10 CHAPTER

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Drawing Inferences from Feelings: The Role of Naive Beliefs

Most theories of human judgment assume that we evaluate persons or objects on the basis of declarative or propositional information that bears on the target and that happens to come to mind at the time of judgment (for reviews, see Higgins, 1996; Wyer & Srull, 1989). However, a growing body of research has challenged this assumption by documenting that our subjective experiences and feelings (terms that we propose to use interchangeably) play a crucial role in many judgment processes. The emerging findings can be conceptualized by assuming that our feelings serve informative functions and provide information that we as judges systematically draw on in forming judgments (for a review, see Schwarz & Clore, 1996). Relevant examples include the influence of moods (e.g., Schwarz & Clore, 1983), emotions (e.g., Keltner, Ellsworth, & Edwards, 1993), bodily feelings (e.g., Strack, Martin, & Stepper, 1988); and physical arousal (e.g., Zillman, 1978), as well as cognitive experiences that accompany memory and reasoning, such as the subjective experience of ease or difficulty of recall (e.g., Schwarz, Bless, Strack, Klumpp, Rittenauer-Schatka, & Simons, 1991; Schwarz, 1998) or the experience of perceptual fluency (e.g., Reber, Winkielman, & Schwarz, 1998). When our feelings reflect our actual response to the target, such as when seeing a friend

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elicits a happy mood or makes our heart beat faster, they provide direct and useful information. In these cases, subjective experiences are properly sensitive to the structure of the environment, and are likely to reflect highly adaptive thinking (e.g., Schwarz, 1996; Schooler & Anderson, 1997; Skurnik, Moskowitz, & Johnson, 1999).

In other cases, however, we sometimes mistake feelings from other sources as our response to the target. Thus, we may evaluate our friend more positively for reasons that have little do with him or her, because, for instance, a sunny day has put us in a good mood or because climbing the stairs has increased our heartbeat. When we are aware that our feelings may be due to such irrelevant sources, our feelings' informational value is discredited and we do not draw on our feelings as a source of information. Such discounting effects have been documented for all of the research examples mentioned above, highlighting that we use our feelings as a source of information only when they seem diagnostic for the judgment at hand (for a review, see Schwarz & Clore, 1996).

In the absence of salient conditions that draw attention to an irrelevant source of our feelings, however, we are likely to consider our feelings diagnostic by default. Much as we use the declarative information that happens to come to mind when we think about a target, we use the experiential information that happens to come to mind. In either case, we tend to assume that the information bears on what we think about (or else why would it come to mind?). Higgins (1998) has recently discussed this pervasive tendency as the "aboutness" principle of human inference. Conceptually, the aboutness principle parallels the "relevance" principle of interpersonal communication (Grice, 1975; Sperber & Wilson, 1986), a tacit assumption that holds that every contribution of the speaker is relevant to the aims of the ongoing conversation (or else why would the speaker introduce it?). But much as the relevance of a speaker's contribution can be called into question, so can the relevance of any thoughts or feelings we may experience. When we attribute our mood to an irrelevant source, such as the weather (e.g., Schwarz & Clore, 1983), we are unlikely to rely on it when forming a judgment about an unrelated target. Similarly, when we are aware that some thoughts may only come to mind because they were triggered by an unrelated preceding event (e.g., Martin, 1986; Strack, Schwarz, Bless, Kübler, & Wänke, 1993), we are unlikely to bring these thoughts to bear on the target. In short, we do not rely on the information that comes to mind when its appropriateness to the target is called into question, for example, because we attribute our mood to an irrelevant source (e.g., Schwarz & Clore, 1983) or because we are aware that the declarative information was brought to mind by a preceding irrelevant priming task (e.g., Martin, 1986; Strack et al., 1993). In short, what comes to mind seems relevant by default—or else, why

would we have these thoughts or feelings in apparent response to the target? In contrast, assessments that highlight the irrelevance and low diagnosticity of the input need to be triggered by salient features of the situation (cf. Higgins, 1998; Schwarz & Bless, 1992).

