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The effects of process and outcome accountability on judgment process and performance

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ABSTRACT

This article challenges the view that it is always better to hold decision makers accountable for their decision process rather than their decision outcomes. In three multiple-cue judgment studies, the authors show that process accountability, relative to outcome accountability, consistently improves judgment quality in relatively simple elemental tasks. However, this performance advantage of process accountability does not generalize to more complex configural tasks. This is because process accountability improves an analytical process based on cue abstraction, while it does not change a holistic process based on exemplar memory. Cue abstraction is only effective in elemental tasks (in which outcomes are a linear additive combination of cues) but not in configural tasks (in which outcomes depend on interactions between the cues). In addition, Studies 2 and 3 show that the extent to which process and outcome accountability affect judgment quality depends on individual differences in analytical intelligence and rational thinking style.

Introduction

Helping people to make better judgments and decisions is a prime purpose of research in organizational behavior and human decision making. Several authors have documented positive effects of raising the stakes for decision makers by holding them accountable (Arkes, 1991). For example, it has been shown that accountability makes professional auditors more accurate in judging the financial quality of industrial bond issues (Ashton, 1992), reduces primacy effects in person impression formation (Tetlock, 1983), eliminates the fundamental attribution error (Tetlock, 1985), reduces self-enhancement (Sedikides, Herbst, Hardin, & Dardis, 2002), and reduces sunk cost effects (Fennema & Perkins, 2008; Simonson & Nye, 1992). Accountability is a social factor that can be externally imposed and is therefore particularly useful to avoid judgment errors based on suboptimal cognitive predispositions or abilities of the individual decision maker (Payne, Bettman, & Johnson 1993).

Accountability, however, is not a unitary phenomenon and can be implemented in at least two ways (Lerner & Tetlock, 1999). Sometimes people are evaluated based on the outcomes of their decisions (i.e., outcome accountability). For example, many professional investors are evaluated based on the monetary outcomes of their decisions, regardless of whether they came to their decisions based on solid understanding and analysis or not. In other situations, people are evaluated not so much on the outcomes of their decisions, but need to justify the process that underlay those decisions (i.e., process accountability). Thus, under process accountability the investor would be evaluated solely on how an investment portfolio was chosen, regardless of whether it proved to be profitable. Academic research has shown that increasing process accountability leads to superior judgment quality in a variety of tasks (Ashton, 1992; Chaiken, 1980; De Dreu, Beersma, Stroebe, & Euwema, 2006; Hagafors & Brehmer, 1983). In addition, research indicates that outcome accountability, despite its prevalence in managerial practice, can have negative effects on performance (Arkes, Dawes, & Christensen, 1986; Siegel-Jacobs & Yates, 1996). The divergent effects on performance of process accountability vs. outcome accountability have been confirmed among students participating in experimental research (Brtek & Motowidlo, 2002; Siegel-Jacobs & Yates, 1996; Simonson & Staw, 1992), but also in real-life settings, for example among purchasing professionals who were members of the National Association of Purchasing

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Management (Doney & Armstrong, 1996). Thus, empirical findings suggest that to help people make better judgments and decisions, process accountability is consistently more desirable and uniformly superior to outcome accountability (see Slaughter, Bagger, & Li, 2006, for a lone exception).

The origins of a negative effect of outcome accountability on judgmental or decision performance have, to the best of our knowledge, not seen any direct empirical investigation. However, indirect evidence relying on Janis and Mann's (1977) Conflict Theory suggests that outcome accountability's detrimental influence may be due to an increase in decision stress and a narrowing of attention that does not occur with process accountability (Brtek & Motowidlo, 2002; Lerner & Tetlock, 1999; Siegel-Jacobs & Yates, 1996; Simonson & Staw, 1992).

The beneficial effects of process accountability are attributed to greater attention to the problem at hand, better encoding and retrieval of information, and more even-handed and consistent use of available information. For example, Brtek and Motowidlo (2002) found that process accountable participants, relative to outcome accountable participants, gave more accurate judgments of managers' leadership potential based on an interview. This effect was mediated by an attentiveness score reflecting attention to the interview, alertness of posture, note taking, and thoughtfulness after the interview. De Dreu et al. (2006) found that process accountable participants recalled more distinct negotiation tactics from a description of a group discussion scenario than participants who were not held accountable. Process accountable participants in a pretest by Scholten, van Knippenberg, Nijstad, and De Dreu (2007) reported that in an upcoming group discussion they would strive for thorough and balanced decisions, would think deeply before reaching a judgment, and thought that thinking through every possibility would be more important than making efficient decisions. Siegel-Jacobs and Yates (1996) found that process accountable participants were more consistent and better calibrated in their judgments than outcome accountable participants.

