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# APPLYING EASE OF RETRIEVAL IN JUDGMENTS: THE ROLE OF CONTEXTUAL BACKGROUND

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The study examines the hypothesis that situational coherence moderates the ease-of-retrieval (EOR) effect. The findings reveal that participants rely more on ease of retrieval in making judgments when the situational background fits (rather than does not fit) the dimension of judgment (Experiments 1 and 2). The results further demonstrate that disrupting coherence by focusing participants on a stimulus they tend habitually to ignore also led to similar moderation of the EOR effect (Experiment 3). We conclude with a discussion of the potential moderators of the ease-of-retrieval effect. Our findings cannot be explained by distraction or misattribution—the moderators suggested by past research. Rather, our research emphasizes the importance of the perceived situational background to the understanding of the judgmental processes.

The ease-of-retrieval (EOR) effect refers to changes in judgments caused by metacognitive feelings that accompany retrieval of information. Much of the evidence for this phenomenon comes from research on the availability heuristic (Tversky & Kahneman, 1973) and the ingenious extension suggested by Schwarz, Bless, and colleagues (1991). It has been repeatedly shown that the feelings of retrieval ease can dominate the amount of knowledge so that individuals ascribe lower levels of an attribute (e.g., assertiveness) to themselves after recalling many examples of their own relevant behaviors (which is experienced as difficult) as opposed to few behaviors (which is experienced as easy; see Wänke, 2012, for a recent review).

The utilization of the feeling of ease in making judgments is by no means ubiquitous, and research projects in the last 15 years investigated many of the modera-

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tors (see Greifeneder, Bless, & Pham, 2011, for a review). People's reliance on the EOR in making judgments depends on their processing strategy (Schwarz, 1998), mood (e.g., Ruder & Bless, 2003), motivation (e.g., Aarts & Dijksterhuis, 1999), processing capacity (Greifeneder & Bless, 2007), and the personal relevance of the judgment (e.g., Grayson & Schwarz, 1999; Rothman & Schwarz, 1998).

The use of the EOR in making judgments is also influenced by its interpretation. Generally, if there is more than one way to explain the feelings of ease, people call the diagnostic value of the EOR feelings into question (see Schwarz, 1998 and 2004, for reviews), and the EOR consequently ceases to influence judgments. Such doubts are typically triggered when the EOR feeling is attributed to an external source (e.g., Haddock, Rothman, Reber & Schwarz, 1999; Ruder & Bless, 2003; Schwarz et al., 1991; Wänke, Schwarz & Bless, 1995; Winkielman, Schwarz, & Belli, 1998). However, the EOR experience might be discounted also when conspicuous alternative explanations spontaneously come to mind (Oppenheimer, 2004; Yahalom & Schul, 2013).

Our interest is in a third type of factors that moderates the use of the EOR experience in making judgments. Tybout, Sternthal, Malaviya, Bakamitsos, and Park (2005) explored the effect of familiarity and demonstrated that EOR influenced consumer judgments about familiar brands but not about unfamiliar ones. Raghubir and Menon (2005) showed that EOR had more influence on judgments about recent events than events in the remote past. Schwarz and Vaughn (2002) showed that self-judgments tended to be based on EOR when people were schematic rather than aschematic in the judgment domain. We propose that these studies share a common theme. Reliance on the EOR occurs when people are dealing with familiar information. The significance of the feeling of familiarity for the presence of EOR effect accords with the finding that people tend to apply their EOR feelings when they experience situational certainty as opposed to situational uncertainty (Müller, Greifeneder, Stahlberg, Van Den Bos, & Bless, 2010). Our study expands this line of research by exploring the role of the situational background on the utilization of EOR in judgments.

## CONTEXTUAL BACKGROUND AS A COGNITIVE TUNING DEVICE

The Cognitive Tuning model, proposed by Schwarz and Clore (2003, 2007), describes the cognitive system as tuned by internal and external signals that indicate the nature of the situation and its demands. According to the basic model, affective feelings play a crucial role in the tuning process by providing a quick indicator if the situation is "benign" or "problematic": Positive moods indicate benign situations and entail that one can use business-as-usual routines and in particular that one can employ shortcuts rather than pay attention to details. In contrast, negative moods indicate problems and entail that the situation may require change. As a result, people in negative mood shift to more detail-oriented processing (see review in Bless, Schwarz, & Kemmelmeier, 1996; Schwarz, 2012; Schwarz & Clore,

2003, 2007). In a direct test of the influence of positive/negative mood, Ruder and Bless (2003) found that happy mood increases the EOR effect (see also Greifeneder & Bless, 2007). Friedman and Forster (2000) extended the cognitive tuning model by showing that non-affective cues that signal whether the environment is benign can also be used to tune processing.

Our study explores the influence of a novel set of non-affective cues—the coherence between elements in the situation—on the use of EOR. We hypothesize that if the judgment task and the judgment context are coherent, decision makers can maintain the processing style which is reserved to secure environments; namely, they employ their usual cognitive routines and shortcuts. Accordingly, we hypothesize that when the judgment task and the environment cohere, the use of EOR in making judgment is likely. However, the reliance on shortcuts and cognitive cues as the EOR effect becomes less likely when the context is incoherent with the judgments.

Parenthetically, our hypothesis assumes that individuals monitor the coherence of the situation, including the fit between the task and the background context. Such an assumption is consistent with research showing that people continue to perceive the background even when they focus attention on a particular entity (Barsalou, 1993; Wu & Barsalou, 2009; Yeh & Barsalou, 2006). Perceivers' sensitivity to situational information is demonstrated by a vast line of research showing that performance is facilitated when a focal entity fits the background context (e.g., Biederman, 1972; Yeh & Barsalou, 2006; see also Smith & Semin, 2004). The contextual facilitation has been recently explained by Bar (2007, 2009) in terms of the cognitive system's continuous tendency to activate predictions that are used to guide our actions, plans, and thoughts in accordance of the given situations by pre-sensitizing relevant representations. This default process is accompanied by a complementary process which involves the evaluation of the fit between the current perception and the predictions: When the environment is perceived as coherent and stable, default associations and mental shortcuts are activated; however, when cognitive alertness is triggered (i.e., when unexpected and/or novel cues are present), alternative definitions for the given stimuli/situation are explored (Bar, 2007, 2009).

## THE PRESENT STUDY

The present study examines if the judgment/context level of coherence affects whether the cognitive heuristic which utilizes the ease of retrieval is applied. In two experiments reported below, we manipulate the level of fit between the judgmental context and dimension of judgment and compare the extent of reliance on the EOR in the different conditions. A third experiment is conducted as a conceptual replication.

The basic context of all three experiments was the psychology laboratory at the university. In accordance with the notion that a cognitive system's continu-

ous tendency is to activate predictions regarding situations (Bar, 2007, 2009), we conducted a pretest which was meant to explore participants' assumptions and predictions regarding tasks they might encounter in the psychology lab. Based on the pretest, we chose tasks that differed in participants' evaluation of plausibility in the psychology lab. Specifically, participants rated a task involving judgments of self characteristics (e.g., assertiveness) as highly plausible at the psychology lab, and hence this task was regarded as highly coherent with the default lab context; they rated a task involving ratings of music as less plausible, and hence the music-related judgments were deemed to have low coherence with the default lab context.