But how do people bring an apparently relevant feeling "about" the target to bear on the specific judgment at hand? This is the question we address in the present chapter. We suggest that the inferences that a person may draw from a feeling are constrained by the person's naive beliefs about the working of the mind and the nature of emotions. To take a well-researched example, people believe that it is easier to recall frequent or recent events than to recall rare or distant events. Without this belief, experienced ease of recall would be epiphenomenal and would have no bearing on frequency judgments (e.g., Tversky & Kahneman, 1973) or the dating of events (e.g., Bradburn, Rips, & Shevell, 1987). Conversely, if people believed, for example, that ease of recall was an indication of the recalled event's correspondence with well-formed expectations, rather than an indication of frequency, the expectancy-based illusory correlation effect (Hamilton & Rose, 1980) would not be obtained. Similarly, people believe that desirable events make them feel good, whereas undesirable events make them feel bad (Frijda, 1988, 1999). Without this belief, their apparent affective reaction to a target would not feed into evaluative judgments, and mood effects would not be obtained. Note that these judgment-related beliefs can be employed in an "implicit" manner, in the absence of verbal reports from judges. For instance, in research on semantic priming effects in person perception, people tend to assimilate their judgments of a target person to a primed construct, as if they mistake the high accessibility of the construct as their reaction to the target person (Clore, 1992; Martin, 1986). However, when people are unobtrusively reminded of the priming episode, they seem to realize that the primed construct is accessible for judgment-irrelevant reasons and change their final judgments of the target person in an apparent corrective move. All these effects are found in the absence of any verbal reports about a connection between the priming and judgment tasks (Lombardi, Higgins, & Bargh, 1987; Mosk[illegible]urnik, 1999; Strack et al., 1993; Wegener & Petty, 1997). Tacit beliefs of this type are widely shared and determine the "meaning" of the subjective experience itself for the judgment at hand.

Nevertheless, people may draw different context-dependent inferences from the same subjective experience, as the examples reviewed below illustrate. In the present chapter, we ask: Does this context dependency in judgment imply that our feelings provide *different experiential information* in different contexts? Or does it imply that we draw different, context-dependent conclusions from the *same experiential information*? We address this issue after a review of relevant empirical findings.

☐ How Happy Was Your Childhood? Inferences from Difficulty of Recall

Suppose you are asked, "Are there large parts of your childhood after age 5 that you can't remember?" and are offered the response alternatives "yes," "unsure," and "no" (Ross, 1989). How would you arrive at an answer? How does one evaluate one's own memory for a specified time period? One possibility is that people focus on how much information they can retrieve about the specified time period. The more information retrieved, the better one's memory presumably is. An alternative possibility is based on the notion of the availability heuristic (Tversky & Kahneman, 1973): when judging their memory, individuals may rely on the subjective experience of ease or difficulty of recall. If they do, they may judge their memory as good when recall is experienced as easy, but as poor when recall is experienced as difficult. Supporting the latter prediction, Winkielman, Schwarz, and Belli (1998) observed that judgments of how much one can remember about one's own childhood are based on the ease with which childhood memories can be brought to mind.

Depending on conditions, participants had to recall either 4 or 12 childhood events and were subsequently asked the memory question cited above. If participants base their memory judgments on the total amount of recalled information, they should infer that their memory is better when they had to recall 12 rather than 4 events. Yet, if they base their memory judgments on the subjective recall experience, they should infer that their memory is better when they recall 4 rather than 12 events, reflecting that the former task is easier than the latter. The results supported this ease-of-recall prediction. Whereas 46% of the participants who had to recall 12 memories inferred that they can't remember large parts of their childhood, only 19% of the participants who had to recall 4 events did so. Thus, the former participants inferred poorer memory than the latter, despite the fact that they had just recalled three times as many events. Presumably, they based their judgment on the difficulty they encountered in trying to remember, rather than on the total number of events remembered. Supporting this interpretation, informing participants in another condition that recalling 12 childhood events is a difficult task reduced reports of poor childhood memory to 27%, an estimate that does not reliably differ from the 4-events condition. In this condition, participants (correctly) attributed the experienced difficulty to the nature of the task rather than to the poor quality of their childhood memory, thus eliminating the otherwise observed impact of their phenomenal experience.

These findings bear on a controversial issue at the interface of cognitive and clinical psychology (see Belli, Winkielman, Read, Schwarz, & Lynn,

1998). Some clinical researchers assume that amnesia for childhood events is an indicator of childhood sexual abuse and encourage "memory work" designed to help their clients retrieve presumably repressed childhood memories (e.g., Bass & Davis, 1988; Courtois, 1991; Edwards, 1987). The Winkielman et al. (1998) findings however, suggest, that the more clients attempt to retrieve childhood events, encouraged by their therapist to tell them more, the more likely they are to conclude that they are amnesic for childhood events. This conclusion, in turn, apparently confirms the concern that something bad must have happened, or else, why would they have repressed their childhood memories?

