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Thinking of Oneself as an Object of Observation Reduces Reliance on Metacognitive Information

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This research explores the consequences of two states of mind on judgment: a subjective state, looking at the world from one's own eyes, and an objective state, in which one thinks of oneself from the imagined perspective of an external observer. In six experiments, we show that judgments people make while they are in a subjective state of mind are more influenced by metacognitive experience compared with judgments people make when they are in an objective state of mind. This is demonstrated in Experiments 1–3, using two different manipulations for the two states of mind and two different fluency tasks. Experiment 4 explores the underlying mechanism and demonstrates that an objective state does not lessen the metacognitive experience itself; rather, it affects the reliance on this experience as a relevant source of information. Finally, in Experiments 5 and 6 we investigate implications of our hypothesis for doing experimental research in psychology. We find that taking part in a laboratory experiment resembles the experimental condition of an objective state of mind, as participants rely less on their metacognition compared with conditions aimed to restore the subjective state of mind within the lab setting. We discuss the theoretical and practical implications of our findings regarding social influences on judgments and decisions in psychology labs and in the real world.

Keywords: ease of recall, fluency, metacognition, objective state of mind, subjective state of mind

> "We cannot perceive the world and at the same time apprehend a look fastened upon us; it must be either one or the other."
>
> Jean-Paul Sartre (1978, 258)

In his book *Being and Nothingness,* the philosopher Jean-Paul Sartre (1943) describes two states of mind: one of experiencing the self as a subject observing others, and the other of perceiving the self as the object of others' observation. As an example, Sartre describes a situation in which he is peeking through a keyhole and gluing his ear to a door, watching another person "in a pure mode of losing himself in the world." When Sartre suddenly discovers that a third person is watching *him,* he becomes the object of the other's perception, a state that he describes as "the recognition of the fact that I am indeed that object which the other is looking at and judging" (pp. 259–261).

Our aim in the current study is to explore how the two states of mind that are induced by perceiving others and by feeling as the object of others' perception affect reliance on metacognitive experience in judgment. We begin by conceptualizing the two states of mind, continue with a brief review of the reliance on metacognitive information in judgment, then we discuss the possible influence of the two states of mind on metacognitive judgments, leading to our description of the set of studies. Finally, we discuss possible mechanisms, related phenomena, and implications of our findings and theory.

Subjective and Objective States of Mind

Over the last centuries, numerous philosophers, psychologists, and sociologists identified and elaborated upon two primary facets of the self. The psychological preoccupation with this field began with William James (1890), who distinguished between the "I" and the "Me": The "I" is the self-as-knower, which manifests as an active processor of experience, whereas the "Me" is the self-as-known, which today might be called *self-concept* (Greenwald & Pratkanis, 1984). Later on, Cooley (1902) coined the term "the looking-glass self" to describe the self-image people construct by imagining themselves through the eyes of others, and Mead (1934) elaborated on Cooley's idea and reasoned that awareness of the self is informed by adopting others' perspectives of us. Specifically, Mead argued that when an individual's experience is absorbed or preoccupied with objects around him, the self is the subject of consciousness; but when the person gets outside himself experientially by taking the point of view of the other, he becomes an object to himself.

On the basis of these distinctions between the different facets of the self, Duval and Wicklund (1972) proposed the theory of objective self-awareness. According to their definitions, "subjective self-awareness" is a state of consciousness in which attention emanating from the self is focused on events external to the

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individual, whereas "objective self-awareness" is the focusing of attention upon the self. Duval and Wicklund theorized that in a state of subjective self-awareness, the person experiences the peripheral feedback from his or her actions and various other feelings that arise within the body. Thus, in this case the self-awareness lies in the feeling of being the source of forces directed outward.

The construct of objective self-awareness underwent a major theoretical refinement. It was suggested that the state of focusing on one's self—objective self-awareness—can be divided into two: a state in which people are attuned to internal information (private self-awareness) and a state in which people are focused on themselves as they believe others see them (public self-awareness; Buss, 1980; Fenigstein, Scheier, & Buss, 1975; Govern & Marsch, 2001). Buss (1980) further suggested that in a state of public self-awareness, people focus on public aspects of themselves—those elements that are entirely overt, like physical appearance and observable behavior. By contrast, in a state of private self-awareness, people focus on private aspects of themselves—internal states—that can be known only to the experiencing person, such as feelings, thoughts, sensations, and phenomenological experiences.

In the present research, we return to Sartre's conceptualization, the contrast between one's state of mind when focusing on what s/he sees outside compared with the state of mind in which one is focused on her/himself as the object of others' perception. Therefore, we compare the state of subjective self-awareness, which we designate "subjective state of mind," with the public aspect of objective self-awareness, which we designate "objective state of mind."

Two important clarifications are in order. First, we use the terms "subjective" and "objective" not in the sense of "in\dependent" or "un\biased," but in the sense of being the subject or the object of social perception. Second, we use the term "state of mind" in the sense of a mental state that can influence cognitive and behavioral tendencies even when these are completely unrelated to the actual state (e.g., Savary, Kleiman, Hassin, & Dhar, 2015; Schul, Mayo, & Burnstein, 2004; Xu & Wyer, 2008). Thus, metaphorically, we think of the two mental states as different computing devices that perform different computations and assign different decision weights to various informational cues. The current research compares between reliance on metacognitive experience while making judgments in a subjective and in an objective state.

Reliance on Metacognitive Experience in Judgment

Human judgments can draw on two distinct sources of information: (a) declarative content information considered germane to the judgment domain, and (b) experiences or feelings that occur during the judgmental process, called *metacognitive feelings*. Most formal theories of judgment and decision making, as well as naïve theories in these domains, focus on the role of relevant declarative information in judgment (for reviews, see Higgins, 1996; Wyer & Srull, 1989). However, a growing psychological literature suggests that people often base their judgments on metacognitive feelings that are triggered while processing content information (e.g., Alter & Oppenheimer, 2009; Schwarz, 2015).

Past research identified several factors that moderate the influence of metacognitive experience on judgments (for a review, see Greifeneder, Bless, & Pham, 2011; see also the General Discussion section below). One moderating factor pertains to the mental resources people have. Specifically, when resources are taxed by other tasks (e.g., through a manipulation of cognitive load), people tend to use cues that require less extensive processing. Because reliance on the content of information in a judgment requires more extensive processing than reliance on metacognitive feelings, the impact of metacognitive feelings increases when cognitive resources are limited. In line with this suggestion, research has demonstrated that the impact of internal experience on judgments increases when the ability to process information is reduced by distraction (Albarracín & Kumkale, 2003; Albarracín & Wyer, 2001), time pressure (Pham, Cohen, Pracejus, & Hughes, 2001; Siemer & Reisenzein, 1998), or cognitive load (Shiv & Fedorikhin, 1999; but see Tormala, Petty, & Briñol, 2002).

In the present research, we test how the subjective versus objective states of mind affect reliance on metacognitive experience. Because actually being observed by others or even just thinking about it can lead to stress and cognitive load (Nichols & Champness, 1971), people in an objective state of mind might be more likely to rely on metacognitive experience compared with people in a subjective state. However, in spite of the potential influence of the cognitive-load factor, we hypothesize an effect in the opposite direction. That is, we postulate that under the subjective state, when one is focused outward, observing and evaluating one's surroundings, one is in tune with his or her feelings and metacognition. Therefore, people in a subjective state should base their judgment on metacognitive experience. By contrast, under the objective state, when one is concerned with oneself from the perspective of an external observer, one tends to adopt the observer's perspective, from which one's own metacognitive experience is obscured. We hypothesize that as a result, when people are in an objective state of mind they tend to rely less on their metacognition.

The Present Research

Contrasting the subjective and objective states of mind allows us to investigate issues not explored in past research, which typically contrasts the state of focusing on the self from the perspective of others with a state of private self-awareness or with a baseline (e.g., Froming, Walker, & Lopyan, 1982; Scheier & Carver, 1980). We believe that the subjective/objective comparison is of unique importance given the increasing prevalence of the objective state in modern life. Psychologists often assume that the subjective state of mind is the default, meaning that people are reacting to their external environment as if no one were watching them. In support of this view, Boothby, Clark, and Bargh (2017) recently reported that people believe they observe others to a larger extent than others observe them. However, in recent years there seems to be a surge in the concerns about one's lack of privacy and in the preoccupation with being monitored by different online devices. These may make the objective state of mind increasingly more common. One prominent example is the gain in the popularity of selfie pictures, which illustrates the tendency to observe oneself as an object of photography, rather than focusing on the surroundings.

Importantly, the present research aims to isolate the influence of the objective state of mind from the multitude of other influences that the presence of an observer can have on the use of metacognition. The classic inducers of the objective state of mind are the presence of an audience, a video camera, or other factors that make

people feel observed. However, the presence of others may entail factors such as anxiety and mental load (see research on evaluation apprehension, e.g., Cottrell, Wack, Sekerak, & Rittle, 1968). Actual observation might also lead the participants to attempt to fit their judgments to the demands of the social environment by trying to be more accountable (Prentice-Dunn & Rogers, 1982) or more liked by the observer. Therefore, we developed subtle manipulations in which the mental state is cued without the presence of actual observers (or their proxy, a camera; see Bateson, Nettle, & Roberts, 2006; Kitayama, Snibbe, Markus, & Suzuki, 2004). We believe that this minimizes the explanatory power of alternative mechanisms such as anxiety, load, accountability, reduction of social uncertainty, gaining control of the situation, consideration of others' inner motives or thoughts, or pleasing a specific observer.

The distinction between the subjective and the objective states of mind raises an important question regarding laboratory experiments involving human participants: Do participants in lab studies feel like active agents who have agreed to contribute to science, reacting to the stimuli and experimental context from a subjective state of mind, or do they feel like objects who are being tested and evaluated by others? These two potential views of the experimental setting have profound implications for the interpretation of control or baseline conditions in laboratory studies in psychology. That is, one can ask what is the default state of mind of participants in the absence of any state-of-mind manipulation. It is quite possible that the default is that of naïve observers, who behave in the experimental setting like observers who react to stimuli in the world. However, it is equally possible that participants come to psychological experiments thinking of themselves as objects who are being monitored and evaluated by the researchers. The latter, of course, implies an objective state of mind. Thus, even if participants do not attempt consciously to act in support of or in contrast to the experimental hypotheses as they perceive them to be (Weber & Cook, 1972), their default state of mind can help us gauge their sensitivity to metacognitive feelings. We return to this issue in Experiments 5 and 6.

Overview

This paper reports the findings of six experiments. In Experiments 1–4, we manipulated the subjective versus objective states of mind by asking participants to imagine a social situation either when their attention is focused on other people, or when the participants are the object of observation by others. The paradigms we used in these experiments were meant to simulate daily situations in which we shift between the subjective and objective states of mind by thought alone rather than by actual changes in the environment. Importantly, the state-of-mind manipulations are completely unrelated to the experimental task and to participants' performance goals in the experiments. Thus, we are able to learn how the subjective and objective states of mind influence processing spontaneously, that is, when they cannot be used to advance participants' performance goals. Experiments 1–4 investigate whether reliance on the metacognitive experience of ease of processing differs in the two states of mind, using two well-established paradigms of perceptual fluency (Experiments 1 and 3) and ease of retrieval (Experiments 2, 4). Experiment 4 tests, in addition, whether participants' state of mind affects the metacognitive *experience* itself or the *reliance* on the metacognitive experience. Experiments 5 and 6 investigate a natural environment in which people might feel observed, namely participating in psychological experiments. These two experiments explore whether the objective state of mind triggered in a psychological experiment can be modified by highlighting anonymity.