In Experiments 1 and 2, we modified the above-mentioned task/context coherence by changing the default lab context, that is, by the playing of background music in the lab. It was assumed that the presence of background music enhances the task/context coherence of a music task (relative to the absence of music); analogously, it was assumed that the presence of background music weakens the coherence of a self-judgment task (relative to the absence of music).

In Experiment 3, which was similarly conducted in the default lab context, diverse instructions regarding the processing of a mild auditory stimulus were applied as a means of manipulating situational (in)coherence. This experiment was conducted to explore the role of a person's stance towards elements in the context, regardless of its actual characteristics in determining judgmental processes.

In all three experiments, we hypothesized that people tend to rely on the EOR feelings to a greater extent when the task and the environment cohere (see below).

## EXPERIMENT 1

The situational context in Experiment 1 involved the presence (vs. absence) of background music in the psychology lab while the participants engaged in one of two variants of the EOR paradigm. Previous EOR research utilized music as way to call the diagnostic value of EOR into question. Participants in these studies received an experimenter-generated interpretation of the alleged impact of the music on the availability of information (e.g., Haddock et al., 1999; Schwarz et al., 1991). We were interested in the influence of music as a background context when it is not contaminated by the experimenter's suggestions. Hence, contrary to previous EOR experiments (e.g., Schwarz et al., 1991; Wänke et al., 1995), we did not provide such interpretation. We also did not provide any cover story regarding the topic of judgment, assuming that provision of a cover story may add a sense of situational coherence which we aimed to manipulate.

In the present study, we applied two types of judgmental tasks, which we assumed would make the presence/absence of music more/less fitting given the basic context of participating in a psychology experiment. Based on our pretest, we assumed that the default context of the lab would be experienced as more coherent with a task involving thinking and rating one's level of assertiveness than

with a task which concerns Israeli music.[1] We further assumed that the presence of background Israeli music (without justification) may undermine situational coherence in the case of the assertiveness-rating task and may enhance the situational coherence in the case of the Israeli music-related task. We therefore hypothesized that the presence of background music would enhance reliance on EOR in judgments involving music, because the music adds to the sense of judgment/context fit; however, music should undermine the influence of EOR in judgmental tasks that involve a self-assertiveness rating because in this case, music does not fit the judgment and may be experienced as odd, given the basic context of the psychology lab.

## METHOD

*Participants.* Eighty students (71 females) at the Hebrew University participated in Experiment 1 in return for partial credit toward course requirement.[2] Participants were run individually in a psychology lab at the university. They were randomly assigned to one of eight conditions of a 2 (Background music: presence vs. absence) x 2 (Judgment dimension: music effectiveness vs. self-assertiveness) x 2 (Number of items to be retrieved: 4 vs. 10) between-participants factorial design.

*Procedure.* Upon coming to the experiment, participants were told that the study concerns personal abilities that will be assessed in a series of tasks. The participants in the music-present condition were informed, "In this experiment, you will hear music." The experimenter pressed a computer key to play Israeli songs through loudspeakers.[3] The participants in the music-absent condition were told, "We shall now begin." All participants then received one of the four versions of the generation task. Half of the participants were given a music-related task. Specifically, they were given a questionnaire with a request on the first page to generate either 4 (assumed to create an experience of retrieval ease) or 10 (assumed to create an experience of retrieval difficulty) arguments in the favor of "using Israeli music as a didactic tool in Hebrew language lessons for foreign language speakers" (e.g., new immigrants). After they finished generating the 4/10 arguments, these participants turned to the second page where they were asked to rate the effectiveness of music as a didactic tool in Hebrew language lessons for foreign language speakers on an 8-point scale (the music-related judgment, hereafter). The other participants were given a trait self-rating task. Specifically, they were given

1. Participants' expectancies regarding the two recall tasks applied in the study were assessed in a pretest ($n = 50$). Participants were presented with the two tasks used in Experiment 1 and were asked to mark the task which they believed was more plausible in the laboratories of the psychology department. We found that 82% of the respondents marked the assertiveness task as more plausible than the music-effectiveness task ($\chi^2(1) = 20.48$, $p < .01$).

2. The sample size was determined in advance based on Schwarz and colleagues (1991, Experiments 1 and 3).

3. The content of the chosen songs (e.g., songs concerning a dog, a castle, migratory birds) was unrelated to the judgmental tasks.

a questionnaire with a request, on the first page, to list either 4 or 10 episodes in which they behaved assertively (Schwarz et al., 1991). On a second page, these participants were asked to rate their own assertiveness on an 8-point scale (the self-related judgment). Thus, participants who generated arguments for music as a didactic tool rated music effectiveness, and participants who generated episodes of assertiveness rated their own assertiveness.

After completing the thought-generation task, all participants filled out a post-experiment questionnaire on which they rated their difficulty in listing the requested items (1–7 scale). Participants in the music-present condition were also asked whether they felt the music interfered with their performance (yes/no). Finally, all participants were debriefed.

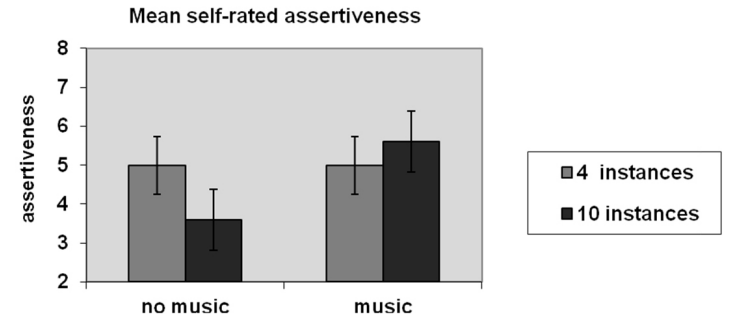
## RESULTS AND DISCUSSION

*Target Judgments: Assertiveness and Effectiveness Ratings.* In order to allow comparison between the two judgment scales (effectiveness of music as a didactic tool vs. self-assertiveness), ratings were standardized (within scale).

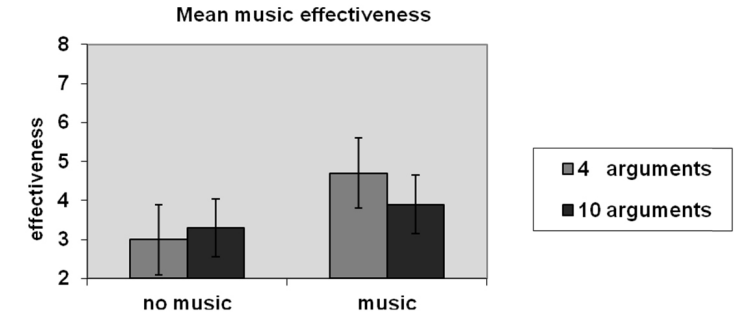
We start by testing whether the reliance on EOR differs between the two judgment conditions, given the basic context of the psychology lab (without background music). Analysis of participants' judgments in the default lab context (no music) reveal a pattern that corresponds to the original reasoning: a two way ANOVA [topic (music effectiveness vs. self-assertiveness) x number of items (4 vs. 10)]) indicated a significant interaction, $F(1,36) = 4.18$, $p < .05$. Specifically, simple effect analysis shows that in the default lab context conditions (when background music was absent), the EOR effect occurred only when the task concerned self-assertiveness, ($t(18) = 2.58$, $p < .05$, $d = 1.15$) but not when it concerned music effectiveness as a didactic tool ($t(18) = -.5$, $p = .62$, $d = .22$).

