

The Impact of Interpretation versus Comparison Mindsets on Knowledge Accessibility Effects

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Received February 2, 2000; revised May 30, 2000; accepted June 1, 2000

Many models of social judgment assert that both the interpretation of a perceived target stimulus and the comparison of this stimulus to a relevant standard are important components of the impression formation process. The present research examines the consequences of the activation of mindsets corresponding to these components for the use and impact of accessible knowledge on subsequent judgments. The findings of three studies support the hypothesis that accessible knowledge is more likely to produce assimilative interpretation effects when an interpretation goal is activated, whereas contrastive comparison effects occur when a comparison goal is activated. These goal \times knowledge priming effects occurred without perceivers being aware of having or working toward these mindsets during the target task. Implications for models of knowledge accessibility effects and other social phenomena are discussed.

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You have just returned home from a delicious dinner with your sister, Veronica, and her new boyfriend, Michael. Before you take your coat off, Veronica calls. It is obvious she had an ulterior motive for inviting you to dinner when she asks, “What do you think of Michael? Do you like him?” When answering such a question, you have to go through at least two steps: You have to encode and identify the observed behavior (What does it mean when somebody laughs at everything you say? Is that an indication of politeness, nervousness, or contempt?) and you have to tie the identified behavior to judgments on a particular dimension (To what extent does this mean Michael is likable?). Thus, encoding and judgment seem to be important ingredients of the impression formation process and indeed many social psychological theories of the construction of judgment distinguish these or similar components of the impression formation process (see

Biernat, Manis, & Kobrynowicz, 1997; Devine, 1989; Gilbert, 1989; Manis & Paskewitz, 1984; Schwarz & Bless, 1992; Trope, 1986; Wyer & Srull 1989). For example, Trope (1986) has developed a model that decomposes the impression formation process into an “identification” (encoding) and an “inference” (judgment) stage. Identification involves generating trait-related categories for observed behavior. The results of this identification procedure feed into the actual, judgmental inference process, in which judgments are constructed about the person who engaged in that behavior. The outcome of these interpretation and judgment processes is determined by the role of situational or contextual information that is accessible at each stage. Contextually activated knowledge may serve to disambiguate behavior during encoding as well as aid in the construction of dispositional inferences at the judgment stage (see also Newman & Uleman, 1993).

An important determinant of the outcome of the impression formation process is thus the role played by accessible knowledge in both the interpretation and judgment components of this process (see Higgins, 1996). In fact, several models of knowledge accessibility effects either implicitly assume or explicitly postulate a direct relation between the *consequences* of knowledge accessibility (assimilation or contrast) and the *component* of the impression formation

We thank Henk Aarts and Asteria Straathof for their assistance with data collection and Veronica Tedori-Sanson, Leonard L. Martin, and Abraham Tesser for commenting on earlier versions of this article. This research was supported by Grant 400-72-040 from the Dutch Science Foundation (Nederlandse Organisatie voor Wetenschappelijk Onderzoek) and by a fellowship of the Royal Netherlands Academy of Arts and Sciences.

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process on which accessible knowledge mainly exerts its influence (for a review see Stapel & Koomen, 1999).¹ For example, Wyer and Srull (1989) suggest (but do not test empirically) in their discussion of assimilation and contrast effects in memory and judgment that accessible knowledge is more likely to result in assimilation when it is used during encoding, whereas contrast is more likely when this information serves as a comparison standard during judgment (see also Manis & Paskewitz, 1984; Schwarz & Bless, 1992). Similarly, Trope's (1986) multiple-stage model of dispositional attribution processes states that contextual knowledge will have an assimilative effect during behavior interpretation, whereas a contrastive effect is more likely to occur when it comes to constructing judgments about a particular person. In other words, the impact of accessible knowledge is likely to be dependent on factors determining whether this knowledge will serve as an interpretation frame (such that interpretative assimilation will occur) or as a comparison standard (such that comparative contrast is more likely). But what determines whether accessible knowledge will predominantly serve as an interpretation frame or as a comparison standard?

In previous investigations on the impact of accessible knowledge on judgment and behavior, a dominant approach to answering this question was by manipulation of the *characteristics* of knowledge that is activated during impression formation. For example, in studies of Herr (1986) and Manis, Nelson, and Shedler (1988), it is demonstrated that an essential factor in the occurrence of assimilation and contrast is the perceived extremity of the accessible knowledge. Since extreme information is more likely to be used as a comparison standard, it is more likely to be contrasted to the target stimulus than moderate information. Similarly, in previous studies (e.g., Stapel, Koomen, & Van der Pligt, 1996, 1997; Stapel, Koomen, & Zeelenberg, 1998), we argued and demonstrated that some kinds of stimuli were more easily used for assimilative interpretation purposes (e.g., abstract traits: "pretty"), whereas others would mainly function as standards of comparison during judgment (e.g., concrete exemplars: "Naomi Campbell") and result in con-

trast. In previous research the interpretation/comparison logic to accessibility effects has thus mainly been tested via a rather indirect route: by manipulations of the kind of knowledge (e.g., moderate vs extreme and traits vs exemplars) that was activated, not by inductions of interpretation versus comparison processes per se.