The size of the samples used in this study was determined according to the procedure recommended by Cohen (1988), with the aid of G-Power software (Version 3.1.9.2; Faul, Erdfelder, Lang, & Buchner, 2007). The power analyses were based on effect sizes of published studies that used similar experimental procedures, and were set for a significance level of $\alpha = .05$ and a power of 80%. In all the experiments, we rounded the number of participants up to include at least 30 participants in each condition. We analyzed data upon termination of data collection. The data were analyzed using an analysis of variance with planned contrasts. The Appendix provides a Bayesian analysis of our main findings. All the experiments in this study meet the institutional ethical guidelines and were approved by the Hebrew University IRB.

Experiment 1

Experiment 1 explores the effect of the subjective versus objective state of mind on utilization of the metacognitive feeling of perceptual fluency. *Perceptual fluency* is defined as the subjective experience of ease-of-processing of perceptual information (Alter & Oppenheimer, 2009; Benjamin, Bjork, & Hirshman, 1998; Jacoby & Dallas, 1981; Reber, Wurtz, & Zimmermann, 2004). It has been manipulated in a variety of ways, such as by changing the font size of printed text (e.g., Oppenheimer & Frank, 2008), comparing simple names with complex names (Alter & Oppenheimer, 2006), adding visual noise to images and text (e.g., Buchner, 1994; Kleider & Goldinger, 2004), or presenting information in a difficult-to-read font (Alter, Oppenheimer, Epley, & Eyre, 2007; Novemsky, Dhar, Schwarz, & Simonson, 2007; Oppenheimer, 2006).

In Experiment 1, we employed a variant of the perceptual-fluency paradigm used by Song and Schwarz (2008). Participants read a recipe either in an easy-to-read handwriting (high fluency) or in a difficult-to-read handwriting (low fluency), and estimated how long it would take them to prepare the dish. Song and Schwarz (2008) found that participants who read the recipe in the easy-to-read font estimated that preparing the dish would require less time than did participants who read the recipe in the difficult-to-read font. Song and Schwarz (2008) interpreted this finding to mean that participants mistook the feeling of ease while reading the recipe as indicative of the ease with which they could execute the described activity.

The question of interest in Experiment 1 is how the state of mind influences the perceptual-fluency effect. We hypothesized that participants in the subjective state of mind would rely on the fluency experience when estimating the dish's preparation time more than participants in the objective state of mind would do. Operationally, our hypothesis implies that participants' estimates of preparation time will be more sensitive to the fluency manipulation in the subjective condition than in the objective condition.

Method

Participants. One hundred twenty students (58% women; mean age = 26, *SD* = 3.53) participated in Experiment 1. Partic-

ipants were randomly assigned to the four experimental conditions (30 participants in each condition). Each participant received 5 NIS (approx. US$1.25) for completing the questionnaire.

Procedure. An experimenter approached students who were sitting by themselves in the university's libraries and computer centers and asked whether they would be willing to answer a short questionnaire. Students who agreed (about 60%) received one of the four versions of the questionnaire and were left alone for a few minutes to answer it. The four versions varied in the state-of-mind manipulation (subjective or objective) and in the fluency manipulation (high or low fluency). The order of the questionnaires in the pile was randomized in advance, and all versions had the same cover page, so that the experimenter would not know the condition of the questionnaire handed to each participant.

On the cover page, we thanked the participants for agreeing to answer the questionnaire and ensured their anonymity. On the second page, we manipulated the participants' state of mind using the iceberg paradigm we adopted from Pronin, Kruger, Savitsky, and Ross (2001). Pronin and her colleagues compared people's perception of their knowledge of their peers with people's perception of their peers' knowledge of them, by presenting participants with diagrams of 10 partially submerged icebergs (see Figure 1) and asking them to indicate how much they thought they saw of other people and how much they thought other people saw of them. We adopted this paradigm and modified it to serve as a manipulation for a subjective/objective state of mind. Specifically, we asked all the participants to read the following text[1]:

> Everyone has some part of them that others do not know, understand, or "get." In this way, people are like icebergs—part of us is visible and known to others, and part of us is hidden beneath the surface. Of course, exactly how much is above the surface and how much is below the surface varies from person to person.

Next, participants in the subjective condition were given the following instructions: "In this task, you are asked to indicate how much you think *you see of others*. Circle the iceberg that best depicts the ratio between the visible and hidden parts." Participants in the objective condition were given the following instructions instead: "In this task, you are asked to indicate how much you think *others see of you*. Circle the iceberg that best depicts the ratio between the visible and hidden parts."

All participants were presented with the same diagram of 10 icebergs, which differed only in the legend. The legend of the subjective condition described the parts of others that are visible to—or hidden from—the participant, whereas the legend of the objective condition described the parts of the participant that are visible to or hidden from others.

The third page of the questionnaire contained a perceptual-fluency manipulation (adapted from Song & Schwarz, 2008). Participants read a recipe for tiramisu (an Italian dessert), either in an easy-to-read handwriting (high fluency) or in a difficult-to-read handwriting (low fluency).

On the fourth page, participants first answered the question, "How much time (in minutes) do you think it would take you to prepare the tiramisu?" Their estimations served as the dependent variable in this experiment. Then they rated how difficult it was for them to read the handwriting of the recipe on a 7-point scale (1 = *very easy*, 7 = *very difficult*), which served as a manipulation check for the processing fluency. Lastly, we collected demographic information (age, gender, and mother tongue).

Results

Manipulation check: Reading difficulty. A two-way ANOVA (Reading Difficulty [easy vs. difficult] × State of Mind [subjective vs. objective]) revealed an overall main effect of reading difficulty; namely, participants in the easy condition rated the reading of the recipe as easier than did those in the difficult condition (M_{easy} = 1.57, SD = 0.92, $M_{difficult}$ = 3.59, SD = 1.49; $F(1, 115) = 78.07$, $p < .001$, $\eta_p^2 = .40$). Importantly, we found no main effect for the state-of-mind condition on the ratings of reading difficulty, $F(1, 115) < 1$, $\eta_p^2 = .005$, and no interaction, $F(1, 115) < 1$, $\eta_p^2 = .001$.

Time estimations. Participants' estimations of how long it would take them to prepare the recipe constituted the main dependent variable of this experiment. We hypothesized that the often-reported fluency effect would be present in the subjective condition and would be weaker in the objective condition, which would lead to an interaction between the state of mind and the fluency manipulation. To test these predictions, we carried out a series of planned contrasts within the framework of a two-way between-participants ANOVA (Reading Difficulty [easy vs. difficult] × State of Mind [subjective vs. objective]). The Appendix describes the Bayes factor computations that correspond to our main analysis. Figure 2 presents the mean time estimations in the different conditions.

Overall, a significant interaction occurred between the state of mind and reading difficulty, $F(1, 115) = 5.46$, $p = .021$, $\eta_p^2 = .045$, lending support to our main hypothesis that the participants' state of mind influences how they use their metacognitive feelings. The main effects for the state of mind, $F(1, 115) = 1.55$, $p = .216$, $\eta_p^2 = .013$, and the processing fluency, $F(1, 115) = 1.45$, $p = .230$, $\eta_p^2 = .013$, were weak and statistically not significant.

Unpacking these results, we begin by considering the subjective condition. As we had hypothesized, participants who read the recipe in an easy-to-read handwriting estimated its preparation time to be shorter than did those who read the recipe in a difficult-to-read handwriting (M_{easy} = 27.93 min, SD = 12.80, $M_{difficult}$ = 43.62 min, SD = 41.95; $F(1, 115) = 6.23$, $p = .014$, $d = .51$). These results replicate previous findings on perceptual fluency, showing that participants used their metacognitive feelings (reading ease or difficulty, in this experiment) as a cue in estimating the preparation time of the recipe.

Next, we tested the objective condition. In line with our hypothesis, there was no significant difference in the objective condition (M_{easy} = 32.77 min, SD = 14.29, $M_{difficult}$ = 27.77 min, SD = 15.54; $F(1, 115) < 1$, $d = -.334$).

Discussion

The results of Experiment 1 indicate that when participants were in a subjective state of mind, they based their judgments on the metacognitive experience of perceptual fluency to a greater extent than did participants in an objective state. We interpret this finding

[1] This text is a free translation from Hebrew. All the experiments in this study were run in Hebrew.

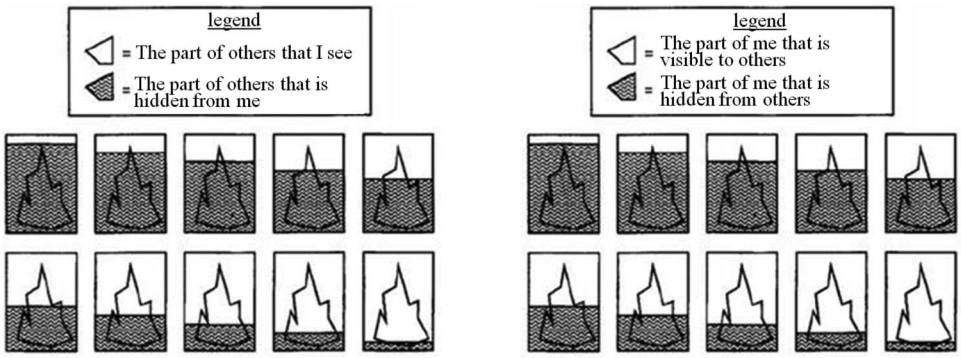

Figure 1. Iceberg diagrams in the subjective (left) and objective (right) conditions. Adapted from "You don't know me, but I know you: The illusion of asymmetric insight," by E. Pronin, J. Kruger, K. Savitsky, & L. Ross, 2001, *Journal of Personality and Social Psychology, 81*, pp. 639–656. Copyright 2018 by the American Psychological Association.

to mean that when a person is in a subjective state of mind, s/he attends to the information about the target, relying on her/his feelings as they unfold. Put differently, when people focus outside, on others, they attend to their inner feelings and consider them to be about what is in the focus of their attention. By contrast, when people consider themselves from the imagined perspective of others, they put less weight on internal cues that are not accessible to others, such as metacognitive feelings.

Experiment 2

Experiment 2 is intended to replicate and generalize the results of Experiment 1 to a different type of metacognitive feeling: ease of retrieving information from memory. Many studies indicate that people form judgments of the frequency, likelihood, and typicality of events on the basis of the ease with which exemplars are brought to mind. The ease-of-retrieval (EOR) paradigm, introduced by Schwarz et al. (1991), highlights two aspects of this phenomenon: the amount of retrieved information and the ease of retrieval. Research shows that the EOR effect can dominate the amount-of-knowledge effect, so that individuals ascribe lower levels of an attribute (e.g., assertiveness) to themselves after recalling many examples of situations in which they behaved in a manner that was consistent with the attribute (a recall that is experienced as difficult) as opposed to a few such examples (a recall that is experienced as easy; for reviews see Schwarz, 2004; Wänke, 2013). The EOR effect has been generalized to a wide array of judgments, such as perception of one's attitudes (Wänke, Bohner, & Jurkowitsch, 1997), judgments of memory (Winkielman, Schwarz, & Belli, 1998), and judgments of health (Rotliman & Schwarz, 1998; for reviews see Alter & Oppenheimer, 2009; Schwarz, 2004; Wänke, 2013).