We continue with the main question: Does the background music influence the reliance on EOR in making judgments? We hypothesized that the presence of music (vs. absence) would moderate the EOR effect (i.e., the difference between retrieving 4 and 10 thoughts) in opposite ways in the two judgment dimensions. Specifically, hearing Israeli music may increase the sense of coherence between the task and the experimental settings when people make judgments of music effectiveness, but decrease the coherence when they make judgments of assertiveness. Consequently, in the former case, people would be more inclined to use the EOR relative to the latter case. In order to explore this hypothesis, we conducted a series of planned contrasts within a three-way [background music (present vs. absent) x topic (music effectiveness vs. self-assertiveness) x number of items (4 vs. 10)] between-participants ANOVA. The above-mentioned prediction was tested by the three-way interaction contrast, which was, in fact, statistically significant, $F(1,72) = 5.29$, $p < .05$, $\eta_p = .26$.[4] Figure 1 presents the raw judgment scores within each topic condition. Panel "a" indicates that participants who considered their own assertiveness relied on the EOR more when the background music was absent. In

4. The standard ANOVA for the interaction was $F(1,72) = 8.4$, $p < .005$.




Panel a




Panel b

**FIGURE 1.** Assertiveness and effectiveness ratings as a function of the context and number of requested thoughts (Experiment 1).
*Note*. The error bars indicate the within condition *SD*.

contrast, panel "b" indicates that participants who considered the effectiveness of music relied on the EOR more when the background music was present.

It should be noted that analysis within each topic condition revealed that although the pattern of interaction (number of thoughts x presence/absence of background music) within each of the topics agreed with the hypothesis, the two-way interaction contrast was significant in the case of judgments of assertiveness ($F(1,72) = 4.15$, $p < .05$) and not in the case of judgments of music-as-a-didactic tool ($F(1,72) = 1.47$, $p = 0.23$). This might reflect the greater sensitivity of participants to introduction of music than to its absence (Rozin, Fischler, & Shields-Argelès, 2009; see also Spranca, Minsk, & Baron, 1992).

## AUXILIARY ANALYSES

*Sense of Distraction.* Participants who heard music were asked whether they felt that the music had interfered with their performance while listing their thoughts and making their assertiveness or music-effectiveness judgments. Approximately 65% of the participants answered that the music did not interfere with their

thought-generation process. Importantly, neither the topic condition ($\chi^2(1) = .62$, $p = .43$) nor the number of requested thoughts (4 vs. 10) ($\chi^2(1) = .014$, $p = .71$) were related to participants' sense of distraction. This finding suggests that the differential impact of the music in the two topic conditions could not be explained in terms of attribution of retrieval difficulty to music distraction. We elaborate on this issue in the General Discussion section.[5]

*Difficulty Ratings.* After rating their own assertiveness or the effectiveness of music in language instruction, the participants rated the difficulty of the retrieval task. At a first glance, this might be considered a manipulation check. However, as Xu and Schwarz (2005) and Yahalom and Schul (2013) suggested, such interpretation is not warranted because the ease/difficulty of retrieval has already been interpreted when participants made their music-effectiveness or assertiveness judgments. For example, in the case of judgments of assertiveness, the ease/difficulty has been viewed as reflection of the amount of assertiveness, rather than as a reflection of the task. This implies that the pattern of difficulty ratings should not reflect the characteristics of the task (i.e., the 4 vs. 10 contrast), but rather it should correspond closely to the first judgment (i.e., assertiveness or music effectiveness rating). Indeed, a three-way ANOVA (music [present vs. absent], number of arguments [4 vs. 10], and judgment dimension [music effectiveness vs. self-assertiveness]) indicated that the only significant effect was the three-way interaction, $F(1,72) = 5.13$, $p < .05$, which was similar in pattern to the critical judgments seen in Figure 1. Moreover, the correlations between the two judgments (difficulty and assertiveness/music-effectiveness) were moderately high among participants who performed the assertiveness task [$r(38) = -0.54$, $p < .01$] and among those who rated the effectiveness of the music [$r(38) = -0.41$, $p < .01$]. These findings point to the potential limitations faced by those trying to interpret a second judgment about an ambiguous percept after an earlier judgment disambiguates the percept.

The results of Experiment 1 are consistent with our hypothesis that judgments are more likely to be influenced by the EOR when the background context is coherent with the dimension of judgment. In contrast, judgments are less likely to be influenced by the EOR when the background context is incoherent with the dimension of judgment.

## EXPERIMENT 2

Experiment 1 contrasted a particular self-judgment (i.e., assertiveness) with a particular judgment that does not involve the self (i.e., music effectiveness). The difference between the two judgments might be interpreted in two different ways. Our interpretation is based on a comparison between music-related and music-unrelated topics. However, the difference between the two judgments may indicate

5. The objective distraction of the background music was assessed by a pretest ($n = 120$). Pretest participants performed an arithmetic task with or without the background music used in Experiments 1 and 2. We found that the background music did not influence either the time needed to complete the task or the quality of performance. Specifically, in the music-absent condition, participants completed the task in about the same time as participants in the music-present condition (4.23 vs. 4,34, $t(118) = .3$, $p = .76$; $d = .05$). Similarly, the error rate was almost identical with and without background music (.05 vs.07, $t(118) = 1.54$, $p = .13$; $d = .28$).

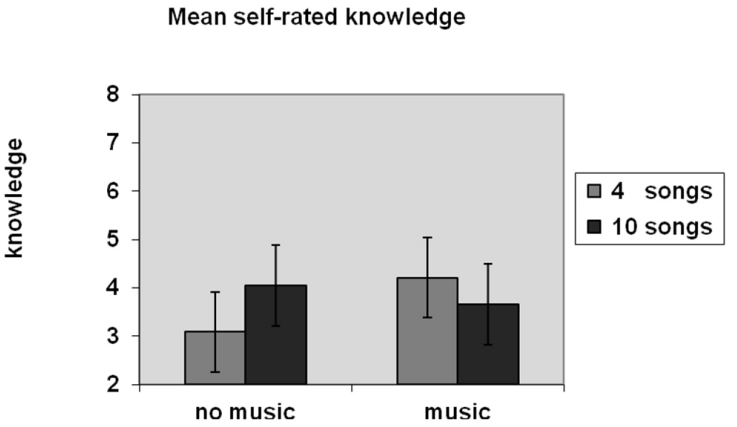



**FIGURE 2.** Self-rated knowledge as a function of the context and number of requested songs and their composers (Experiment 2).
*Note*. The error bars indicate the within condition *SD*.

a comparison between self-judgments and judgments involving something else. This later interpretation suggests that the presence of background music weakens reliance on EOR when people make self-judgments. In Experiment 2, we therefore focused on self-judgments about musical abilities.

