



Lies that feel honest: Dissociating between incentive and deviance processing when evaluating dishonesty

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ABSTRACT

This study investigated neural responses to evaluations of lies made by others. Participants learned about other individuals who were instructed to privately roll a die twice and report the outcome of the first roll to determine their pay (with higher rolls leading to higher pay). Participants evaluated three types of outcomes: honest reports, justifiable lies (reporting the second outcome instead of the first), or unjustifiable lies (reporting a different outcome than both die rolls). Evaluating lies relative to honest reports was associated with increased activation in the anterior cingulate cortex (ACC), insula and lateral prefrontal cortex. Moreover, justifiable lies were associated with even stronger activity in the dorsal ACC and dorsolateral prefrontal cortex compared to unjustifiable lies. These activities were more pronounced for justifiable lies where the deviance from the real outcome was larger. Together, these findings have implications for understanding how humans judge misconduct behavior of others.

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1. Introduction

The way individuals judge dishonesty is a central aspect of daily interactions. It allows juries to craft verdicts, inform partners to stay together or get divorced, and tax agents to initiate financial investigations of suspected firms (Levine, 2010). When judging dishonest behavior, certain contextual factors can cause people to consider certain lies as less dishonest than other lies (e.g., when people lie to help another person, see Gino, Ayal, & Ariely, 2013). This situation, in which it is not right away evident if the behavior should be judged as clearly dishonest, is thought to result in cognitive conflict. We define cognitive conflict as those situations that require a selection among a set of equally permissible responses (see Botvinick, 2007). In the current study, we hypothesized that individuals experience more conflict when evaluating lies that can be justified, compared to evaluating lies that cannot be justified, given that there will be more competition between right/wrong selection processes. We tested this hypothesis using functional neuroimaging, which allowed us to test conflict experience at the neural level (Botvinick, 2007).

Prior research on dishonest behavior mainly focused on the behavior of the lie-teller. This research has shown that when motivated to do so, individuals often lie for financial profit (DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996), but at the same time, people want to maintain an honest self-concept (Mazar, Amir, & Ariely, 2008). Thus, there is a balance between justifiable and non-justifiable lie telling, although this balance may differ between individuals and situations. It is a well-replicated finding that individuals restrict their dishonesty and lie more often for small amounts than for large amounts (Ayal & Gino, 2011; Fischbacher & Föllmi-Heusi, 2008). Less is known, however, about whether a similar distinction is made when individuals evaluate lies of others. Although there is a large body of research that focuses on lie detection and the accuracy thereof (for a review see Rosenfeld, Ben-Shakhar, & Ganis, 2016), hardly any research has focused on how individuals evaluate whether and under what circumstances lies of others are justifiable or not. This is an important issue given that even small or justifiable lies may accumulate to large societal costs. After all, on aggregate many little lies pile up to a hefty sum (Ariely, 2012).

One method that allows us to gain a deeper understanding of how individuals evaluate lies of others is by using neuroimaging. Prior research has shown that in general moral judgment makes use of brain regions dedicated to social cognition (Greene & Haidt, 2002). These brain regions include, for example, the orbitofrontal

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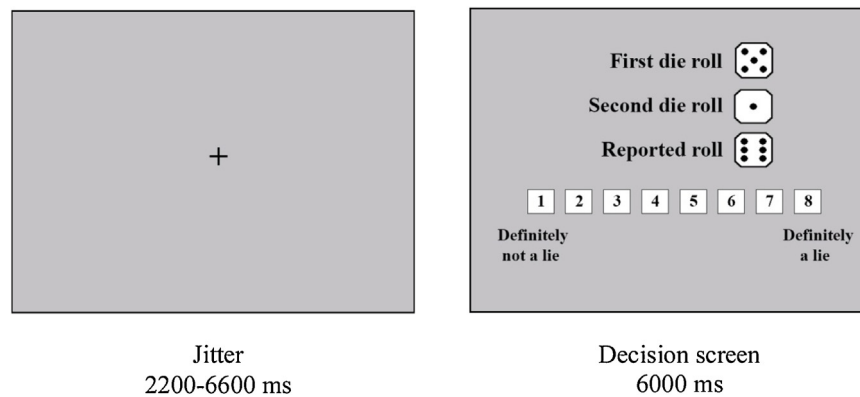


Fig. 1. Visual display and timing of the events in the scanner task in milliseconds (ms). After a jittered fixation cross, a screen displayed the two die rolls and the reported roll (here an example of the first two rolls are “5” and “1”, and the reported roll is “6”). We measured activation at the onset of this decision screen. Participants had a maximum response time of 6000 ms. After the response, the decision screen remained on the screen until 6000 ms after the onset of the decision screen.