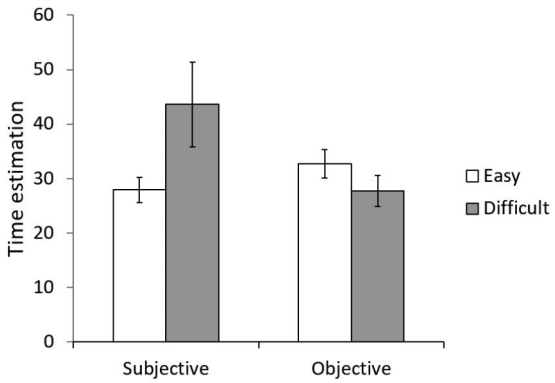

Figure 2. Mean time estimations (in minutes) and *SE* of recipe's preparation (Experiment 1).

Experiment 2 uses a paradigm described by Wänke, Schwarz, and Bless (1995) in which the ease or difficulty of generating words was found to affect ratings of one's verbal skills. In line with Experiment 1, we hypothesized that participants in a subjective state would base their self-judgments on their metacognitive experience more than participants in an objective state.

Experiment 2 differs from Experiment 1 in another respect. Experiment 1 compares judgments of participants who either underwent a manipulation of a subjective state of mind or an objective state of mind. Because the state of mind of each participant has been manipulated, we could not assess the baseline state of mind, namely, that of participants who did not undergo a mental-state manipulation. Hence, Experiment 2 includes a baseline condition with no subjective/objective state-of-mind manipulation. The results of the baseline condition can indicate whether the objective-state manipulation decreases reliance on metacognitive experience compared with the baseline, whether the subjective manipulation increases such reliance, or whether both effects occur.

Method

Participants. One hundred eighty students (46.3% women; mean age = 25.3, *SD* = 2.85) volunteered to answer a short questionnaire. Participants were randomly assigned to the six experimental conditions (30 participants in each condition). After completing the questionnaire, each participant was offered a cookie for his or her participation. Five questionnaires were not returned to the experimenter; therefore, the analysis is based on 175 questionnaires.

Procedure. An experimenter approached students who were sitting by themselves in the university's libraries and computer centers,

and asked whether they would be willing to participate in a short study. Students who agreed received one of the six versions of the questionnaire and were left alone for a few minutes to answer it. The versions of the questionnaires varied in the state-of-mind manipulation (subjective, objective, or baseline) and in the fluency manipulation (high or low fluency). The order of the questionnaires in the pile was randomized in advance, and all the versions had the same cover page, so that the experimenter would not know the condition of the questionnaire handed to each participant.

The state-of-mind manipulation was identical to that in Experiment 1: using the iceberg diagrams, participants rated either how visible others were to them (subjective condition), or how visible they were to others (objective condition). The questionnaires of the participants in the baseline condition did not include the state-of-mind manipulation, and these participants' questionnaires started with the EOR task.

In the EOR task (based on the paradigm of Wänke et al., 1995, adapted to Hebrew by Yahalom & Schul, 2013), participants were asked to generate 12 words that either begin with a certain letter (easy task) or have that letter in the third position (difficult task). After listing the 12 words, on a separate page of the questionnaire, participants were asked to rate their verbal ability on an 8-point scale (1 = *low*, 8 = *high*) and to assess their skill in searching their Hebrew lexicon on an 8-point scale (1 = *low*, 8 = *high*). Lastly, participants assessed how long it took them to list the 12 requested words.

Results

Manipulation check: Retrieval time estimations. A two-way ANOVA (EOR [easy vs. difficult] × State of Mind [subjective/objective/baseline]) revealed an overall main effect of EOR; namely, participants in the easy condition estimated that they generated the requested words more quickly, compared with participants in the difficult condition (M_{easy} = 1.06 min, SD = 0.60, $M_{difficult}$ = 3.06 min, SD = 2.03; $F(1, 166) = 75.35$, $p < .001$, $\eta_p^2 = .312$). We found no main effect for the state-of-mind condition on the time estimations, $F(2, 166) < 1$, $\eta_p^2 = .001$, and no interaction, $F(2, 166) < 1$, $\eta_p^2 = .002$.

DV: Self-judgment of verbal skills. Reliance on the metacognitive experience—the EOR effect—is estimated by the discrepancy between the evaluations of the verbal skills of the participants in the easy versus difficult-task conditions. In particular, if participants base their judgments on their metacognitive experience, the easy-generation task (word generation based on first letter) should lead to judgments of better verbal skills than would the difficult-generation task (generation based on third letter). Accordingly, our main hypothesis is concerned with an interaction effect of the subjective/objective state of mind regarding the EOR effect. We hypothesized that the EOR effect would be revealed in the subjective condition, and would be weaker or nonexistent in the objective condition. To examine our hypotheses, we averaged the two judgments the participants made concerning their verbal skills (r = .78) into a single index, and carried out a series of planned contrasts within the framework of a two-way between-participants ANOVA (EOR [easy vs. difficult] × State of Mind [subjective/objective/baseline]). Figure 3 presents the mean verbal-skills ratings of the participants in the different conditions.

Let us start by reporting the analyses involving the two manipulated states of mind. The analyses showed a significant interaction between the state of mind and metacognitive difficulty, $F(1, 164) = 4.64$, $p = .032$, $\eta_p^2 = .024$. A simple-effect contrast revealed that in the subjective condition, participants who had performed the easy task rated their verbal skills as significantly better than did those who had performed the difficult task (M_{easy} = 6.73, SD = 1.03, $M_{difficult}$ = 5.31, SD = 1.37; $F(1, 164) = 13.48$, $p < .001$, d = 1.14). Thus, as in past research, participants in the subjective state of mind used the EOR as a cue in rating their verbal abilities. However, as in Experiment 1, this EOR effect was diminished in the objective state of mind (M_{easy} = 5.83, SD = 1.37, $M_{difficult}$ = 5.60, SD = 1.91; $F(1, 164) < 1$, d = .154).

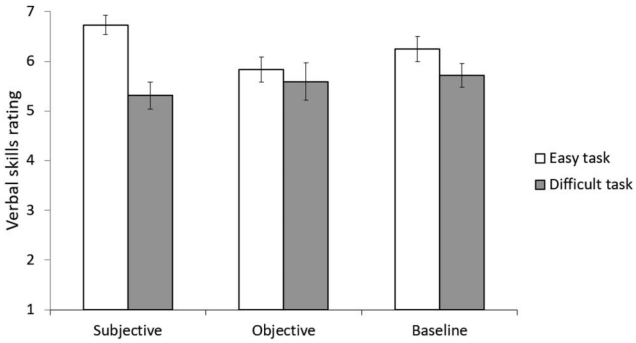

Figure 3. Mean ratings and *SE* of verbal skills (Experiment 2). Verbal skills were rated on 8-point scales (1 = *low*, 8 = *high*).

Earlier we discussed two potential ways in which baseline participants might approach the experimental task: either as an observer who reacts to the environment or as someone who is being monitored and observed. In the former case we expected a fluency effect similar to that revealed by the participants in the subjective state of mind; in the latter we expected a weak effect similar to that of participants in an objective state of mind. In fact, the participants in the baseline condition showed no statistical evidence of a fluency effect (M_{easy} = 6.25, SD = 1.37, $M_{difficult}$ = 5.71, SD = 1.38; $F(1, 164) = 2.24$, $p = .136$, d = .391). The pattern of the EOR effect in the baseline condition was similar to that in the objective condition, as indicated by a nonsignificant interaction, $F(1, 164) < 1$, $\eta_p^2 = .002$. However, we should be cautious in likening the baseline to the objective state of mind because there is no statistical support for the suggestion that the fluency effects differed in the subjective and baseline conditions, $F(1, 164) = 2.81$, $p = .096$. Therefore, in Experiment 3 we try to replicate this design.

Finally, we found no main effect for the state of mind, $F(1, 164) < 1$, $p = .457$, $\eta_p^2 = .009$, but a significant main effect due to the EOR condition, $F(1, 164) = 11.01$, $p = .001$, $\eta_p^2 = .062$.

Discussion

Experiment 2 replicated the main results of Experiment 1, and extended them to another type of metacognitive experience. That is, participants who were in a subjective state of mind relied on their EOR experience, whereas those in an objective state did not. Interestingly, we found that the participants in the baseline condition, whose state of mind was not manipulated, did not rely on processing fluency. As we think that correspondence between the objective and baseline conditions may be informative regarding

the state of mind of our participants when they engage in psychology experiments, we test it again in Experiment 3.

Experiment 3

Experiments 1 and 2 demonstrate that merely thinking about how *unspecified abstract* others see us affects our reliance on metacognition. Experiment 3 explores whether the effect of the objective state of mind can be generalized to a case in which we sense the gaze of specific others who evaluate us. To this end, in Experiment 3, we developed a manipulation that simulates situations in which we observe or feel observed by *specific others*.

Participants were shown pictures of four faces gazing directly at them. We asked participants in the subjective condition to look at these photographed people and choose one of them. By contrast, we asked participants in the objective condition to imagine that the photographed people were observing them to decide whether to choose them. We hypothesized that the effect of the subjective and objective states of mind triggered by concrete faces would be similar to the effect of the state of mind triggered by thinking about abstract others.

As in Experiment 2, Experiment 3 included a baseline condition in which the participants' state of mind was not manipulated. The baseline condition enabled us to test whether the correspondence found between the baseline condition and the objective condition in Experiment 2 replicated for a different manipulation of the objective state of mind and for different metacognitive feelings. To ensure that the null effect in the baseline condition in Experiment 2 was not the result of a lack of statistical power, we doubled the sample size in this experiment.

Method

Participants. Four hundred students (45% women; mean age = 25.16, SD = 3.28) volunteered to answer a short questionnaire without any compensation. Participants were randomly assigned to the six experimental conditions (66–67 participants in each condition). Nine participants did not complete the questionnaire and were therefore excluded from data analysis.

Procedure. One of two experimenters approached students who were sitting by themselves in the university's libraries and computer centers, and asked them whether they would be willing to participate in a short experiment. Students who agreed received one of the six versions of the questionnaire and were left alone for a few minutes to answer it. The different versions varied in the state-of-mind manipulation (subjective, objective, or baseline) and in the fluency manipulation (high or low fluency). The order of the questionnaires in the pile was randomized in advance, and all the versions had the same cover page, so that the experimenters would not know the condition of the questionnaire handed to each participant.

The questionnaires were similar to those in Experiment 1, except for the state-of-mind manipulation. On the cover page, we thanked the participants for agreeing to participate in the study and ensured their anonymity. Next, on page 2, participants in the subjective and objective conditions underwent a state-of-mind manipulation. The questionnaire asked participants to imagine that they were about to take part in a competition in which each competing side was a two-person team. The participants were shown face pictures of four people (two men and two women; see examples in Figure 4). Participants in the subjective condition were asked to choose one of the four people in the photo as their partner for the competition. Participants in the objective condition were asked to guess which one of the four people would choose them as his or her partner for the competition. The questionnaires of the participants in the baseline condition did not include the state-of-mind manipulation, and these participants' questionnaires started with the perceptual-fluency task. The fluency task was identical to that in Experiment 1: Participants read a tiramisu recipe either in an easy-to-read handwriting or in a difficult-to-read handwriting, estimated its preparation time (number of minutes), and rated the reading difficulty of the handwriting (7-point scale). Finally, participants provided demographic information (age, gender, and mother tongue).