Participants in Experiment 2 rated their own musical knowledge. Half of them did so in the presence of background music. The others did so without background music. As in the case of Experiment 1, it was assumed that given the default context of the psychology lab in which a musical task is perceived as less plausible, performing the task while hearing music may enhance task/context coherence. We hypothesized that the participants would base their musical self-judgment on EOR when the context was coherent with the judgment at hand. Therefore, we hypothesized that like in the case of the music condition in Experiment 1, participants would show a greater reliance on EOR in the presence, rather than absence, of background music in the psychology laboratory.

## METHOD

*Participants.* Eighty students at the Hebrew University (46 females) participated in the study.[6] The students were paid the equivalent of two US dollars to participate. Participants were run individually in a psychology lab at the university. They were randomly assigned to one of four experimental conditions of a 2 (Background music: presence vs. absence) x 2 (Number of items to be retrieved: 4 vs.10) between-participants factorial design.

*Procedure.* Experiment 2 was identical to Experiment 1 with two differences. The first involved the nature of the items participants had to retrieve from memory

6. Experiment 2 was run before a second, unrelated experiment. The sample size was determined in advance by the requirements of the second experiment. Accordingly, it is larger than the samples used in Experiments 1 and 3.

and the dimension of judgment. Participants were instructed, on the first page, to list either 4 (easy retrieval condition) or 10 (difficult retrieval condition) titles of Israeli songs and their composers. On the second page, they were asked to rate their knowledge of Israeli music on an 8-point scale. Second, the experimenter recorded unobtrusively the time participants took to write down the songs' titles and composers and rate their knowledge. This allowed us to explore whether the music condition influenced generation of the requested items.

## RESULTS

*Target Judgment: Knowledge Ratings.* Figure 2 presents the means of participants' ratings of their knowledge of Israeli music. As Figure 2 suggests, when background music was present, participants rated themselves as more knowledgeable of Israeli music following retrieval of 4 songs and their composers ($M$ = 4.21, $SD$ = 1.61) than 10 ($M$ = 3.66, $SD$ = 1.77). However, when the background music was absent, participants tended to rely on the number of songs they retrieved. Accordingly, participants rated themselves as less knowledgeable following retrieval of 4 songs and their composers ($M$ = 3.09, $SD$ = 1.57) than 10 ($M$ = 4.05, $SD$ = 1.61). Statistically, these opposing patterns are indicated by a significant interaction, $F(1,76) = 4.14$, $p < .05$, $\eta_p = .22$. Note that the pattern of self-rating of music knowledge corresponded to the observed music effectiveness ratings in Experiment 1 (Figure 1, panel "b"), rather than to the pattern of self-assertiveness (Figure 1, panel "a"). Consequently, it is unlikely that the different patterns observed in panel "a" and panel "b" of Figure 1 have to do with self-judgments compared to non-self judgments. Rather, the different patterns in the two panels seem to show sensitivity to the coherence between the judgment context and the judgment dimension.

## AUXILIARY ANALYSES

*Generation Time.* A two-way ANOVA (background [music vs. no music] x number of items to be retrieved [4 vs. 10]) unsurprisingly revealed that participants who were asked to list 4 songs and their composers were faster than those who had to list 10 songs and their composers, $F(1, 76) = 34.01$, $p < .01$, $\eta_p = .55$. This occurred when background music was present: $t(38) = 3.7$, $p < .01$, $d = 1.20$ and when it was absent: $t(38) = 5.53$, $p < .01$, $d = 1.79$. Importantly, the two-way interaction failed to reach significance, $F(1, 76) = .57$, $p = .45$, $\eta_p = .08$, suggesting that the actual generation times were similarly affected by the number of songs in the presence and absence of music.

## DISCUSSION

The findings of Experiments 1 and 2 are consistent with the suggestion that participants relied on EOR more when the judgment task was coherent with the situational background. In particular, music facilitated reliance on EOR when participants considered music-related issues. Moreover, our findings indicate that the effect of music on the utilization of EOR depends on its fit with the judgment task.

This can be seen most readily in the pattern of findings in Experiment 1. Relative to the default context of an experiment in the psychology lab, the presence of background music enhanced the EOR effect in judgments of music but undermined the EOR effect in judgments of assertiveness. This interaction pattern helps ruling out a well-known account of the effect of music in our experiments, namely, that the effect of music has to do with distraction (Greifeneder et al., 2011). To wit, although music undermined the reliance on EOR when the task involved a judgment of assertiveness, the presence of music led to greater utilization of EOR in judgments that involved music.

We proposed before that the role of coherence between the judgmental task and the experimental situation could be viewed as analogous to the role of positive mood in the Cognitive Tuning model (Clore & Schwarz, 2003; Schwarz & Bless, 1991; Schwarz & Clore, 2007; Schwarz, 1990; 2012); conversely, when the judgmental task does not cohere with the situational background, the decision maker might feel less certain regarding the situation (Bar, 2007), which is analogous to the role of a negative mood in the Cognitive Tuning model.

Still, it could be argued that context/task coherence also influences judgments directly, rather than by moderating whether decision makers rely on their metacognitive cues. Research on conceptual fluency (e.g., Whittlesea, 1993) and situated cognition (Smith & Semin, 2004; Yeh & Barsalou, 2006) suggests that the context might affect the actual ease of retrieval (Bar, 2007, 2009; Smith & Vela, 2001). To illustrate, it might be easier to mentally list advantages of a particular television brand when a person is in an electronics store than when she is swimming in a pool. Since we were particularly interested in the moderating function of the context-judgment fit, the context and the retrieval domain were chosen in Experiments 1 and 2 to minimize the direct influence of the context on the retrieval ease. There is some evidence that we succeeded in this choice. The findings of Experiment 2 indicate that generation time was unrelated to the task/context coherence. Experiment 3 employs a different manipulation to disrupt situational coherence and thereby affect the use of EOR in judgments.

## EXPERIMENT 3

Experiment 3 disrupts situational coherence by focusing participants on a stimulus they tend habitually to ignore. All participants in Experiment 3 performed the assertiveness task used in Experiment 1 in the presence of a relatively mild background noise. We selected a level of white noise that allows adaptation and assumed that participants in the experiment would have no trouble overcoming the disruptive influence of the noise. We hypothesized that when the background noise is processed passively, participants would adapt to it and therefore rely on default cognitive heuristics, such as using their EOR while making judgments. In contrast, consider what should happen to participants who were instructed to actively listen to the background noise. Such unusual listening was hypothesized to trigger cognitive alertness, similar to the one triggered when the context does

not fit the judgmental task. These situational circumstances should weaken the tendency to use cognitive shortcuts (Bar, 2007). Accordingly, we hypothesized that given the topic of the task (assertiveness) and the basic context of the psychology lab, the EOR effect would be evident when the background noise is merely heard, but not when participants are instructed to listen to it.

Note that the opposite hypotheses about EOR utilization in assertiveness judgments when people hear white noise or background music (Experiment 1) stem from the fact that only the latter is a meaningful stimulus (See Zakay, Block, & Tsal, 1999). We assumed that since the white noise is meaningless and the default cognitive condition is to overcome such disturbances, the routine heuristics-based judgmental processes, as reliance on EOR, will take place.

Actively listening to background noise might have a greater depletion effect on participants' cognitive resources compared to simple exposure to that noise. We assessed participants' performances in three executive-attention tasks to explore the influence of listening (vs. hearing) on the depletion of cognitive resources.