To address this possibility, Winkielman and Schwarz (1999) replicated their earlier study and asked participants to evaluate the quality of their childhood. After completion of the recall task, but prior to rating their childhood happiness, participants were provided with two different theories. Some participants were told that psychologists have found that poor childhood memory indicates an unhappy childhood, with many unpleasant experiences that have been repressed or purged from memory. Others were told that psychologists have found that poor childhood memory indicates a happy childhood: because we ruminate more about unpleasant events than about pleasant ones, pleasant experiences are more likely to be forgotten. For both groups, it was emphasized that these are poorly supported hypotheses and that the relevant evidence is limited to small and unusual clinical samples, making it worthwhile to test these hypotheses with a general college population. As predicted, participants' ratings of their childhood depended on the subjective theory offered to them. Finding it difficult to retrieve 12 childhood events, participants who were told that happy events fade from memory evaluated their childhood as happier than did participants who were told that bad events fade from memory.

These findings have applied as well as theoretical implications. On the applied side, the findings suggest that "memory work" is likely to contribute to the conclusion that one's childhood was problematic. In a therapeutic setting, the attempt to retrieve childhood events is motivated by this problem hypothesis to begin with, and the experienced retrieval difficulties will serve to confirm it (see Belli et al., 1998, for a more detailed discussion). On the theoretical side, these findings illustrate second-order effects in a series of inferences that underlie the judgment. First, the experience that it is difficult to bring childhood memories to mind suggests that few childhood memories are available in memory, unless the informational value of this experience is discredited (Winkielman et al., 1998). At the next step, people have to decide what their perceived memory performance means for the quality of their childhood. Their inferences at this step depend on the naive beliefs about the link between childhood memory and childhood quality that they bring to bear on the task. As a result, they draw different inferences from the *same* experiential information.

Note that these results also indicate that people use theories about the implications of their experience to construct an initial judgment, and not only to correct or revise a judgment that they have already formed. This suggests that recent theorizing about how people use naive beliefs and theories need not cast subjective experience and naive beliefs as altogether different bases for judgment (e.g., Kelley & Jacoby, 1996; Wegener & Petty, 1995, 1997). Instead, the impact of subjective experience on judgments requires beliefs that connect the experience to the judgment task. Without such beliefs, the experiences would simply not bear on the task. In the research on perceptions of childhood memory described above, participants were explicitly informed about the probable meaning of having many versus few childhood memories. Next, we describe research in which participants derive beliefs through more incidental exposure to information. The topic of this research is the "illusion of truth" effect, where familiar information seems true on no basis other than its familiarity.

Illusions of Truth and Falseness: Inferences from Familiarity

In a study of rumor transmission during World War II, Allport and Lepkin (1945) observed that the strongest predictor of belief in wartime rumors was simply repetition of the rumors. Certainly there are circumstances in which repetition is good grounds for belief, especially if the information in question has been heard from a number of independent and credible sources. The curious aspect of Allport and Lepkin's finding was that in some cases, the source of repetition of rumors was a special newspaper column that warned people about false and unfounded rumors. By all indications, people took the column very seriously—but, paradoxically, repeating rumors in order to identify them as false increased later belief in those rumors. Since then, this "illusion of truth" effect (Begg, Anas, & Farinacci, 1992) has been reproduced many times in laboratory studies with information such as trivia statements or words from a foreign language (Arkes, Hackett, & Boehm, 1989; Begg et al., 1992; Brown & Nix, 1996; Gilbert, Krull, & Malone, 1990; Hasher, Goldstein, & Toppino, 1977). Chapter 2 by Fiedler in this volume suggests that merely considering information is enough to make it seem true, an effect that contributes to a wide variety of phenomena, such as belief perseverance and constructive memory errors induced by the use of active versus state verbs.

Begg et al. (1992) argued that the illusion of truth occurs when we make a decision about truth value based only on a feeling of familiarity.