Results

Manipulation check: Reading difficulty. A two-way ANOVA (Reading Difficulty [easy vs. difficult] × State of Mind [subjective/objective/baseline]) revealed an overall main effect of reading difficulty; namely, participants in the easy condition rated reading the recipe as easier than did participants in the difficult condition (M_{easy} = 1.59, SD = 1.00, $M_{difficult}$ = 3.67, SD = 1.51; $F(1, 383) = 254.40$, $p < .001$, $\eta_p^2 = .40$). We found no effect of the state-of-mind condition, $F(2, 383) < 1$, $\eta_p^2 = .003$, and no interaction effect, $F(2, 383) < 1$, $\eta_p^2 = .002$.

DV: Time estimations. To examine our hypothesis, we carried out a series of planned contrasts within the framework of a two-way between-participants ANOVA (Reading Difficulty [easy vs. difficult] × State of Mind [subjective/objective/baseline]). Figure 5 presents the mean time estimations in the different conditions.

Let us start by reporting the analyses involving the two manipulated states of mind. In line with the results of Experiments 1 and 2, the effect of reading difficulty differed under the subjective and objective conditions, $F(1, 385) = 3.90$, $p = .049$, $\eta_p^2 = .010$.

Figure 4. Two of the four images that were presented in Experiment 3 (the other two images are not authorized for publication). Participants in the two experimental conditions were presented with pictures of four faces that were taken from the NimStim facial stimulus set (Tottenham et al., 2009, available via https://www.macbrain.org/resources.htm). Participants in the subjective condition were asked to choose one of the people in the photos as a partner for a task for two persons. Participants in the objective condition were asked to guess which one of the people in the photos would choose the participant as his or her partner for the task. See the online article for the color version of this figure.

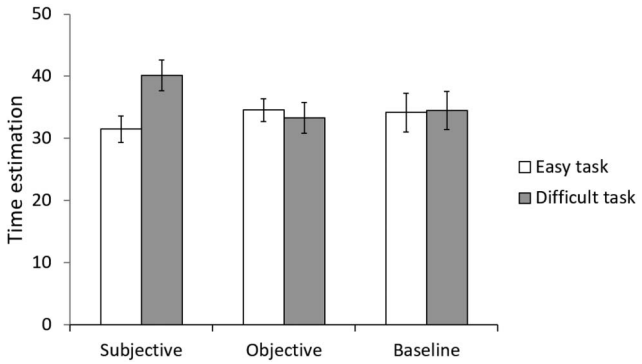

Figure 5. Mean time estimations (in minutes) and *SE* of recipe's preparation (Experiment 3).

Unpacking the interaction, we found a significant fluency effect in the subjective condition, such that participants who read the recipe in an easy-to-read handwriting estimated its preparation time as shorter than did those who read the recipe in a difficult-to-read handwriting ($M_{easy} = 31.50$ min, $SD = 16.73$, $M_{difficult} = 40.14$ min, $SD = 20.45$; $F(1, 385) = 5.71$, $p = .017$, $d = .459$). Thus, replicating previous findings, participants in the subjective condition used perceptual fluency as a cue in estimating the recipe's preparation time. However, as in Experiments 1 and 2, this effect disappeared in the objective condition ($M_{easy} = 34.58$ min, $SD = 15.49$, $M_{difficult} = 33.30$ min, $SD = 20.28$, $F(1, 385) < 1$, $d = -.071$).

As in Experiment 2, we did not find statistical evidence of a fluency effect in the baseline condition ($M_{easy} = 34.16$ min, $SD = 25.61$, $M_{difficult} = 34.50$ min, $SD = 22.73$; $F(1, 385) < 1$, $d = .014$). The pattern of the fluency effect in the baseline condition was similar to the pattern in the objective condition, and, in line with the findings of Experiment 2, there was no interaction between these two conditions, $F(1, 385) < 1$, $\eta_p^2 < .001$. Still, as in Experiment 2, we have no statistical evidence that the fluency effects in the subjective condition differed from that in the baseline conditions, $F(1, 385) = 2.58$, $p = .109$.

As in Experiments 1 and 2, we found no main effects for the state of mind, $F(2, 385) = 0.31$, $p = .734$, $\eta_p^2 = .002$; and, as in Experiment 1, which used a similar fluency paradigm, we found no main effect for the processing fluency, $F(1, 385) = 1.53$, $p = .216$, $\eta_p^2 = .004$.

Discussion

Experiment 3 replicates the main findings of Experiments 1 and 2, indicating that people base their judgments on metacognitive experience when they are in a subjective state, but not when they are in an objective state. Experiment 3 also replicates the findings of Experiment 2 and reveals that the pattern in the baseline condition, in which neither the subjective nor the objective states of mind were manipulated, resembles the pattern in the objective condition, suggesting that participants in the baseline condition were concerned with the way they were perceived by others even without the experimental manipulation. Experiments 5 and 6 investigate this phenomenon further.

Experiment 4

Experiments 1–3 indicated that an objective state of mind reduces the impact of metacognitive experience on judgment. This reduction can be brought about by two different mechanisms. One possibility is the weakening of the experience itself, namely, that people in an objective state feel weaker metacognitive cues that are associated with ease or difficulty compared with people in a subjective state. Another possibility is that the experience in the two conditions is similar, but that the *reliance* on the metacognitive feeling differs in the two states of mind. Of course, these mechanisms are not mutually exclusive. Experiment 4 investigates whether the two states of mind differ in their reliance on metacognitive experience when we control for the potential impact of the state of mind on the metacognitive experience.

Examining the manipulation checks used in Experiments 1–3 provides initial evidence for the claim that the subjective and objective states of mind did not affect the experience itself, but did affect reliance on the metacognitive experience. In all three experiments, we found that the metacognitive-experience manipulation influenced the direct measures (i.e., ratings of the ease/difficulty of the experience) without being affected by the state-of mind manipulation. This pattern is consistent with the suggestion that the subjective/objective manipulation has no impact on participants' experience of ease or difficulty of processing the information, but does affect their reliance on that experience in their judgments. However, the direct measures of the experience were based on participants' self-reports, which were collected after the dependent variables, and could be influenced by various factors other than the metacognitive experience itself, including inferences from the major dependent variables.

In Experiment 4, we directly explore whether the metacognitive feeling in the objective state is experienced but underutilized (effect on reliance) or not experienced at all (effect on experience), by varying the order of the state-of-mind (SOM) manipulation and the EOR tasks. In the SOM/EOR condition, the manipulations are presented in the same order as in Experiments 1–3 (i.e., state-of-mind manipulation before ease-of-retrieval manipulation). In the EOR/SOM condition, in contrast, the EOR manipulation appears before the SOM manipulation. If the state of mind affects the metacognitive *experience*, manipulating the metacognitive feeling before manipulating the state of mind (i.e., EOR/SOM condition) should diminish the influence of the state of mind on the metacognitive effect. However, if the state of mind affects the *reliance* on the metacognitive experience, the influence of the state of mind on the metacognitive effect should be preserved in the EOR/SOM condition, that is, even when the state of mind is manipulated following the metacognitive experience.

Method

Participants. Four hundred students (50% women; mean age = 25.3, $SD = 3.57$) participated in the experiment in exchange for 5 NIS (approx. US$1.25). Participants were randomly assigned to the eight experimental conditions (50 participants in each condition). Ten participants did not complete the questionnaire and were therefore excluded from data analysis.

Procedure. An experimenter approached students who were sitting by themselves in the university's libraries and computer centers, and asked them whether they would be willing to answer

a short questionnaire. Students who agreed received one of the eight versions of the questionnaire and were left alone for a few minutes to complete it. The eight versions of the questionnaire varied in (a) the state-of-mind (SOM) manipulation (subjective vs. objective), (b) the EOR task (easy vs. difficult), and (c) the order of the two manipulations (SOM/EOR vs. EOR/SOM). The order of the questionnaires in the pile was randomized in advance, and all the versions had the same cover page, so that the experimenter would not know the condition of the questionnaire she handed to each participant.

The state-of-mind manipulation was identical to that in Experiment 3. Specifically, participants either chose a partner for a competition (subjective condition) or guessed who would choose them (objective condition). The EOR task was identical to that in Experiment 2; that is, participants generated 12 words that either begin with a certain letter (easy condition) or have that letter in the third position (difficult condition). After completing the two tasks, the participants rated their verbal ability on an 8-point scale (1 = *low*, 8 = *high*) and assessed their skill in searching their Hebrew lexicon on an 8-point scale (1 = *low*, 8 = *high*). At the end of the experiment the participants completed two manipulation checks. First, to test the fluency manipulation, participants were asked to assess the time it took them to list the 12 requested words. Second, to test the state-of-mind manipulation, the participants were asked "To what extent did the first/second task [this differed according to the order condition], that dealt with choosing a partner for the task, make you think about how you are perceived by others?" Participants were asked to respond using a 1–8 scale (1 = *not at all,* 8 = *very much*). Both manipulation checks appeared after the DVs were assessed and could not have contaminated them.

Results

Manipulation check: Time estimations. A three-way ANOVA (order [SOM/EOR vs. EOR/SOM] × EOR [easy vs. difficult] × SOM [subjective vs. objective]) revealed an overall main effect of ease of retrieval; namely, participants in the easy condition estimated that they were faster at generating the requested words compared with those in the difficult condition (M_{easy} = 1.33 min, SD = 0.96, $M_{difficult}$ = 3.38 min, SD = 2.42; $F(1, 380) = 120.85$, $p < .001$, $\eta_p^2 = .241$). Importantly, we found no main effect for the state-of-mind condition, $F(1, 380) < 1$, or for the order, $F(1, 380) = 1.88$, $p = .171$ on the time estimations, and no interaction (all interactions' Fs < 1.02).

Manipulation check: Thinking about how the self is perceived by others. A three-way ANOVA (order [SOM/EOR vs. EOR/SOM] × EOR [easy vs. difficult] × SOM [subjective vs. objective]) revealed an overall main effect of state of mind; namely, participants who were asked to choose their task partner answered that they thought about how they are perceived by others less than the participants who were asked to guess who would choose them ($M_{subjective}$ = 3.17, SD = 2.18, $M_{objective}$ = 4.57, SD = 2.17; $F(1, 381) = 40.16$, $p < .001$, $\eta_p^2 = .095$). Importantly, we found no main effect for the fluency condition, $F(1, 381) = 2.12$, $p = .146$, or for the order, $F(1, 381) = 1.78$, $p = .182$, and no interaction (all Fs < 1).

DV: Self-judgment of verbal skills. To examine our hypothesis, we averaged the two judgments the participants made concerning their verbal skills ($r = .80$) into a single index, and carried out a series of planned contrasts within the framework of a three-way ANOVA (order [SOM/EOR vs. EOR/SOM] × EOR [easy vs. difficult] × SOM [subjective vs. objective]). Figure 6 presents the mean ratings of verbal skills in the different conditions. The means suggest that the influence of the state-of-mind manipulation on the use of the metacognitive experience was similar in the two order conditions. The statistical analysis is consistent with this observation.