## METHOD

*Participants.* Fifty-three students at the Hebrew University (25 females) participated in the study.[7] The students were paid the equivalent of two US dollars for their participation. Participants were run individually. They were assigned randomly to one of four experimental conditions of a 2 (White noise processing: hearing vs. listening) x 2 (Number of to-be retrieved items: 4 vs. 10) between-participants factorial design.

*Procedure.* Participants arrived at the lab and received instruction that the experiment examines the influence of different background noises on visual, motor, and arithmetic performances to study attention-deficit disorders. Participants in the hearing condition were told that they would be asked to perform several tasks while hearing mild noise. Participants in the listening condition were told that they would be asked to perform several tasks while listening to a noise. We emphasized the importance of not only hearing the noise, but actually listening to it.

All participants were then told, "In order to get used to the new situation, you will be given a warm-up task." The experimenter pressed a computer key to turn on the white noise, which was played through loudspeakers. Participants in the listening condition were reminded to listen to the noise while performing the task. All participants then received the assertiveness questionnaire used in Experiment 1. The experimenter recorded the time required for the participants to write down their experiences and rate their assertiveness.

When each participant had finished, he/she handed in the questionnaire and the noise was turned off. The participant was told, "We shall now begin the experiment." The participants in the listening condition were reminded to listen to the noise, while those in the hearing condition received no further instructions regarding the noise. The white noise was turned on. All participants received an

7. The planned sample size was 52. However, 53 participants were eventually run and included in the analyses.

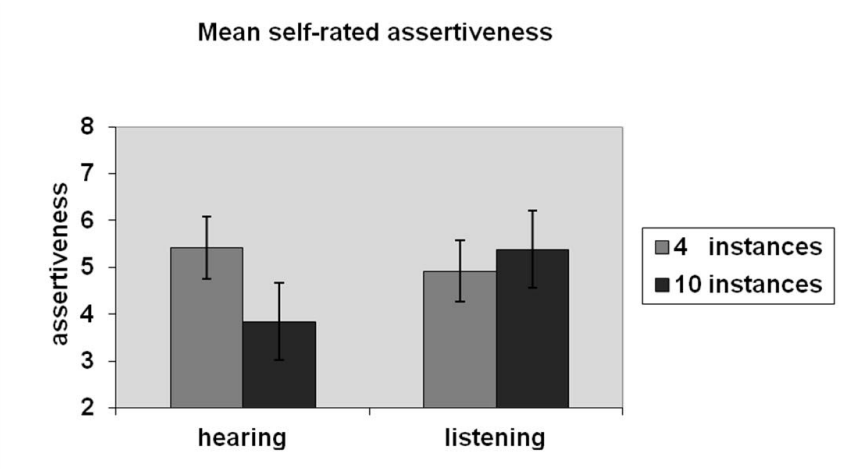



**FIGURE 3.** Assertiveness rating as a function of white noise processing and the number of requested instances (Experiment 3).
*Note*. The error bars indicate the within condition

arithmetic task consisting of 70 simple arithmetic problems with instructions to solve as many as they could until the experimenter stopped them. Participants were given 4 minutes.

Next, the white noise was turned off, and the experimenter explained the instructions of the visual-motor task, which was a digit-symbol coding subtest taken from the WAIS (Wechsler, 1997). Specifically, participants were given a key that listed 9 digit-symbol pairs and a page that contained several rows of digits. Under each digit, the participant had to draw the corresponding symbol as quickly and accurately as possible. Participants in the listening condition were reminded to listen to the noise that they were about to hear. The white noise was again turned on while participants performed the task and was terminated after 90 seconds, when the participants were stopped. The number of correct symbols drawn within the 90-second interval was recorded.

Next, participants performed a memory task. Prior to starting the activity, participants in the listening condition were reminded to listen to the noise. A computer monitor presented a series of 20 words, each of which appeared for 5 seconds. The presentation of the words was accompanied by white noise. The white noise was turned off after the word presentation, and the participants were given a paper with 20 blank lines on it to record as many words as they could recall. The experimenter collected the recall protocols after 4 minutes.

Finally, the participants received a post-experiment questionnaire. First, participants were asked to rate whether they felt they had successfully followed the experiment instructions regarding the noise (1–7 scale). Then, they were asked to rate the extent to which they felt the noise affected their retrieval during the recall task (1–7 scale). Last, participants were debriefed and paid.

## RESULTS AND DISCUSSION

*Assertiveness Ratings.* Figure 3 presents the mean assertiveness ratings in the four experimental conditions. We conducted a series of planned contrasts within a two-way [number of to-be retrieved items (4 vs. 10) x noise processing (hearing vs. listening)] ANOVA to test our predictions.

The interaction contrast that compared the EOR effect (4 vs. 10) of participants in the listening condition and the EOR effect of participants in the hearing condition was statistically significant ($F(1,49) = 6.97$, $p < .05$, $\eta_p = .35$). Simple effect analysis in the hearing condition shows a significant EOR effect. That is, participants who were asked to list 4 instances rated themselves as more assertive than participants who were asked to list 10 instances, $t(25) = 2.99$, $p < .01$, $d = 1.12$. In contrast, analysis of findings from the listening condition shows that the EOR effect diminished ($t(24) = -.83$, $p = .41$; $d = .32$) when participants listened to the noise.

## AUXILIARY ANALYSES

*Listening to the Noise.* Participants utilized a 7-point scale to rate their success in following the experiment instructions to listen to the noise, with higher scores indicating more success in following the listening instructions. All participants in the listening conditions rated their success as 4 and above, with the mean ($M = 5.61$, $SD = .98$) being significantly different from the midpoint of the scale ($t(25) = 8.38$, $p < .01$, $d = 3.35$).

*Generation Time.* As expected, participants were faster when listing 4 experiences of assertiveness ($M = 2.91$, $SD = 1.45$) then 10 such experiences ($M = 6.84$, $SD = 3.14$), $F(1, 49) = 35.67$, $p < .01$, $\eta_p = .64$ Importantly, this pattern was independent of the white noise processing condition (hearing vs. listening) as indicated by the non-significant interaction ($F(1, 49) = .83$, $p = 36$; $\eta_{p=} .13$).

In addition, no significant difference was found between the time participants in the hearing conditions ($M = 5.31$, $SD = 3.47$) and the time participants in the listening conditions spent on the generation of the assertive episodes ($M = 4.35$, $SD = 2.69$), $F(1, 49) = 2.48$, $p = .12$, $\eta_p = .21$.

*Perceived Distraction.* Participants rated the extent to which they felt the white noise influenced their performance during the recall task on a 1 (facilitated retrieval) to 7 (disrupted retrieval) scale. A two-way ANOVA revealed that the ratings of participants who were asked to listen to the white noise ($M = 4.72$, $SD = 1.06$) were not significantly different from the ratings of participants who passively heard the noise while performing the recall task ($M = 4.55$, $SD = 1.06$), ($F(1, 48) = .31$, $p = .57$; $\eta_p = .07$).[8] The rated distraction was also unrelated to the number of instances that participants had to retrieve, ($F(1, 48) = 1.11$, $p = .29$, $\eta_p = .15$), nor was the two-way interaction significant ($F(1, 48) = .46$, $p = .49$, $\eta_p = .1$).