We might prefer to rely on more detailed memory records for information and the context of its acquisition, but clear and accurate memories are not always available. This explanation relies on a general distinction in memory theories between familiarity, which is a vague sense of pastness that arises automatically and lasts for a very long time, and more clear and detailed memories that fade quickly without constant rehearsal (e.g., Jacoby & Dallas, 1981; Mandler, 1980). Begg et al. suggested that the illusion of truth emerges when we judge the truth of information by relying on a sense of familiarity in the absence of recollected details.

The illusion of truth effect depends on a number of crucial inferences. First, information must be judged as familiar. This judgment of familiarity depends on attributing the feeling of ease or fluency of mental processing to prior exposure (e.g., Jacoby & Whitehouse, 1989; Whittlesea, Jacoby, & Girard, 1990). Sometimes familiarity is described as a subjective experience or feeling in its own right (see, e.g., Jacoby & Whitehouse, 1989). Whether it is a feeling or merely a conclusion based on a feeling of fluency is an interesting question, but not material to our argument here: in both cases, a belief about the meaning of familiarity is necessary for it to influence further judgments.

One way of increasing the fluency with which information is processed is by repeating the information. But fluency from other sources can be mistakenly attributed to past exposure and can ultimately contribute to familiarity (Whittlesea, 1993). For example, Reber and Schwarz (in press) influenced truth judgments by manipulating fluency from visual contrast, rather than from repetition. They presented statements like "Osorno is a city in Chile" for one second on a computer screen and asked participants to decide, as fast as possible, whether each statement was true or false. To manipulate ease of processing, the statements were shown in colors that made them easy (e.g., dark blue) or difficult (e.g., light blue) to read against a white background. As expected, the same statement was more likely to be judged "true" when it was easy rather than difficult to read. Thus, the ease of visual processing resulted in an illusion of truth, presumably because the experience of perceptual fluency elicited a feeling of familiarity. Similarly, McGlone and Tofighbakhsh (in press) found that novel but rhyming aphorisms were rated truer than their semantically similar but nonrhyming counterparts.

But why should people assume that an apparently familiar statement is also likely to be a true statement? Recent research addressing this issue (Skurnik,1998; Skurnik, Moskowitz, & Johnson, 1999) proposes that the connection between familiarity and truth is not unmediated. Instead, people develop a belief that familiarity is diagnostic of truth, and this belief leads people to infer truth from familiarity. Such a belief has been hypothesized to reflect the operation of the tacit assumptions that underlie the conduct of conversation in daily life. As the philosopher Grice (1975) noted, daily communications proceed on the basis of a cooperativeness principle that invites speakers to present information that is truthful, relevant, and clear. Listeners therefore interpret speakers' utterances on the basis of the assumption that they live up to this ideal (for reviews of psychological research bearing on this issue, see Hilton, 1995; Schwarz, 1994, 1996). If information seems familiar, then the most logical inference to draw, in the absence of more detailed memories, is that the information is likely to be true.

If such a "metacognitive" belief about the meaning of familiarity drives the illusion of truth effect, then a change to the belief should change the nature of the illusion effect. For example, if people developed a belief that familiarity is diagnostic of *falseness* rather than of truth, then an "illusion of falseness" effect should result. A series of recent studies has found exactly this sort of reversal (Skurnik, 1998; see also Skurnik, Moskowitz, & Johnson, 1999). In these studies, participants read two different lists of statements on a computer screen; each statement was identified as either true or false as it was presented. Participants were told that the computer selected the first list of statements entirely at random, but the list was actually compiled specifically to be 2/3 true or 2/3 false, depending on condition. Then participants studied a second list of different statements that was always exactly half true and half false. Finally, participants engaged in a standard memory test for the illusion of truth: they saw the second list of statements again, with new statements mixed in, and had to decide whether each statement was true from the second list, false from the second list, or new. All participants were correctly told the only repeated statements they would see would be from the second list (which had equal numbers of true and false statements), and not from the first list (which had unequal numbers of true and false statements).

Results from these studies showed that participants whose initial list was 2/3 true showed the standard illusion of truth effect for their memories of the second list. Specifically, participants in this condition mistakenly called originally false statements "true" more often than they mistakenly called new statements "true" and more often than they mistakenly called originally true statements "false." However, participants whose first list was 2/3 false showed the first-ever demonstration of the illusion of falseness: they called true statements from the second list "false" more often than they called new statements "false" and more often than they called false statements "true." In other words, when the first list of statements was 2/3 false, participants switched their default belief about the meaning of familiarity from "true" to "false," resulting in the illusion of falseness.