Overall, a significant interaction occurred between the state of mind and EOR, $F(1, 379) = 3.91$, $p = .048$, $\eta_p^2 = .010$, showing that the EOR effect was stronger in the subjective condition compared with the objective condition. Importantly, we found no evidence that this interaction pattern was different in the two orders, as indicated by a nonsignificant three-way interaction, $F(1, 379) = 1.46$, $p = .227$,$\eta_p^2 = .003$.

Unpacking these results, and in line with the results of Experiments 1–3, simple-effect contrasts revealed significant EOR effects in each of the two orders of the subjective condition, but the absence of a significant EOR effect in the two orders of the objective condition. Specifically, when the state of mind was manipulated first (i.e., SOM/EOR), the EOR effect was significant in the subjective condition (M_{easy} = 6.32, SD = 1.12, $M_{difficult}$ = 5.64, SD = 1.73; $F(1, 379) = 5.48$, $p = .019$, $d = .467$) but not in the objective condition (M_{easy} = 6.22, SD = 1.26, $M_{difficult}$ = 5.77, SD = 1.58; $F(1, 379) = 2.60$, $p = .107$, $d = .315$). When the EOR was manipulated first (i.e., EOR/SOM), the EOR effect was significant in the subjective condition (M_{easy} = 6.64, SD = .90, $M_{difficult}$ = 5.33, SD = 1.57, $F(1, 379) = 21.12$, $p < .001$, d = 1.025) but not in the objective condition (M_{easy} = 6.14, SD = 1.47, $M_{difficult}$ = 5.74, SD = 1.38; $F(1, 379) = 1.96$, $p = .162$, d = .278). The latter pattern is theoretically important because the metacognitive experience of EOR could not have been influenced by the state-of-mind manipulation, since the EOR experience was created prior to the state-of-mind manipulation. Hence, this pattern indicates that the state of mind (subjective vs. objective) influenced the reliance on the metacognitive experience, and not—or not only—the metacognitive experience itself.

Discussion

Experiment 4 replicates the main results of Experiments 1–3, namely, that the participants in the subjective state relied on their

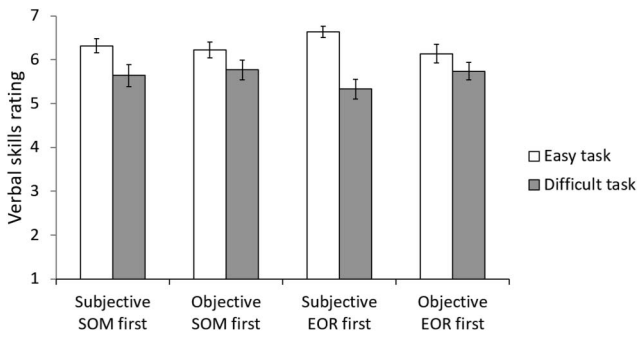

Figure 6. Mean ratings and *SE* of verbal skills (Experiment 4). SOM = state-of-mind manipulation (subjective vs. objective). EOR = ease-of-retrieval manipulation (easy vs. difficult). Verbal skills were rated on 8-point scales (1 = *low*, 8 = *high*).

metacognitive experience more than participants in the objective state. Importantly, Experiment 4 shows that this pattern holds even when the metacognitive feeling is manipulated before the state of mind, indicating that the state of mind affects *reliance* on the metacognitive experience, rather than affecting the metacognitive *experience* itself.

Experiment 5

Experiments 2 and 3 included a baseline condition in which we did not manipulate participants' state of mind. In both experiments we found that baseline participants were not sensitive to the metacognitive feelings of ease. We interpreted this cautiously as meaning that being in a study induces an objective state of mind. However, this interpretation must be too strong because the effect of metacognition on judgment was found in numerous experiments that did not manipulate a subjective state of mind. What may have led to this difference? Why were our baseline participants similar to those who felt observed? The Zeitgeist highlights the importance of minute details in the experimental situation that convey subtle cues to participants. In our case, the question is: Were there cues in the standard experimental situation that induced an objective state of mind?

To investigate this question, Experiments 5 and 6 contrasted two protocols of experimental settings within a lab setting: a *standard* protocol and an *anonymity* protocol. Because we thought that the standard protocol activated a state of mind that led to similar outcomes as the objective state of mind, we took special care in the *anonymity* protocol to emphasize to the participants their anonymity in order to weaken their feeling of being monitored and evaluated.

Method

Participants. Eighty students (60% women, mean age = 23.5, $SD = 2.12$) were assigned randomly to one of the four experimental conditions.[2] Each participant received 10 NIS (approx. US$2.50) or course credit for participation.

Experimental-protocol manipulation. Each participant completed the experiment individually in an experimental room in a laboratory of the psychology department. Upon arrival at the lab, each participant was asked to fill out a consent form stating that the participant was allowed to leave the experiment at any point and for any reason. Then, in the *standard-protocol* condition, the experimenter handed the questionnaire to the participant and asked him/her to enter the experimental room and complete it. The experimenter informed the participant that she would be waiting outside in case the participant had any questions. She then left the experimental room and closed the door behind her. In the *anonymity-protocol* condition, the experimenter handed the participants the questionnaire inside an envelope. The envelope and the questionnaire did not have any identifying details on them, except for the participant's number on the questionnaire. The experimenter then asked the participant to enter the room, complete the questionnaire, place it back inside the envelope, seal the envelope, and put it in a box (which contained many similar envelopes) outside the experimental room. As in the standard condition, the experimenter informed each participant that she would be waiting outside in case the participant had any questions, and then left the room and closed the door behind her. We used the same rooms and same questionnaires in both conditions, and the only difference between the standard and anonymity conditions was the emphasis in the anonymity protocol on the unidentifiability of the participants' responses.

The questionnaires included an EOR task, based on the assertiveness task developed by Schwarz et al. (1991) and adjusted to Hebrew by Yahalom and Schul (2013). Participants were asked to write down either a few (4) or many (10) past experiences in which they had behaved assertively,[3] to evaluate their assertiveness on an 8-point scale (1 = *low*, 8 = *high*), and to assess the effort the retrieval task required of them (1 = *low*, 8 = *high*).

Results

Seven participants were excluded from data analysis: five because they failed to write down four experiences in which they had behaved assertively, one because she did not follow the instructions, and one because she correctly identified the purpose of the EOR manipulation.

Manipulation check. A two-way ANOVA (EOR [4 vs. 10] × Protocol Condition [anonymity vs. standard]) revealed that participants who had to generate 10 cases of behaving assertively (the difficult condition, hereafter) reported that listing the assertive experiences was more difficult, compared with those who had to generate four cases of being assertive (the easy condition, hereafter; $M_{easy} = 4.22$, $SD = 1.54$, $M_{difficult} = 5.08$, $SD = 1.34$; $F(1, 69) = 6.49$, $p = .013$, $\eta_p^2 = .086$). We found no main effect for the protocol condition ($F(1, 69) < 1$, $p = .573$, $\eta_p^2 = .004$), and no significant interaction ($F(1, 69) = 2.97$, $p = .089$, $\eta_p^2 = .041$).

DV: Assertiveness ratings. To examine our hypothesis, we carried out a series of planned contrasts within the framework of a two-way between-participants ANOVA (EOR [4 vs. 10] × Protocol Condition [anonymity vs. standard]). Figure 7 presents the mean ratings in the different conditions.

Overall, a significant interaction occurred, indicating different patterns of reliance on EOR in the anonymity condition and the standard condition, $F(1, 69) = 4.41$, $p = .039$, $\eta^2 = .060$. We start by considering the EOR effect in the anonymity condition. In this condition, as Schwarz et al. (1991) found, participants who recalled a few cases in which they had behaved assertively rated themselves as more assertive, compared with participants who recalled many instances ($M_{easy} = 5.26$, $SD = 1.28$, $M_{difficult} = 4.44$, $SD = 1.62$; $F(1, 69) = 3.18$, $p = .039$, one-tailed, $d = .565$). Conversely, participants in the standard condition did not base their judgments on EOR; in fact, participants who recalled many instances rated themselves numerically as more assertive, compared with participants who retrieved a few instances ($M_{easy} = 5.00$, $SD = 1.28$, $M_{difficult} = 5.56$, $SD = 1.38$; $F(1, 69) = 1.42$, $p = .23$, $d = .413$).

[2] We aimed for 30 participants in each condition, but data collection stopped once participants no longer signed up for the experiment at the end of the academic year.

[3] The number of experiences is based on Yahalom and Schul's (2013) pretest on Israeli participants.

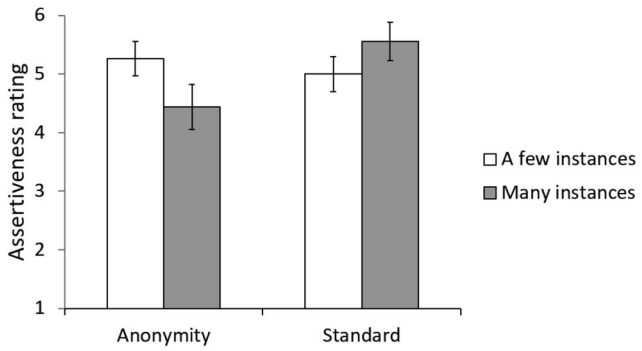

Figure 7. Mean assertiveness ratings and *SE* (Experiment 5).

Discussion

In Experiment 5, we found that participants who were run under an anonymity protocol showed the expected reliance on metacognitive experience, whereas participants who were run under the standard protocol, in which anonymity was not highlighted, failed to show an EOR effect. The standard protocol led to results that are similar to the baseline condition in Experiments 2 and 3. The anonymity protocol appears to have weakened the perception of being monitored. Thus, Experiment 5 is consistent with our earlier conjecture that our participants' default state of mind when being tested in an experiment is a feeling of being observed or evaluated, and thus, might be closer to an objective rather than a subjective state of mind.

Experiment 6

The results of Experiment 5 indicated that emphasizing the anonymity of participants increased their reliance on EOR when making judgments, compared with the standard laboratory setting. Experiment 6 replicates the design of Experiment 5 with a larger sample, using a different variant of the EOR manipulation, with an additional element in the anonymity manipulation, and with a manipulation check for the anonymity manipulation.

Method

Participants. One hundred twenty students (75% women, mean age = 23, *SD* = 2.19) participated in the experiment in exchange for 10 NIS (approx. US$2.50) or course credit. Each participant was randomly assigned to one of the four experimental conditions.