*Effects on Performance in the Three Executive-Attention Tasks.* It might be suggested that the difference between the listening and hearing conditions had to do with the added distraction produced by the listening task. According to this interpreta-

8. One participant did not rate this item, therefore the degrees of freedom are 48.

tion, the added distraction (caused by instructions to listen) interfered with participants' abilities to utilize EOR in the making of judgments. To investigate this possibility, we compared the performances of participants in the listening condition and hearing condition in three tasks that are sensitive to cognitive load. No significant differences were found between the performances of participants in the two conditions. Specifically, neither the arithmetic task performance (as indicated by the number of correct responses) (Listening: $M = 25.46$, $SD = 11.02$; Hearing: $M = 25.81$, $SD = 8.76$, $t(51) = .12$, $p = .89$; $d = .03$), the visual motor task performance (Listening: $M = 59.69$, $SD = 13.18$; Hearing: $M = 65.01$, $SD = 12.96$, $t(51) = 1.47$,$p = .14$; $d = .41$), nor the number of recalled words in the verbal recall task (Listening: $M = 10.8$, $SD = 5.28$; Hearing: $M = 12.62$, $SD = 4.36$, $t(51) = 1.37$, $p = .14$; $d = .38$) differed between the listening and hearing conditions.

The abovementioned analysis indicates that none of the listening/hearing differences was statistically significant. Still, in light of the consistent trend of slightly higher scores among participants in the hearing condition, we conducted an additional multivariate analysis (treating the scores in the three tasks as three variates of executive attention performance) to test whether there is evidence of a listening/hearing difference across the three measures. We started by standardizing the performance scores within each task. Then, we conducted a one-way MANOVA with noise processing (hearing vs. listening) as a between-participants factor and the performances in the three executive-attention tasks (arithmetic task, visual motor task and verbal recall task) as variates. Results revealed that the performances of participants in the two noise-processing conditions were not significantly different, ($F(1, 51) = 2.13$, $p = .15$, $\eta_p = .20$), nor was there evidence for differential influence of the noise-processing condition on the three variates, as indicated by a non-significant two-way interaction ($F(2, 51) = .68$, $p = .51$, $\eta_p = .11$).

The findings of Experiment 3 indicate that the participants' stance regarding the auditory stimulus determined the way EOR was utilized in the judgment. Specifically, in the hearing condition that was assumed to reflect default processing of mild background noise, the typical EOR effect emerged. However, when the participants' default stance regarding the mild background sound was altered, in the listening condition, judgments were unrelated to the EOR.

## GENERAL DISCUSSION

Our study indicates that the task/context coherence affects people's tendency to rely on meta-cognitive cues such as EOR in making judgments. Experiments 1 and 2 showed that when the experimental context was coherent with the judgment task, participants who had to retrieve a few items (easy retrieval) made higher judgments than participants who had to retrieve many items (difficult retrieval condition). However, when the background context did not fit the task, the opposite pattern was revealed. Experiment 3 provides converging evidence for this effect by showing that the reliance on the ease of retrieval occurred when the background noise was merely heard, but not when participants were instructed to listen to it.

## STUDY-WISE ANALYSIS

The abovementioned patterns of findings led to statistically significant interactions in each of the experiments. Simple-effect analyses were used to unpack the interaction contrasts. These analyses revealed that when the background context fit the judgment task (context/task coherence), only 2 out of the 4 simple effects reached significance. Because failure to reject the hypothesis may reflect the power of the analysis, we performed a study-wise analysis to test the EOR effect in conditions of context/task coherence versus disrupted coherence.

We started by standardizing the judgments within each experiment, so as to remove between-experiments main effects due to scale use. Then, we conducted a three-way ANOVA with task/context coherence (high vs. low), number of retrieved items (4 vs.10), and Experiment (1, 2, and 3) as between-participants factors. The only significant effect in this analysis was the interaction between the task/context coherence and the number of retrieved items, $F(1,201) = 15.93$, $p < .001$, $\eta_p = .27$. Unpacking this interaction revealed that when coherence was high, judgments of participants who retrieved 4 items were higher than those who retrieved 10 items (+.33 vs. -.31), $t(105) = 3.36$, $p < .001$, $d = .65$. In contrast, when the coherence was low, an opposite pattern emerged: the judgments of participants who retrieved 4 items were lower than the judgments of those who retrieved 10 items (-.20 vs. + .20), $t(104) = -2.20$, $p < .05$, $d = .43$. Thus, when the situational circumstances (including the context, the focal task, and nature of processing) were relatively coherent, participants tended to utilize the ease of retrieval. However, when the circumstances were less coherent, participants' judgments were higher when they retrieved more items, indicating that the EOR was not applied.

There were virtually no differences as a function of experiment in the strength of this pattern, all $F$s < 1.35. Thus, our study provides strong support for the moderating role of situational coherence in determining the strength of the reliance on the meta-cognitive cues.

## RELIANCE ON INTERNAL CUES AS A FUNCTION OF THE SITUATION

Our results are congruent with the research of Alter, Oppenheimer, Epley, and Eyre (2007) demonstrating that people rely more on cognitive heuristics in judgments under high (rather than low) processing fluency conditions (see also Higgins, 1996). Our findings also complement past EOR research indicating that the standard EOR effect is more prominent when the retrieval topic is familiar or relevant (Caruso, 2008; Raghubir & Menon, 2005; Schwarz & Vaughn, 2002; Tybout et al., 2005). These findings suggest that people rely on meta-cognitive heuristics as EOR to a greater extent when they feel more certain regarding the judgmental situation (See Müller et al., 2010). Our own research on distrust (Schul, Mayo, & Burnstein, 2008) and social uncertainty (Yahalom & Schul, 2013) shows less reliance on internal cues under distrust and uncertainty. The current research may

provide a general theme for these studies by suggesting that the tendency to rely on immediate internal cues weakens when there is a feeling of disharmony. In our study, disharmony was triggered either by low coherence between the judgmental task and the contextual background (Experiments 1 and 2) or by the way this background was perceived (Experiment 3), but based on past research, it might also be generated by low familiarity, irrelevance, or increased uncertainty.

## CONTEXTUAL FRAMING IN PRIOR EOR EXPERIMENTS

Many experiments, including those investigating reliance on EOR, provide participants with a cover story that makes the experimental situation reasonable (e.g., Aarts & Dijksterhuis, 1999; Rothman & Schwarz, 1998; Schwarz et al., 1991; Wänke et al., 1995). In Schwarz and colleagues (1991; Experiment 2), for example, participants who were about to receive the assertiveness-recall task were told that the study was concerned with the development of assertiveness training. Similarly, in Wänke, Schwarz, and Bless (1995), participants who were about to undergo an EOR manipulation were told that the study concerned the influence of several variables on language production. To support the cover story, participants were asked to provide information on supposedly relevant verbal abilities. Such information may provide a seemingly appropriate contextual background in which the experimenter's further requests are coherent within the experimental setting. In line with the suggestion that heuristics are more applicable when factors in the experimental context fit the judgmental task (Corneille, Leyens, Yzerbyt, & Walther, 1999; Kopetz & Kruglanski, 2008; Whittlesea & Williams, 2000), the common finding is the default reliance on EOR. The present study proposes that this practice is not coincidental—it is useful for theoretical reasons. The comprehensive cover story creates task/context coherence, which is critical for the EOR effect; the absence of such coherence minimizes the EOR effect.