In sum, the feeling of familiarity that is elicited by the experience of fluent processing resulted either in an illusion of truth or in an illusion of

falseness, depending on the experimental context. However, as in the childhood memory example, what changed in this experiment is not the meaning of the experiential information itself: fluency always indicated familiarity; yet which inference participants drew from familiarity depended on the distribution of true and false items—when most items presented were false (true), the familiar ones are probably false (true) as well.

When Positive Feelings Result in Negative Judgments: Inferences from Affective States

So far, we addressed the informative functions of cognitive experiences that accompany the thought process, like ease of recall or fluency of perception. As noted earlier, the same conceptual logic holds for affective experiences, like moods and emotions (for reviews, see Bless, in press; Forgas, 1995; Schwarz & Clore, 1996). Instead of drawing on declarative information about the target, people may simplify the judgment process by consulting their apparent affective response to the target, essentially asking themselves, "How do I feel about it?" In doing so, people may misread their preexisting mood state as a response to the target, resulting in more positive judgments when they are in a happy rather than sad mood. Consistent with this analysis, mood effects on evaluative judgments are eliminated when people attribute their mood to an unrelated source, such as the weather or side effects of the experimental room, thus undermining its informational value with regard to the target (Schwarz & Clore, 1983; for conceptual replications, see Keltner, Locke, & Audrain, 1993; Savitsky, Medvec, Charlton, & Gilovich, 1998; Schwarz, Servay, & Kumpf, 1985; Siemer & Reisenzein, in press, among others).

Much as we have seen for the case of ease of recall and perceptual fluency, however, it is possible to create conditions under which the default effect is reversed, for example, conditions under which individuals arrive at more negative judgments when they are in a positive mood, as Martin, Abend, Sedikides, and Green (1997) demonstrated. To use an example from their ingenious experiments, suppose that a person is put in a happy mood and asked to read a sad story. Next, the person is asked "how effective the story had been in inducing the intended mood" (i.e., sadness; Martin et al., 1997, p. 244) and how much he or she liked the story. Feeling happy due to the preceding mood induction, the person infers that the story obviously wasn't very effective, or else he or she would now feel sad. Hence, he or she concludes that this story was a poor sad story. Under these conditions, feeling good results in a negative judgment.

As in the preceding examples, this reversal does not indicate a change in the meaning of the experiential information itself. Instead, it reflects that the same experiential information has different implications for different criteria of judgment. Much as a sweet cookie makes for a poor salty snack, a story that apparently leaves us in a happy mood is a poor sad story—but the meaning of the happy feelings themselves changes as little as the sweet taste of the cookie.

Conclusions

As the contributions to the present volume illustrate, a large body of research in social and cognitive psychology has documented that our feelings and subjective experiences can profoundly influence the judgments we make. The specific nature of their influence, however, is context dependent, and it is useful to distinguish different forms of context dependency.

One type of context dependency derives from the perceived diagnosticity of the feeling. As many studies demonstrated, we only draw on our feelings as a source of information when they seem relevant to the judgment at hand. As a default, we tend to assume that our thoughts and feelings pertain to whatever we think about (Higgins, 1998; Schwarz & Clore, 1996), or why else would they come to mind at this point? When we become aware that our feeling may be due to an irrelevant source, its informational value for the judgment at hand is discredited. Conversely, when we perceive influences that seem likely to inhibit the feeling, its informational value is enhanced. As a result, discounting as well as augmentation effects have been observed (for a review, see Schwarz & Clore, 1996). If the informational value of the feeling is discounted, we turn to alternative sources of information to form a judgment. If alternative sources of information are not available, we attempt to correct for any undue influence of our discredited feelings, usually resulting in an overcorrection (for a review, see Strack & Hannover, 1996).

A second type of context dependency derives from the beliefs that connect the subjective experience to the judgment at hand. In the examples we reviewed above, the meaning that people gave to their subjective experience itself did not change: people always took ease of recall as an indication of large amounts of information in memory and fluency of perception as an indication of familiarity. What changed were their belief-based second-order inferences: having a copious childhood memory could mean either a good or bad childhood, and familiarity could be diagnostic of truth or falseness, depending on naive beliefs or theories. Similarly, a good mood indicates a positive response—but whether a positive response leads to judging a target as "good" or "bad" depends on the par-

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