Experimental-protocol manipulation. In the *standard* condition, each participant entered the lab individually, and the experimenter asked whether s/he had registered for the experiment using the online registration system, looked at the list on the registration system, and additionally asked the participant, "Are you [Personal Name]?" When the participant confirmed, the experimenter handed the participant a consent form stating that participants were allowed to leave the experiment at any point and for any reason, and asked the participant to sign his or her name on it. Once the participant signed, the experimenter wrote down the participant's number on the top of the consent form and asked the participant to enter the experimental room and complete a four-page questionnaire, on which the experimenter wrote the same number. Participants in the *anonymity* protocol condition also arrived at the lab individually and were asked if they had registered through the online registration system, but unlike in the standard protocol, the experimenter did not mention their names and only checked that someone had indeed registered for that time slot. Next, instead of asking participants to sign their names on a consent form, the experimenter informed them verbally that they were allowed to leave the experiment at any point and for any reason. Then, the experimenter handed the participant an envelope that contained the questionnaire. The envelope and the questionnaire did not have any identifying details on them, except for the participant's number on the questionnaire. The experimenter instructed the participant to enter the room, complete the questionnaire, place the completed questionnaire back inside the envelope, seal it, and put it in a box containing many similar envelopes outside the experimental room. The experimenter explained to the participants that the purpose of this procedure was to ensure their anonymity.

The questionnaire contained an EOR task that was identical to the EOR task used in Experiments 2 and 4. Specifically, participants were asked to generate 12 words that either begin with a certain letter (easy task) or have that letter in the third position (difficult task). After completing the word-generation task, participants were asked to rate their word-generation skills and their skills in scanning their vocabulary, and to estimate how long they took to generate the words.

After the EOR task, participants completed the perceived-anonymity scale (Whelan & Thompson, 2009) as a measure of their subjective sense of anonymity. The six-item measure included statements such as "I feel certain that this survey is anonymous" and "It would be impossible to trace my responses to this survey back to me." Responses were made on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*), with higher values indicating a greater sense of anonymity.

Results

Manipulation check: Retrieval-time estimations. A two-way between-participants ANOVA (EOR [easy vs. difficult] × Protocol Condition [anonymity vs. standard]) revealed that participants in the difficult condition—relative to participants in the easy condition—estimated that they took longer to come up with 12 words ($M_{difficult}$ = 4.68 min, *SD* = 2.85, M_{easy} = 1.46 min, *SD* = .86; $F(1, 116) = 69.21$, $p < .001$, $\eta_p^2 = .374$). We found no statistical evidence for a main effect for the protocol condition or an interaction, both Fs < 1. Thus, we have no evidence that the encoding of the difficulty of the EOR task differs in the two protocol conditions.

Manipulation check: Responses to the anonymity questionnaire. A two-way between-participants ANOVA (EOR [easy vs. difficult] × Protocol Condition [anonymity vs. standard]) failed to show significant effects of the experimental manipulations on participants' responses to the anonymity questionnaire. Although participants in the anonymity condition indicated a numerically higher feeling of anonymity than did participants in the standard condition ($M_{anonymity}$ = 4.26, *SD* = .87, $M_{standard}$ = 4.05, *SD* = .73), this effect did not reach an acceptable level of significance, $F(1, 116) = 2.31$, $p = .131$, $\eta_p^2 = .020$. The main effect for the EOR condition was not

significant, $F(1, 116) = 1.15$, $p = .285$, $\eta_p^2 = .009$, and neither was the interaction, $F(1, 116) < 1$, $p = .343$, $\eta_p^2 = .007$.

DV: Verbal-skills ratings. We tested our hypothesis using a two-way between-participants ANOVA (EOR [easy vs. difficult] × Protocol Condition [anonymity vs. standard]). Figure 8 presents the mean average of verbal-skills ratings in the different conditions.

In this experiment, we did not find a significant interaction effect, $F(1, 116) = 1.966$, $p = .164$, $\eta_p^2 = .017$, although the pattern of results is similar to the patterns found in our previous experiments. As in Experiment 5, we found a significant EOR effect in the anonymity condition: Participants who completed the easy task rated their verbal skills as better compared with participants who completed the difficult task ($M_{easy} = 6.65$, $SD = 1.01$, $M_{difficult} = 5.36$, $SD = 1.82$; $F(1, 116) = 11.51$, $p < .001$). As in the previous experiments, this effect was much smaller—and statistically not significant—in the standard condition ($M_{easy} = 6.06$, $SD = 1.44$, $M_{difficult} = 5.53$, $SD = 1.46$; $F(1, 116) = 1.99$, $p = .161$).

Discussion

As in Experiment 5, we found a significant EOR effect in the condition in which participants were made to feel anonymous, but not in the standard laboratory setting. Still, because the interaction was not significant, we should be cautious in interpreting the findings as providing positive evidence of the additional impact of anonymity on the use of metacognitive feelings. To obtain a stronger test of the difference between the anonymity and standard conditions, we combined the two experiments after standardizing the dependent variable. We analyzed the combined data set, consisting of the z-transformed DV, in a three-way between-participants ANOVA (Experiment [5 vs. 6] × EOR [easy vs. difficult] × Protocol Condition [anonymity vs. standard]). The analysis revealed a highly significant EOR effect in the anonymity condition, $F(1, 185) = 12.23$, $p = .0006$, but not in the standard condition, $F(1, 185) < 1$, $p = .921$. The two patterns of means are significantly different from each other, as indicated by a significant two-way interaction between the protocol condition and EOR, $F(1, 185) = 6.41$, $p = .012$, $\eta_p^2 = .034$. The pattern was similar in the two experiments, as revealed by a nonsignificant three-way interaction, $F(1, 185) = 2.01$, $p = .141$, $\eta_p^2 = .031$. The combined analysis indicates that the standard procedure in our laboratory must have conveyed to our participants subtle cues that triggered a feeling of being observed and monitored. As a result, reliance on metacognitive feelings was weakened. Moreover, the findings further suggest that these cues can be weakened, because participants who were made to feel anonymous relied on the EOR experience more strongly while making self-judgments.

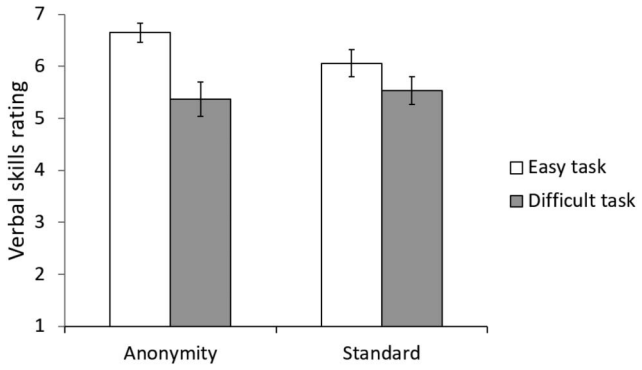

Figure 8. Mean verbal-skills ratings and *SE* (Experiment 6).

As a manipulation check, participants in Experiment 6 rated their perceived anonymity. Unexpectedly, the protocol manipulation did not influence these ratings significantly. One possibility is that the perceived-anonymity questionnaire might have tapped only part of the anonymity construct. We speculate that although the questionnaire is particularly sensitive to the perception of the identifiability of participants' responses, which did not differ significantly between the two conditions, it might not have tapped into other aspects of anonymity, such as whether the experimenter knew the participants' names, whether the whole experimental procedure was anonymous, and whether participants felt evaluated and observed. These aspects might have driven the influence of the experimental condition on the use of the EOR feeling. Another possibility is that our manipulation did not work in the predicted direction because participants' reasoning about anonymity could be influenced by two opposite interpretations. Recall that the participant's number was written on the consent form. Some participants may have remembered that their names were attached to the numbers, so the act of writing the number on the questionnaire triggered a reduced level of anonymity. For others, however, this same action may have communicated that their responses generally were anonymous, because the questionnaires were being kept separate from the consent forms.[4]

General Discussion

Our research indicates that when people are in a subjective state of mind, perceiving the world around them, they are more likely to experience their feelings as being about the world they are observing, and hence more likely to rely on these feelings as sources of information, than when they view themselves as the object of others' perception. In Experiments 1–4, we used two different manipulations for the states of mind, and two different fluency tasks: one that capitalizes on perceptual fluency, and one that capitalizes on the metacognitive experience of ease or difficulty. The results consistently indicated that people in a subjective state rely on their metacognitive experience more than people in an objective state do, with the latter tending to ignore their metacognitions as a relevant source of information. Experiment 4 further demonstrates that an objective state of mind does not lessen the metacognitive experience itself; rather, it affects the reliance on this experience as a relevant source of information. Specifically, the effect of the states of mind on the use of metacognitive feelings occurred also when the metacognitive feelings were created before the state of mind was instantiated.

The distinction between the subjective and objective states of mind is not merely technical; it describes an important variation that can prevail across situations and between different people in the same situation. This variation can come into play, for example, when people try to counter the objective state of mind in situations known to trigger it (e.g., job interviews or romantic dates) by attempting to be themselves or to "listen to their inner voice." We

[4] We thank an anonymous reviewer for this insightful suggestion.

shall return to this when we discuss other mental constructs that can trigger the two states of mind.

Combined Analysis

In each of Experiments 1–4, we found that participants in a subjective state based their judgments on the metacognitive feeling of fluency more than participants in an objective state did. We next report the results of a combined analysis of Experiments 1–4. The dependent variable was z-transformed in each experiment, and we then combined the data from the subjective and objective conditions into one data set. A three-way ANOVA (State of Mind × Fluency × Experiment) was performed on the combined data set. Figure 9 presents the mean fluency effects (i.e., the difference between mean judgments in the high- and low-fluency conditions, following standardization).

The analysis revealed a main effect of fluency, $F(1, 874) = 24.39$, $p < .0001$, $\eta_p^2 = .027$, which was qualified by an interaction between the state of mind and fluency, $F(1, 874) = 18.09$, $p < .0001$. Unpacking the interaction, we see a highly significant fluency effect in the subjective conditions, $F(1, 874) = 41.91$, $p < .0001$, 95% confidence limits: [.464, .819], but not in the objective conditions, $F(1, 874) < 1$, $p = .627$, 95% confidence limits: [−.152, .252]. Finally, we found no statistical evidence indicating that the specific experimental settings affected this pattern of results. None of the interactions involving the experiment were significant (for the triple interaction, $F(3, 874) < 1$, $p = .670$; for the interaction between the state of mind and experiment, $F(3, 874) = 1.09$, $p = .354$; and for the interaction between fluency and experiment, $F(3, 874) = 2.06$, $p = .10$). Thus, the same pattern of findings holds across the four experiments, indicating the reliability of the subjective/objective state-of-mind effect on reliance on metacognition in judgment (Tversky & Kahneman, 1973).

Triggering the Subjective and Objective States of Mind

An important question regarding the subjective and objective states of mind concerns how they are triggered. We suggested earlier that both states of mind may be induced independently of the external situation. Obviously, the immediate influencing factor that comes to mind is the actual presence of others who observe the protagonist. However, as our procedures demonstrate, the objective state of mind can be triggered without the actual presence of another person in the environment—for example, when one considers specific others or even abstract generalized others. Importantly, Experiments 5 and 6 demonstrate that a subjective state of mind, when one feels anonymous or unidentified, can be attained even in situations known to involve monitoring. Thus, although actually being observed and adopting an objective state of mind tend to co-occur, they do not necessarily depend on each other and therefore should be considered as two distinct theoretical constructs.