Jointly, these prior inquiries suggest that process accountability has a universal and uniform positive effect on cognitive processing and judgment quality relative to outcome accountability. However, it is possible that the effect of process vs. outcome accountability is more specific. In this article, we argue that process and outcome accountability do not affect all cognitive processes to the same extent. Specifically, we establish that process accountability (vs. outcome accountability) boosts the use of a cue abstraction process but not exemplar-based processing. Because cue abstraction is not equally effective in all situations (Juslin, Karlsson, & Olsson, 2008; Olsson, Enkvist, & Juslin 2006), the superiority of process accountability over outcome accountability is not as uniform as previous results would suggest.

In the next section of this article, we describe two cognitive processes based on different memory representations that can be used to make judgments (i.e., cue abstraction and exemplar-based processing). We then elaborate on the impact of using these processes on judgment quality in different types of tasks. Subsequently, we relate process and outcome accountability to differential use of the two cognitive processes. Finally, we generate predictions regarding the impact of holding people process vs. outcome accountable on judgment quality in different types of tasks. These predictions are tested in three experimental studies using a multiple-cue learning paradigm.

Theoretical background

Judgment based on cue abstraction and exemplar memory

Two cognitive processes based on different memory representations have taken a central place in the cognitive science literature over the past few decades, (1) an analytical cue abstraction process based on abstract knowledge about the relationship between individual features of a stimulus and an outcome to be judged and (2) a more holistic exemplar-based process based on concrete representations of previously-encountered stimulus-outcome configurations (e.g., Erickson & Kruschke, 1998; Hahn & Chater, 1998; Juslin et al., 2008; Pothos, 2005; Smith & Sloman, 1994).

To illustrate this distinction, consider the case of two experts (Expert A and Expert B) trying to predict the commercial success of a new type of mobile phone. Expert A argues that, because the phone has a long battery life (i.e., a positive feature) but the software is not user-friendly (i.e., a negative feature), it is likely to be moderately successful. Expert B agrees with this prediction, because the new phone is similar to a specific phone that was launched a couple of months ago, and that earlier phone has proven to be moderately popular among consumers. Although Expert A and Expert B arrived at the same prediction, their judgments can be traced to informational inputs of a fundamentally different nature. Whereas the prediction of Expert A is based on abstract information relating individual features of the phone to commercialization success (i.e., knowledge about individual cue-outcome relations), the prediction of Expert B is based on the storage and retrieval of previously launched phones together with their respective commercialization success (i.e., knowledge about exemplars made up of a configuration of cues and their relationships with an outcome). Judgments based on cue-outcome information involve the abstraction and representation of "mental rules" that relate individual attributes of a stimulus to an outcome to be judged. At the time of judgment, each cue is selectively attended to, its relation to the outcome is considered, and the judgment results from an additive integration of the independent effects of each cue on the outcome (e.g., Einhorn, Kleinmuntz, & Kleinmuntz, 1979; Juslin, Jones, Olsson, & Winman, 2003; Juslin, Olsson, & Olsson, 2003; Juslin et al., 2008). Judgments based on exemplar-outcome information, on the other hand, depend on the holistic storage of stimuli (i.e., a configural pattern of cues) and their respective outcome values in long term memory. Judgments are constructed by assessing the overall similarity of the stimulus under consideration to the stimuli that are stored in memory, with relatively more similar stimuli having a greater influence on the final judgment (e.g., Juslin et al., 2008; Medin & Schaffer, 1978; Nosofsky, Shin, & Clark, 1989).

Effects of two cognitive processes on judgment quality in different tasks

Crucially, both types of information are not equally adaptive for judgment in all task environments. Knowledge about individual cue-outcome relations is only useful in *elemental* task structures. These are task structures in which the true outcome can be relatively well approximated by a linear additive combination of cue values, i.e. tasks where individual cues are elementally and linearly related to the outcome to be predicted. For example, cue abstraction should work well when cell phone weight has a consistent negative relationship with the success of cell phones in the market (higher weight means less success and this relationship is constant over the whole range of realistic weights). However, knowledge about individual cue-outcome relations is not useful in *configural* task structures. These are task structures in which cues interact with each other to predict the outcome. In tasks where cues are related to the outcome in a configural way judgments based on cue-outcome relations allow at best only for a linear additive approximation of the outcome values (Juslin et al., 2008; Olsson et al., 2006). For example, cue abstraction should work badly when flashy colors are positively related to market success when combined with MP3 player functionality but negative when com-