## TOWARD AN UNDERLING MECHANISM

Studies suggest that the utilization of cognitive feelings, particularly EOR, diminish if these feelings do not reach a certain saliency threshold. Greifeneder, Bless, and Pham (2011) discuss two main mechanisms for the failure to reach the threshold: distraction and misattribution. We believe that the effects in our study are unrelated to distraction or misattribution for the reasons discussed below. The last section of this article considers a third general factor that can moderate the impact of cognitive feelings on judgment.

*Distraction as an Explanation for the Findings.* Participants who retrieved experiences of assertiveness in the context of music did not utilize their EOR to make judgments about assertiveness (Experiment 1). At first glance, this finding could be explained in terms of distraction. One may argue that the music distracts par-

ticipants from paying attention to the ease with which they recalled the requested items (Zakay, Block, & Tsal, 1999) and thereby weakens the memory trace of the EOR. An alternative suggestion proposes that music captures attention, thereby limiting perceivers' attempts to focus on their retrieval ease/difficulty, hence undermining the utilization of these feelings in making judgments (Wegner, 1994). However, as previously noted, these suggestions are not supported by the influence of background music on judgments of music effectiveness (Experiment 1) or musical knowledge (Experiment 2). In these cases, judgments did correspond to the level of EOR, indicating that the music does not necessarily interfere with or distract attention from the EOR. Moreover, the background music and the white noise had no effect on participants' performance in other cognitive tasks that are sensitive to cognitive load. We therefore suggest that distraction is not a viable explanation for our findings.

*Spontaneous Attribution as an Explanation for the Findings.* People may fail to utilize their EOR if they attribute their meta-cognitive experience to another factor that is not relevant to the judgment. Therefore, it might be argued that participants spontaneously attributed the feelings of retrieval difficulty to the interfering factors in the context (i.e., the music or the white noise). Indeed, Jacoby, Allan, Collins, and Larwill (1988) showed that people possess a naïve theory alleging that difficulty in information processing may be related to interference caused by physical dimensions of the situation (i.e., noise). In their study, noise accompanying familiar sentences was judged as being less loud than noise accompanying novel sentences, suggesting that a misattribution of processing difficulty had occurred. We believe that such a misattribution mechanism is an unlikely explanation for the pattern of the EOR effects in our study: In order to employ the misattribution explanation to our findings, one has to assume that participants activated one naïve theory about the presence of music when making assertiveness judgment and another naïve theory about the absence of music when making music-related judgment in Experiment 1. Similarly, participants should have activated the theory while listening to the white noise (Experiment 3), but not while merely hearing the white noise. Moreover, we directly asked the participants whether the music or the noise interfered with listing their thoughts and making their judgments, and we found no difference in the subjective sense of distraction as a function of the experimental conditions.[9]

*Situated Reliance on EOR.* We believe that the pattern of the EOR influence on judgment in our study reflects a third mechanism related to the sensitivity of the cognitive system to different aspects of the situation (Bar, 2007, 2009; Schwarz, 2006; Smith & Semin, 2004). The Cognitive Tuning model (Schwarz & Clore, 2003, 2007; Schwarz, 2012) refers to situational responsiveness as a critical means of the cognitive system to adaptively tune behavior by taking the immediate circumstances into consideration. We suggest that a disharmonious situation or a nonstandard stance of the individual towards elements in the contextual background make an implicit "suggestion" to the mental system that the otherwise default reliance on immediately given shortcuts, as EOR, is momentarily inappropriate.

9. Note that we refer to the ratings that participants made regarding the alleged interference effect of the music/noise and not the ratings regarding the difficulty of the retrieval task.

This interpretation is in line with research indicating that default mindlessness is undermined when nonstandard factors in the situation are present (Kitayama & Burnstein, 1988; Langer, 1989).

The findings presented herein add a novel aspect of situational coherence to the vast line of research which previously indicated that cognition is tuned to meet the requirements of the situation (Schwarz & Clore, 2003, 2007; Smith & Semin, 2004). However, this work was not designed to explicate the mechanism that lead to applicability of cognitive cues as EOR in coherent versus incoherent situational circumstances. Future work might further explore the factors that comprise and affect situational coherence and consider the mechanism underling its effect on judgmental processes.

The creation of situational coherence is a common practice in laboratory research; however, as the present research suggests, this practice could be part of the story, so that altering the situational coherence may affect the judgmental processes. Our findings show that an understanding of human judgments should not only be informed by the accessible content and the ease with which this content is retrieved, but also involve the characteristics of the situation and the way it is perceived.

## REFERENCES


Aarts, H., & Dijksterhuis, A. (1999). How often did I do it? Experienced ease of retrieval and frequency estimates of past behavior. *Acta Psychologica, 103,* 77-89.

Alter, A. L., Oppenheimer, D. M., Epley, N., & Eyre, R. (2007). Overcoming intuition: Metacognitive difficulty activates analytic reasoning. *Journal of Experimental Psychology: General, 136,* 569-576.

Bar, M. (2007). The proactive brain: Using analogies and associations to generate predictions. *Trends in Cognitive Sciences, 11,* 280-289.

Bar, M. (2009). The proactive brain: Memory for predictions. *Philosophical Transactions of the Royal Society B: Biological Sciences, 364,* 1235-1243.

Barsalou, L. W. (1993). Flexibility, structure, and linguistic vagary in concepts: Manifestations of a compositional system of perceptual symbols. In A. F. Collins, S. E. Gathercole, M. A. Conway, & P. E. Morris (Eds.), *Theories of memories* (pp. 29-101). East Sussex, UK: Erlbaum.

Biederman, I. (1972). Perceiving real-world scenes. *Science, 177,* 77-80.

Bless, H., Schwarz, N., & Kemmelmeier, M. (1996). Mood and stereotyping: The impact of moods on the use of general knowledge structures. *European Review of Social Psychology, 7,* 63-93.

Caruso, E. M. (2008). Use of experienced retrieval ease in self and social judgments. *Journal of Experimental Social Psychology, 44,* 148-155.

Corneille, O., Leyens, J. P., Yzerbyt, V., & Walther, E. (1999). Judgeability concerns: The interplay of information, applicability, and accountability in the overattribution bias. *Journal of Personality & Social Psychology, 76,* 377-387.

Friedman, R. S., & Forster, J. (2000). The effects of approach and avoidance motor actions on the elements of creative insight. *Journal of Personality and Social Psychology, 79,* 477-492.

Grayson, C. E, & Schwarz, N. (1999). Beliefs influence information processing strategies: Declarative and experiential information in risk assessment. *Social Cognition, 17,* 1-18.

Greifeneder, R., & Bless, H. (2007). Relying on accessible content versus accessibility experience: The case of processing capacity. *Social Cognition, 25,* 853-881.

Greifeneder, R., Bless, H., & Pham, M. T. (2011). When do people rely on affective and cognitive feelings in judgment? A review. *Personality and Social Psychology Review, 15,* 107-141.

Haddock, G., Rothman, A. J., Reber, R., & Schwarz, N. (1999). Forming judgments of attitude certainty, importance, and intensity: The role of subjective experiences. *Personality and Social Psychology Bulletin, 25,* 771-782.

Higgins, E. T. (1996). Knowledge activation: Accessibility, applicability, and salience. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 133-168). New York: Guilford.