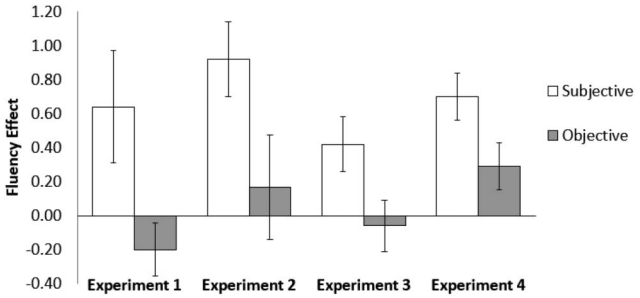

Figure 9. Note: Each bar represents the fluency effect—the difference between standardized self-assessment scores in high fluency and low fluency (Experiments 1–4). Error lines represent the standard error of the difference between the standardized self-assessment scores in high fluency and low fluency.

To illustrate, consider a job interview situation. At a first glance it seems that the interviewee is characterized by having an objective state of mind whereas the interviewer is characterized by having a subjective state of mind. But this is a matter of framing. Regardless of our position (as the interviewer or as the interviewee) we can focus on the impression we form of the others (subjective state) or on the impressions the others form of us (objective state). Similarly, a lecturer may either focus on the audience or on the way she imagines that the audience views her. Even the mere imaging of a social situation or its anticipation can lead to either an objective or a subjective state of mind. For example, when receiving an invitation to a high-school reunion, the invitee may focus either on the opportunity to see what his or her old-time friends have become during the years, or on how s/he would be perceived by them (Vinitzky-Seroussi, 1998). To sum up, the subjective/objective mental states are not triggered automatically by cues in the environment. Rather, their activation depends on a complex interplay between external forces in the environment and internal forces within the person. We return to this issue below in the section on Future Research.

There is another important element of a state of mind, namely, that it can influence reactions even in cases when the trigger of the state of mind is completely irrelevant to the current task. In our study we demonstrate effects of the state of mind on reliance on metacognitive feelings even though the task in which metacognitive feelings were (or were not) used was unrelated to the manipulation of the state of mind. The effects occur because the objective state is associated with a processing style different from that triggered by the subjective state. The conceptual separation of the objective state from the presence of observers, therefore, is important because it allows for a conceptualization of the effect of the objective state of mind that is independent of specific others and their actual presence, as for example a possible chronic individual difference in the dominance of the subjective versus objective states of mind (e.g., Fenigstein & Vanable, 1992).

Another key factor that might affect the prevalence of the subjective or objective states of mind is culture. Cultural psychologists have focused attention on between-society differences in the likelihood of considering the self from outside, through the eyes of others (Oyserman, 1993; Oyserman, Elmore, & Smith, 2012; Triandis, 1989). For example, in general, East Asian cultures have been described as different from Western cultures in their phenomenological perspectives on the self (Cohen & Gunz, 2002). Typically, Asians have been described as more likely than Westerners to experience the self from the perspective of the generalized other, whereas Westerners have been described as more likely than Asians to think of themselves from an insider's perspective (Cohen & Gunz, 2002; Kitayama, 2000).

This leads naturally to the hypothesis that all else being equal, Westerners tend to be in a subjective state of mind, whereas East

Asians tend to be in an objective state, focusing on themselves as the object of social observation. Accordingly, one might expect to find a greater reliance on metacognitive experience in judgment among Westerners than among East Asians. It is, therefore, tempting to speculate that cultural differences explain why we did not find a fluency effect among Israeli participants in the baseline conditions of Experiments 2 and 3, whereas numerous studies found fluency effects among Americans and West Europeans without inducing a subjective state of mind. However, social-identity researchers demonstrate that the tendency to adopt subjective versus objective states of mind is not determined by culture but rather is influenced by context (Brewer, 1991; Hogg, 2003; Oyserman et al., 2012), and therefore more research is needed to elucidate the interplay between culture and context in determining the reliance on metacognitive feelings.

The possibility that the default state of mind of participants in experiments in some cultures is an objective state may have important implications for the way we interpret our findings.[5] There are many psychological phenomena for which such a default state may not be relevant, because they involve reactions that do not depend on inner feelings. However, a host of phenomena (e.g., Alter & Oppenheimer, 2009; Schwarz, 2015, for variety of effects that are driven by fluency) might be sensitive to subjective/objective states of mind. Thus, our findings highlight the importance of creating experimental settings in which the participants are immersed in the experimental situation. People have a unique capacity to respond to an imaginary world, and often events or actions that are known to be false generate a real emotional response (Holmes & Mathews, 2005). Social psychological research often seeks to generate such reactions. We speculate that whenever the immersion into the imaginary experience is prevented by the experimental setting, the research paradigm might miss the opportunity to investigate its intended phenomenon that is about inner feelings.

Underlying Mechanism

Our interpretation of the findings rests on the postulate that people in an objective state of mind view themselves differently than people in a subjective state. In particular, a major challenge of a person who is being observed is to understand how s/he is seen by the other. Such concern becomes generalized over many instances of being observed into a processing style of prioritizing appearances. As a result, when the objective mental state is triggered, the default processing style involves increased sensitivity to appearances and decreased sensitivity to internal cues such as cognitive feelings. Thus, under an objective state of mind, protagonists tend to view themselves from the imagined perspective of those who observe them.

Support for our conjecture comes from past research that investigated the influence of monitoring. Hass (1984), for example, asked participants to write the letter "E" on their forehead, either when a video camera was directed at them or while it was disconnected and pointed away from them. Participants in the videotaped condition were significantly more likely to write the "E" from the perspective of an observer in front of them ("Ǝ"), compared with the participants in the no-videotape condition. Likewise, Wiekens (2009) asked participants to imagine themselves in a job interview, either as a member of a selection committee or as an applicant. Wiekens found that participants who thought they were evaluating others tended to imagine the situation through their own eyes, whereas participants who thought they were being evaluated tended to adopt an external perspective of themselves.

Wicklund and Duval (1971) found that participants who wrote a counterattitudinal essay in front of an operating TV camera changed their attitudes in the direction of the essay more than participants who wrote a counterattitudinal essay without a camera (see also Scheier & Carver, 1980). That is, when being monitored, the external, visible information—the essay content—received more weight than the internal information—the initial attitude. In a recent study, Steinmetz, Xu, Fishbach, and Zhang (2016) found that participants who were observed by an experimenter or by a video camera while they were eating recalled eating a larger portion than participants who were not observed, and that participants who felt observed during a lab task believed they gave either more correct or incorrect answers during the task. However, inactions were not magnified: Participants who felt observed believed that they solved more task problems, but not that they skipped more problems. Steinmetz et al. interpreted these findings to mean that when people feel observed, they add the audience's perspective to their own perspective, which fundamentally alters the subjective magnitude of one's actions.

Our study complements prior research by asking how the subjective versus objective states of mind affect reliance on covert, internal information, and by dissociating the state of mind from the actual presence of relevant observers. Our findings show that an objective state of mind reduced the influence of information that is not available from the audience's perspective on judgment. Notwithstanding, there are alternative theoretical perspectives of our findings, and below we discuss three of them.

Perspective taking. A rich literature compares between mental imagery from first- and third-person perspectives (Kross & Ayduk, 2008; Libby, Eibach, & Gilovich, 2005; Nigro & Neisser, 1983). At times people visualize an event from a first-person perspective, using the vantage point they would have if they were actually experiencing the event. Other times, people visualize an event from a third-person perspective, using an observer's vantage point so that they see themselves as an object in the scene. Most people experience images from both perspectives and can shift perspective at will (Libby & Eibach, 2011; Nigro & Neisser, 1983; Robinson & Swanson, 1993). According to Libby and Eibach's (2011) model, when people picture an event from the first-person perspective, they define that event in terms of the experience evoked by concrete features of the situation; when people picture an event from the third-person perspective, they define that event in relation to its broader context. Thus, the theory proposes that when people picture an event from a third-person perspective, their reactions should reflect a stronger influence of the general theories and beliefs that define the conceptual self, compared with when they picture the event from a first-person perspective.

At first glance, the distinction between the two perspectives resembles the distinction between the subjective and objective states of mind, offering a plausible explanation for our findings: In the case of self-judgments, the two-perspectives theory should predict that people in a subjective state of mind would construe the

[5] This adds, of course, to other effects of participating in a laboratory experiment (Langer, 1978; Rosenthal, 1964, 1994).

situation from a first-person perspective and thus will rely on their phenomenological experience, which should lead to increased reliance on experienced ease or difficulty during the experimental task. People in an objective state would perceive the situation from a third-person perspective, which will lead them to base their judgments on their general self-schema (e.g., on their general perception of their assertiveness or verbal abilities).

However, there is an important difference between the two theoretical frameworks that should be taken into account: Whereas we consider the objective state of mind as a case in which the protagonist perceives him/herself from the imagined perspective of another person, the third-person perspective is akin to self observing the self (Libby, Valenti, Hines, & Eibach, 2014). In some situations (which were not tested in the current research) the two theories may generate different predictions, which will enable differentiation between the possible mechanisms—for example, in a scenario where the general theory of the self is not available from the external perspective of the observer, whereas the concrete features of the situation are. In this case the two theories would generate opposite predictions, and such research would enable us to better specify the underlying mechanisms.

Construal level. One might also argue that the subjective and objective states of mind differ in terms of their level of construal of the situation. Interestingly, the subjective/objective variation may be construed in two different ways. On the one hand, one might suggest that when people are in an objective state, they focus on the self from a more distanced perspective (Kross et al., 2014; Trope & Liberman, 2010). Consequently, the objective state may lead to a higher (more abstract) level of construal compared with the subjective state. On the other hand, focusing on oneself—even from an external perspective—might lead to a lower (more concrete) level of construal compared with focusing outside (as is the case in the subjective state). Moreover, we note that the experimental evidence about the influence of high-level construal on the sensitivity to feelings is contradictory. Critcher and Ferguson (2011) found that an abstract mindset induces more sensitivity to affect, whereas Tsai and McGill (2011) found high sensitivity to metacognitive feelings of fluency in a low but not in a high level of construal. Therefore, future research should delve more deeply into the links between subjective and objective states of mind, psychological distance, and reliance on metacognition.

Judging ourselves and judging others. A large body of research demonstrates that we often judge ourselves in a different way than we judge others. Specifically, we tend to perceive ourselves via introspection (looking inward to thoughts, feelings, and intentions) and others via extrospection (looking outward to observable behavior; Pronin, 2008, 2009). Using the terminology of our study, we judge others based on what we see, but ourselves based on what we think and feel. Several studies that tested reliance on metacognition in judgment of self and others found that whereas people tend to base self-judgments on metacognitive feelings, they do not tend to take into consideration metacognitive feelings when making inferences about others (Caruso, 2008; see also Experiment 4 in Briñol & Petty, 2003).

Our findings indicate that sometimes self-judgments might be similar to judgments of others with respect to reliance on metacognitive feelings. Pronin, Olivola, and Kennedy (2008) suggest additional conditions that lead to self-other similarity; they show that when people think of themselves from a distant temporal perspective (i.e., their future selves), they are less attentive to their subjective experience. We believe that future research is needed to determine whether this similarity is based on the same mechanism or on coincidence of different mechanisms.

Related Phenomena

The variation between the subjective and objective states of mind might explain a diverse set of factors previously found to influence reliance on metacognition in judgment (for a review, see Greifeneder et al., 2011). For example, Yahalom and Schul (2013) proposed that concerns about other people's involvement in a situation might interfere with one's reliance on metacognitive feelings when making judgments. However, because concern about others' involvement is often triggered when others observe the protagonist, it is possible that the objective state of mind leads to this effect.

