cushman, 2007; Nichols & Ulatowski, 2007).

There are several theoretical accounts of the mechanisms of the side effect asymmetry (for a recent review see Feltz, 2007). For example, Knobe (2006) proposes a model with two sub-processes where the identification of a harmful or beneficial side effect triggers a selective search for features that are sufficient to judge the side effect as being brought about intentionally. Other evidence and theory suggests that it is not simply the harmfulness of the side effect that influences judgments but that social norms may also play a role. Scenarios that describe *regretfully* bringing about a harmful side effect can dramatically reduce the asymmetry (Phelan & Sarkissian, 2008). Alternatively, Nadelhoffer (2004) and Malle and Nelson (2003) argue that the asymmetry primarily results from an affective bias. Malle and Nelson suggest that because one has a negative affective reaction to the chairman in the harm scenario, one is more likely to think that the harm is brought about intentionally. Similarly, Nadelhoffer contends that the harm scenario is seen as intentional because it allows participants to blame the chairman more. However, Nadelhoffer further suggests that help judgments are also biased as participants do not want to praise the chairman for his help.

In addition to theoretical accounts that emphasize search and bias mechanisms, emerging research suggests that specific individual differences in intentional action intuitions may also play an influential role. For example, Nichols and Ulatowski (2007) suggest that the asymmetry may be the result of specific individual differences in interpreting the word 'intentionally'. Similarly, Cushman and Mele (2008) have found evidence for multiple folk concepts of intentional action.² One concept treats an action performed with desire as necessary for being done intentionally (i.e. desire-concept) and another concept treats an action performed with belief as sufficient for being done intentionally (belief-concept).

Given the number of theoretical interpretations and findings, we hypothesized that the side effect asymmetry was likely multiply determined, resulting from both individual differences and biases. In order to test this hypothesis, we conducted a series of two experiments. In the first experiment, we examined the relationship between the judgment asymmetry and a personality trait (i.e. extraversion) which is known to be associated with increased social sensitivity and emotional expressiveness. In the second experiment, we directly measured and manipulated specific individual differences in folk intuitions (i.e. naïve intuitions of non-specialists) related to intentional action concepts (Cushman & Mele, 2008). For example, we assessed the extent to which the folk tend to act as if *belief-is-sufficient* to judge that a side effect with little or no affective

valance is intentional (e.g. does a marksman intentionally heat up the barrel of his gun as a result of shooting at a target). This allowed for a more direct assessment of the independent contribution(s) of both global and specific sources of individual variation, and also provided a unique experimental test of the affective bias account.

2. Experiment 1

We sought to use an individual differences approach to provide an initial test of the affective bias explanation of the judgment asymmetry given that emerging research has demonstrated a number of theoretically interesting relationships between individual differences and judgments in the related domains of ethics, free will, and epistemology (Feltz & Cokely, 2008a, 2008b; Feltz, Cokely, & Nadelhoffer, 2009; Haidt, 2007). We were primarily interested in the influence of the general trait extraversion, which is often stable across one's lifespan and is known to exert influence in a number of ways. For example, many personality traits may shape information processing by influencing (i) one's ability to detect cues, (ii) one's perception of the saliency of cues, and (iii) one's general motivation to process information (Funder, 1995, 1991; McCrae & Costa, 1990). We reasoned that if the intentional action side effect asymmetry is the result of an affective bias the personality trait extraversion might be associated with variability in those judgments. That is, research indicates extraversion is associated with looser regulation of affective reactions and greater sensitivities to social dynamics, two factors that theoretically may influence the judgment asymmetry.

Specifically, extraversion is a member of the Five Factor model of personality (John, 1999), and is in some way represented in almost all major personality models (Lucas, Diener, Grob, Eunkook, & Liang, 2000). Within the Big Five model, an extravert is defined as one who is a "communicative, sociable, energetic person who thrives on social contact and who does not regulate tightly his/her emotional reactions" (Akert & Panter, 1988, p. 966). Extraverts enjoy social interaction, find it rewarding, and actively seek out opportunities to be socially and emotionally engaged (Ashton, Lee, & Paunonen, 2002; Lucas & Fujita, 2000). Indeed, extraversion is correlated with a variety of unique emotionally expressive behaviors, socially focused judgments, and memory retrieval processes (Akert & Panter, 1988; Chamorro-Premuzic, Furnham, & Ackerman, 2006; Lucas & Fujita, 2000; Zelenski & Larsen, 2002). For these reasons, we expected the socially-minded and emotionally expressive extraverts may be more likely to exhibit an affective bias in the chairman case. Hence, we formed and tested Hypothesis 1: The judgment asymmetry is positively related to extraversion, controlling for other general individual differences.

In this experiment, we were principally concerned with the influence of extraversion on the judgment asymmetry; however, it was also important to assess whether, and the extent to which, extraversion uniquely predicted the judgment asymmetry. Indeed, other individual differences such as intelligence, cognitive impulsivity, and expertise are known to influence judgment in theoretically interesting ways (Cokely, 2007; Ericsson, Prietula, & Cokely, 2007; Frederick, 2005; Shanteau, 1992; Stanovich & West, 2000). Individual differences in working memory capacity have also been shown to be associated with variations in metacognition (Cokely, Kelley, & Gilchrist, 2006). Therefore, we controlled for these and other individual differences by including: (1) the cognitive reflection task (CRT) which measures cognitive impulsivity or one's reliance on more intuitive (e.g. automatic) versus deliberative (e.g. effortful and subjectively controlled) cognitive processing (Frederick, 2005); (2) working memory capacity (as measured by complex span), i.e. the ability to simultaneously process and store information which significantly mediates the relationship between intelligence and cognitive performance (Turner & Engle, 1989); (3) the brief self-control instrument which measures one's habit of

² It should be noted that it is controversial whether one's intuitions reflect one's concept (see Machery, 2008, for a discussion). If one finds this worry compelling, one could interpret the results that people respond "as if" they have the relevant concept that is used to generate their intuitions.

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