(OFC) and medial prefrontal cortex (mPFC) (Moll et al., 2002). However, besides these brain regions, the evaluation of lies is also thought to be associated with cognitive processes, as is evident from prior studies which reported increased activity in the dorsolateral prefrontal cortex (dlPFC) and the dorsal anterior cingulate cortex (ACC) when evaluating moral dilemmas (Greene, Sommerville, Nystrom, Darley, & Cohen, 2001; Greene, Nystrom, Engell, Darley, & Cohen, 2004). In the current study our first aim was to test whether the same regions that have previously been associated with judging moral conflict (the OFC and mPFC) and cognitive control (the dlPFC and ACC) are also involved in the evaluation of lies of others, by comparing evaluations of lies to evaluations of honest reports, using a die roll paradigm.

A second aim of the current study was to investigate the moderating role of justifications on the evaluations of lies. An important determinant for how lies of others are evaluated is the extent to which lies can be justified (Schweitzer & Hsee, 2002; Shalvi, Gino, Barkan, & Ayal, 2015). People clearly restrict their dishonesty and seem to stretch the truth to the extent they can justify such behavior (Toure-Tillery & Fishbach, 2012). This pattern is also well documented in the justifiable lies paradigm (Shalvi, Dana, Handgraaf, & De Dreu, 2011). In this paradigm, participants are asked to roll a die privately and earn money as a function of their reported die roll outcome (1 = \$1, 2 = \$2, etc.). Since only participants see their die rolls, they can inflate their reports and leave the experiment richer than when they had reported honestly. In the experimental condition participants were asked to roll the die three times, check the outcome of each roll, but then report the outcome of the first roll only (see Fischbacher & Föllmi-Heusi, 2008). In the control condition, holding all other aspects constant, participants were asked to roll only once before reporting their outcome. Results showed that participants who rolled three times lied more often than those rolling only once, because participants justified their lie by reporting the better outcome on the second or third roll (see also Gino & Ariely, 2012; Shalvi, Eldar, & Bereby-Meyer, 2012).

In a second series of experiments, Shalvi and Leiser (2013) investigated how other individuals judged these lies, thereby testing the evaluation of dishonesty. Participants were presented with a scenario describing the behavior of other participants involved in the die rolling experiment described above. Participants were asked to rank the extent to which they found each of the presented combinations to be a lie (1 = *not at all* to 6 = *very much*). They presented die roll combinations (i.e., the outcome of the first and second roll and the reported outcome) that were either honest (1st roll = report), or dishonest (1st roll < report). Critically, within the dishonest combinations, some lies could be justified by reporting the outcome of the (irrelevant for pay) second roll (justifiable combinations). Other

participants were presented with lies that could not be justified, where a higher outcome was reported that did not match any of the die rolls (unjustifiable combinations). Participants judged the justifiable combinations as less of a lie compared to the unjustifiable combinations. This paradigm provides a valuable context for examining how individuals evaluate lies, and more specifically, if lies that can be justified are experienced as less dishonest. Possibly, the evaluation of justifiable lies elicits more conflict than the evaluation of unjustifiable lies, because participants may have difficulty deciding whether this is a complete lie or not.

To examine these conflict responses, we made use of neuroimaging to test cognitive conflict processes in more detail. Based on prior studies, it is well documented that the experience of cognitive conflict is associated with activity in the dorsal ACC and the dlPFC (Greene et al., 2004; Hayashi et al., 2014). These regions are well known for their role in signaling conflict and adjusting behavior to changing environmental cues (Botvinick, 2007; Botvinick, Cohen, & Carter, 2004; Van Veen & Carter, 2006). Conflict-related activity in the ACC is not restricted to behavioral conflict, such as when response mappings are competing (Carter & Van Veen, 2007), but is also found when experiencing social conflict, such as cognitive dissonance (Van Veen, Krug, Schooler, & Carter, 2009) or social expectation violations (Somerville, Heatherton, & Kelley, 2006). In the current study, we tested if justifiable lies elicited more activity in the ACC and dlPFC, under the hypothesis that justifiable lies create more conflict.

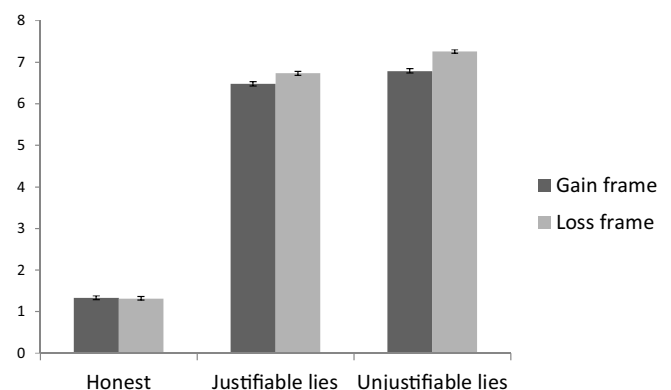


Fig. 2. Behavioral results for participants' evaluations, as a function of die report and frame. Larger means represent harsher evaluations (i.e., participants evaluated these reports as more of a lie). Error bars represent standard errors calculated according to the method of Loftus and Masson (1994), see also Pfister & Janczyk, 2013).

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