The objective state of mind may provide additional insight into the effect of power on the reliance on metacognition. Weick and Guinote (2008) proposed that participants who are primed to feel powerful rely on metacognitive experience more than powerless participants. Being powerless in the presence of powerful others is likely to induce a feeling of being observed (Argyle & Williams, 1969), triggering an objective state of mind. Consequently, powerlessness can lead to adopting an external perspective on the self (Galinsky, Magee, Inesi, & Gruenfeld, 2006). Accordingly, the differences between the subjective and objective states of mind might mediate the impact of power on the reliance on metacognitive experience.

In a similar vein, Fredrickson and Roberts (1997) proposed the self-objectification theory, arguing that because women daily confront images of how they should look and learn that they will be judged by their appearance, they are more likely to shift from a state in which they see everything through their own eyes to a state in which they imagine themselves from the other's perspective (Wiekens, 2009). This shift of perspective may lead women to be less attuned to themselves in social situations. As a result, when they are in a social context, women might rely less on their subjective experience, intuitions, and internal information and might be more likely to make judgments and decisions that are in line with social expectations. In the present study, we did not find a difference between men and women in terms of reliance on the metacognitive experience. However, this finding might be attributable to the fact that our state-of-mind manipulations and the standard experimental setting we used induced perception of the self as an object among men and women alike, and therefore masked gender differences.

The objective state of mind might also be triggered by feeling tokenized—being unique in a salient aspect in a group. To illustrate, being the only woman in a meeting, the only Hispanic in a class, or the only homosexual player on a soccer team might intensify the sense of social scrutiny (Cioffi, 2000). According to Cioffi, feeling like a social token often pressures one to act in a certain way while simultaneously affecting the linkage between how one acts and what one believes (see also Karouji & Kusumi, 2015). Our findings suggest that, in addition to other effects, people who feel tokenized might discount the relevance of their internal information and prefer other sources of information, such as public opinion. In other words, the present research suggests

that the contrast between the subjective and objective states of mind may be part of the effects found regarding metacognition of social concern and power. Future research may wish to differentiate the specific contribution of each of these factors.

Areas of Future Research

Who is the observer? The current research provides evidence that an objective state of mind may affect the way people utilize metacognitive feelings in making judgments. Our experiments used either general others or complete strangers to induce an objective state of mind. It would be interesting to test the influence of thinking about oneself from the imagined perspective of observers with different degrees of proximity to the participants. Buss (1980) claimed that public self-awareness rarely occurs when one is with close friends, family, or lovers. We therefore speculate that adopting the perspective of observers who are closer to the individual and are expected by him/her to share or try to simulate his or her mental state might have a different influence on his or her judgment, but this awaits further investigation. It would also be interesting to test how the attitude toward the observer affects the influence of feeling observed on judgment—for example, does feeling observed by someone whom we like differ from feeling observed by someone whom we dislike? (see Experiment 3 in Kitayama et al., 2004).

Who is feeling observed? The influence of the objective state of mind is likely to differ as a function of individual characteristics. Two notable personality traits that were found to have a significant role in moderating response to social presence are neuroticism and impression management (Uziel & Baumeister, 2012). Specifically, whereas presence in a public social setting tends to deplete self-control resources and impair performance of neurotic individuals (Uziel, 2016), it was found to lead to a restoration of self-control resources of those high in impression management (Uziel, 2010). Other characteristics which might interact with the objective state of mind are public self-consciousness—the dispositional tendency to focus on the self as an object of social perception (Fenigstein et al., 1975; Fenigstein & Vanable, 1992; Govern & Marsch, 2001), extraversion/introversion (Eysenck, 1963; Jung, 1921), as well as demographic characteristics found to be related to the feeling of being observed, such as gender (Argyle & Williams, 1969), age (Monteleone, van Bavel, Rodríguez-Priego, & Esposito, 2015), and culture (as discussed above).

The state of private self-awareness. The objective state of mind occurs when a protagonist focuses on the self from the imagined perspective of the other. The subjective state of mind occurs when a protagonist examines and evaluates objects in the environment. What happens when the protagonist focuses on the self from the perspective of the self? In the Introduction we discussed the construct of *private self-awareness*, a state in which one is attuned to his or her internal cues, thoughts, and feelings. This state of mind is often triggered by the presence of a small mirror in which the person can see his or her face, but also by meditation, daydreaming, introspection, and writing in a diary (Buss, 1980). How would a state of private self-awareness affect reliance on metacognitive information? The theory assumes that private self-awareness makes internal information clearer, and there is some evidence to support this suggestion. For example, studies on the placebo effect (Gibbons, Carver, Scheier, & Hormuth, 1979; Gibbons & Gaeddert, 1984) indicate that participants who faced a mirror showed weaker placebo effects than control participants did. These participants behaved as if the external cues (the presence of a drug and the information regarding its potential influences) were underweighted relative to the internal cues (their bodily feelings). Future research should compare in a unified design between the influence of private self-awareness and that of an objective state of mind with respect to reliance on internal information in judgment. It would be highly interesting, both for theory and for practice, to specifically test the effect of the objective state of mind regarding the placebo effect.

Concluding Remarks

Recent technological advances may have significant effects on the prevalence of the subjective and objective states of mind. On the one hand, technological advances are making it easier than ever before to act and communicate with others while feeling completely anonymous, and some virtual realities enable immersion in fictional experiences without any awareness of one's external appearance. On the other hand, in the modern world we feel more observed than ever before: There are more surveillance cameras in streets and buildings, and video cameras are installed in most laptops and smartphones (Macdonald, 2016). Furthermore, we often choose to expose ourselves to public observation: Online blogs are replacing personal diaries, and tens of millions of self-portraits are uploaded each year to social networks such as Facebook, Instagram, Snapchat, and Tumblr (Winter, 2014). Even as customers in business transactions (e.g., while renting an apartment on AirBNB), we are no longer only in the position of rating the supplier—we are also being ranked and evaluated ourselves. Our research indicates that feeling anonymous and unidentifiable, compared with observed and evaluated, influences the way we process information and make judgments: Feeling like objects of observation makes us less attuned to our internal cues. Importantly, our conclusion is not judgmental—reliance on feelings might increase or decrease the quality of judgment (Pham, Lee, & Stephen, 2012). Similarly, in some situations, tuning into internal cues is better than obeying social norms, but in other social situations, behaving according to social standards benefits both the individual and society. That is, reliance on metacognition might help in situations where the metacognitive experience simplifies processing information and benefits judgments; but in other cases, when gut feelings bias judgment, discounting the relevance of metacognitive experience for judgment might prevent mistakes in judgment and decisions (Schwarz, 2015). Nevertheless, the present research offers a warning: Although the self is our perceived reflection in other people's eyes, it may be only a partial self, because it leads us astray from our inner experiences.

Context

This is the age of the selfie: People often see themselves as others see them. Do people cognize differently when they focus on themselves from the perspective of others? This century-old question is investigated from a novel perspective in the present work. We study the use of metacognitive feelings when people observe the world and when they feel observed. Earlier research by one of us (Yahalom & Schul, 2013) demonstrated that thinking about others' motives regarding one's self reduces one's reliance on inner cues. However, this research, as well as other studies in the field, confounded the objective state of mind with other variables, such as the involvement of others

in the situation. Our aim in the current study was to test the mere effect of the subjective/objective state of mind on reliance on metacognitive feelings. Somewhat paradoxically, we find that in a subjective state of mind (looking out on the world from within), individuals are attuned to their feelings. By contrast, in an objective state of mind (looking at oneself from "outside"), individuals behave as if they were considering information that is available to external observers and, accordingly, discount their metacognitive feelings. Finally, our results indicate that our standard lab procedure induces an objective state of mind, leading to a diminished metacognitive effect. We believe this recognition may have profound implications for human behavior research.

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(*Appendix follows*)

Appendix

Bayesian Analysis of Our Main Findings

The Appendix describes the computation of Bayes factors (BF) referring to our main analyses. The Bayes factors compare the likelihood that the data are consistent with the alternative hypothesis relative to the null hypothesis (e.g., Dienes, 2014). BF $>$ 3 is considered as good evidence for H1 over H0; BF $<$ 0.33 is considered as good evidence supporting H0 over H1; BF values around 1 are uninformative with respect to the superiority of H1 over H0.

To compute the BFs, we utilized the Dienes calculator (Dienes, 2014). We compared a null hypothesis (i.e., parameter = 0) to a set of alternative hypotheses that were specified as a theoretical distribution. The distribution of priors for each of the paradigms was assumed to be half normal, with a standard deviation that was equal to the effect found in the experiment that was the basis for the paradigm we use.

Specifically, in Experiments 1 and 3 we used the recipe paradigm from Song and Schwarz (2008, Experiment 2). Therefore, we assumed the *SD* of priors to be the mean difference between the time estimations of participants in the fluent and disfluent conditions, as in the original experiment by Song and Schwarz (i.e., 13.44). In Experiments 2, 4, and 6 we used an EOR task reported in Wänke et al. (1995), and adapted to Hebrew by Yahalom and Schul (2013, Experiment 4). Therefore, we assumed the *SD* of the priors to be the difference between the verbal-skills ratings of participants in the easy and difficult conditions in Yahalom and Schul's Experiment 4, namely, 0.68. In Experiment 5 we used the assertiveness task developed by Schwarz et al. (1991) and adapted to Hebrew by Yahalom and Schul (2013, Experiment 1). Therefore, we computed the *SD* based on the difference between the assertiveness ratings of participants in the easy and difficult conditions in Yahalom & Schul's Experiment 1, namely, 0.91.

BF Tests for the Fluency Effect in the Subjective and the Objective Conditions, and for the Difference Between the Two Conditions (i.e., the Interaction)

Experiment	Condition	Actual fluency effect	Actual *SE*	*SD* of priors	BF
1	Subjective	15.69	6.29	13.44	10.75
1	Objective	−5.00	−6.25	13.44	.84
1	Interaction	20.69	8.85	13.44	7.21
2	Subjective	1.42	.39	.68	145.78
2	Objective	.23	.38	.68	.79
2	Interaction	1.19	.55	.68	4.94
3	Subjective	8.64	3.62	13.44	7.32
3	Objective	−1.28	−3.55	13.44	.20
3	Interaction	9.92	5.02	13.44	3.76
4	Subjective – SOM/EOR	.68	.29	.68	7.91
4	Subjective – EOR/SOM	1.31	.29	.68	4,402.91
4	Objective – SOM/EOR	.45	.28	.68	2.14
4	Objective – EOR/SOM	.40	.29	.68	1.58
4	Interaction	.57	.11	.68	3.88
5	Anonymity	.82	.46	.91	3.02
5	Standard	−.56	−.47	.91	.23
5	Interaction	1.38	.66	.91	4.70
6	Anonymity	1.28	.38	.68	73.47
6	Standard	.53	.38	.68	1.82
6	Interaction	.75	.53	.68	1.99

Note. Actual effect refers to the estimate of the fluency effect based on our data. Actual *SE* refers to the standard error computed on the basis of our data. *SD* of priors is described in the text. BF $>$ 3 is considered as good evidence for H1 over H0; BF $<$ .33 is considered as good evidence supporting H0 over H1; BF values around 1 are uninformative with respect to the superiority of H1 over H0.

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