Jacoby, L. L., Allan, L. G., Collins, J. C., & Larwill, L. K. (1988). Memory influences subjective experience: Noise judgments. *Journal of Experimental Psychology: Learning, Memory, & Cognition, 14,* 240-247.

Kitayama, S., & Burnstein, E. (1988). Automaticity in conversations: A reexamination of the mindlessness hypothesis. *Journal of Personality & Social Psychology, 54,* 219-224.

Kopetz, C., & Kruglanski, A. (2008). Effect of accessibility and subjective relevance on the use of piecemeal and category information in impression formation. *Personality and Social Psychology Bulletin, 34,* 692-705.

Langer, E. J. (1989). Minding matters: The consequences of mindlessness-mindfulness. In L. Berkowitz (Ed.), *Advances in experimental psychology* (Vol. 22, pp. 137-173). San Diego, CA: Academic Press.

Müller, P. A., Greifeneder, R., Stahlberg, D., Van Den Bos, K., & Bless, H. (2010). Shaping cooperation behavior: The role of accessibility experiences and uncertainty. *European Journal of Social Psychology, 40,* 178-187.

Oppenheimer, D. M. (2004). Spontaneous discounting of availability in frequency judgment tasks. *Psychological Science, 15,* 100-105.

Raghubir, P., & Menon, G. (2005). When and why is ease of retrieval informative? *Memory & Cognition, 33,* 821-832.

Rothman, A. J., & Schwarz, N. (1998). Constructing perceptions of vulnerability: Personal relevance and the use of experiential information in health judgments. *Personality and Social Psychology Bulletin, 24,* 1053-1064.

Rozin, P., Fischler, C., & Shields-Argelès, C. (2009). Additivity dominance: Additives are more potent and more often lexicalized across languages than are "subtractives." *Judgment and Decision Making, 4,* 475-478.

Ruder, M., & Bless, H. (2003). Mood and the reliance on the ease of retrieval heuristic, *Journal of Personality and Social Psychology, 85,* 20-32.

Schul, Y., Mayo, R., & Burnstein, E. (2008). The value of distrust. *Journal of Experimental Social Psychology, 44,* 1293-1302.

Schwarz, N. (1990). Feelings as information: Informational and motivational functions of affective states. In E. T. Higgins & R. M. Sorrentino (Eds.), *Handbook of motivation and cognition: Foundations of social behavior* (Vol. 2., pp. 527-561). New York: Guilford.

Schwarz, N. (1998). Accessible content and accessibility experience: The interplay of declarative and experiential information in judgment. *Personality and Social Psychology Review, 2,* 87-99.

Schwarz, N. (2004). Metacognitive experiences in consumer judgment and decision making. *Journal of Consumer Psychology, 14,* 332-348.

Schwarz, N. (2006). Feelings, fit, and funny effects: A situated cognition perspective. *Journal of Marketing Research, 43,* 20-23.

Schwarz, N. (2012). Feelings as information theory. In P. Van Lange, A. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (pp. 289-308). New York: Sage.

Schwarz, N., & Bless, H. (1991). Happy and mindless, but sad and smart? The impact of affective states on analytic reasoning. In J. P. Forgas (Ed.), *Emotion and social judgments* (pp. 55-71). Elmsford, NY: Pergamon.

Schwarz, N., Bless, H., Strack, F., Klumpp, G., Rittenauer-Schatka, H., & Simon, A. (1991). Ease of retrieval as information: Another look at the availability heuristic. *Journal of Personality and Social Psychology, 61,* 195-202.

Schwarz, N., & Clore, G. L. (2003). Mood as information: 20 years later. *Psychological Inquiry, 14,* 296-303.

Schwarz, N., & Clore, G. L. (2007). Feelings and phenomenal experiences. In A. W. Kruglanski & E. T. Higgins (Eds.), *Social psychology: Handbook of basic principles* (2nd ed., pp. 385-407). New York: Guilford.

Schwarz, N., & Vaughn, L. A. (2002). The availability heuristic revisited: Ease of recall and content of recall as distinct sources of information. In T. Gilovich, D. Griffin, & D. Kahneman (Eds.), *Heuristics and biases: The psychology of intuitive judgment* (2nd ed., pp. 103-119). New York: Cambridge University Press.

Smith, E. R., & Semin, G. R. (2004). Socially situated cognition: Cognition in its social context. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 36, pp. 53-117). Amsterdam: Elsevier.

Smith, S., & Vela, E. (2001). Environmental context-dependent memory: A review and meta-analysis. *Psychonomic Bulletin & Review, 8,* 203-220.

Spranca, M., Minsk, E., & Baron, J. (1992). Omission and commission in judgment and choice. *Journal of Experimental Social Psychology, 27*, 76-105.

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology, 5,* 207-232.

Tybout, A. M., Sternthal, B., Malaviya, P., Bakamitsos, G. A., & Park, S. (2005). Information accessibility as a moderator of judgments: The role of content versus retrieval ease. *Journal of Consumer Research, 32*, 76-85.

Wänke, M. (2012). Almost everything you always wanted to know about ease of retrieval effects. In C. Unkelbach & R. Greifeneder (Eds.), *The experience of thinking: How feelings from mental processes influence cognition and behavior* (pp. 151-169). New York: Psychology Press.

Wänke, M., Schwarz, N., & Bless, H. (1995). The availability heuristic revisited: Experienced ease of retrieval in mundane frequency estimates. *Acta Psychologica, 89,* 83-90.

Wechsler, D. (1997). *WAIS-III administration and scoring manual*. San Antonio, TX: Psychological Corporation.

Wegner, D. M. (1994). Ironic processes of mental control. *Psychological Review, 101,* 34-52.

Whittlesea, B. W. A. (1993). Illusions of familiarity. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 19,* 1235-1253.

Whittlesea, B. W. A., & Williams, L. D. (2000). The source of feelings of familiarity: The discrepancy-attribution hypothesis. *Journal of Experimental Psychology: Learning, Memory, & Cognition, 26,* 547-565.

Winkielman, P., Schwarz, N., & Belli, R. F. (1998). The role of ease of retrieval and attribution in memory judgments: Judging your memory as worse despite recalling more events. *Psychological Science, 9,* 124-126.

Wu, L. L., & Barsalou, L. W. (2009). Perceptual simulation in conceptual combination: Evidence from property generation. *Acta Psychologica, 132*, 173-189.

Xu, J., & Schwarz, N. (2005). *Was it long ago or unimportant? Diverging inferences from difficulty of recall.* Paper presented at annual conference of the Society for Consumer Psychology, St. Pete's Beach, Florida, March.

Yahalom, N., & Schul, Y. (2013). How thinking about the other affects our reliance on cognitive feelings of ease and effort: Immediate discounting and delayed utilization. *Social Cognition, 31,* 31-56.

Yeh, W., & Barsalou, L. W. (2006). The situated nature of concepts. *American Journal of Psychology, 119*, 349-384.

Zakay, D., Block, R. A., & Tsal, Y. (1999). Prospective duration estimation and performance. In D. Gopher & A. Koriat (Eds.), *Attention and performance XVII, cognitive regulation of performance: Interaction of theory and application* (pp. 557-580). Cambridge, MA: MIT Press.