In the present research, through the direct investigation of interpretation versus comparison *mindsets*, we put the interpretation/comparison hypothesis to a more direct and stringent test. More important, in doing so, we present the first empirical assessment of the impact of information-processing sets that are thought to be inherent to the impression formation process (interpretation and comparison) on the direction of knowledge accessibility effects (assimilation and contrast). Specifically, we examine the hypothesis that whether accessible knowledge is used for interpretative or comparative purposes depends on the information-processing *set* that is active during the impression formation process: When an interpretation goal is activated, accessible knowledge is more likely to be used in the formation of a representation of the target stimulus and assimilation is more likely to occur. Conversely, when a comparison goal is activated, accessible knowledge is more likely to be used in the formation of a standard and contrast is the more probable outcome. In other words, the direction of knowledge accessibility effects is determined by the relative salience or activation of interpretation and comparison sets. Thus, for example, in situations in which "extracting meaning" is likely to be most prevalent and important (e.g., When one is going through a job candidate's resume and tries to imagine whether she would fit in with the rest of the team), contextual cues are more likely to yield assimilation, whereas when "comparing" is the dominant mode of thinking (e.g., When one is interviewing several job candidates), contrast is more likely to result.

MINDSETS AND KNOWLEDGE ACCESSIBILITY

Recently, several studies have shown how the magnitude of knowledge accessibility effects may be affected by communication, accuracy, and correction goals (e.g., Ford & Kruglanski, 1995; Petty & Jarvis, 1996; Sedikides, 1990; Thompson, Roman, Moskowitz, Chaiken, & Bargh, 1994). For example, Sedikides found that assimilation effects produced by covert priming are attenuated if perceivers are motivated to communicate a particular impression about the person they are judging. Ford and Thompson and their colleagues found similar effects for accuracy-motivated perceivers (Ford & Kruglanski, 1995; Thompson et al., 1994; see also Stapel et al., 1998). Furthermore, several studies have explained the occurrence of assimilation and contrast in terms of mindsets that prompt perceivers into *using* versus *not using* activated concepts in the construction of

¹ It is important to note that not all models of knowledge accessibility effects explain the occurrence of assimilation versus contrast in terms of the role (interpretation or comparison) accessible information serves during the impression formation process. In fact, quite a few modern social cognition models explain the direction of accessibility effects mainly in terms of whether one perceives the accessible knowledge as appropriate for the task at hand—the construction of judgment. These studies demonstrate, for example, that Gricean communication rules or awareness of the biasing influence of activated information on target impressions may affect the perceived appropriateness or representativeness of accessible knowledge and thus influence whether this knowledge is used during the construction of judgment. Such appropriateness-based models of accessibility effects do not concern us here (but see Martin, 1986; Schwarz & Bless, 1992; Stapel & Koomen, in press; Wegener & Petty, 1995).

judgment. For example, blatant (instead of covert) priming may make perceivers aware of the biasing influence of the priming episode on subsequent judgments and lead them to conclude that the activated information is irrelevant for the task at hand and should either be partialled out of their representation of the target stimulus (Martin, 1986) or be corrected for in the construction of judgment (Wegener & Petty, 1995).

To date, however, no research has investigated the impact on accessibility effects of operative processing procedures that are *inherent* to (the different stages of) the impression formation process itself, such as “interpretation” and “comparison.” This is somewhat surprising because among early—now classic—social cognition studies were demonstrations of the impact that operative processing procedures have on person memory (see Hastie, Ostrom, Ebbesen, Wyer, Hamilton, & Carlston, 1980). For example, Hamilton, Katz, and Leirer (1980) found that recall of behavioral descriptions of a target person was superior for participants who were instructed to form an impression of this person (impression formation set) when compared to participants who were instructed to remember as much of the information as possible (memorization goal) (see further Chartrand & Bargh, 1996; Wyer & Srull, 1989). To date, studies of the impact of specific information-processing mindsets on memory have never been extended to investigations of knowledge accessibility effects. With the present studies we hope to fill this void. In our studies, we examine the impact of mindsets on the use of accessible knowledge by the activation of procedural sets that are supposed to be inherent to the impression formation process, interpretation and comparison. Moreover, we investigate these goal \times knowledge accessibility effects through the *implicit* activation of these sets. What do we mean by this?

IMPLICIT MINDSET PRIMING

In the vast majority of previous studies on the motivation–cognition interface, the various processing objectives are given to participants *explicitly* through instructions. Bargh (1997; Chartrand & Bargh, 1996) has recently proposed, however, that processing goals may also be activated *implicitly*. Although many of the goals an individual pursues are the result of conscious deliberation and choice, conscious choice is not necessary for goal activation and operation. Goals are represented in memory in the same way that constructs, attitudes, and stereotypes are. Therefore, similar rules will apply when it concerns the activation of goals, mindsets, or other cognitions (Bargh, 1997). Indeed, in Bargh, Gollwitzer, and Barndollar’s (1996) research, participants primed via a “language” test in an ostensibly unrelated first experiment behaved in line with the primed (achievement) goal in a second experiment in which that

goal could be pursued. Similarly, Chartrand and Bargh (1996) replicated the findings of Hamilton et al. (1980) in a study in which information-processing (memorization vs impression formation) sets were activated via subtle (supraliminal or subliminal) priming techniques. In the present research, we hope to further our understanding of the impact of implicit information-processing mindsets on impression formation by applying subtle priming techniques to our investigation of the impact of interpretation and comparison mindsets on the use of accessible knowledge.

MINDSET BY KNOWLEDGE PRIMING

In the present research, we combine manipulations designed to directly activate interpretation or comparison sets (“mindset priming”) with some of the knowledge type manipulations (“knowledge priming”) used in our previous investigations of the determinants of accessibility effects.² In previous studies, we found that when the task is to judge a target person, priming traits (“hostile” and “friendly”) before a target person (vaguely hostile Mike) has to be judged results in assimilative interpretation effects, whereas priming person exemplars (“Dracula” and “Mandela”) yields contrastive comparison effects (Stapel et al., 1996, 1997, 1998).³ It therefore seemed appropriate to combine manipulations of the type of processing goal that is activated (interpretation versus comparison) with manipulations of the type of knowledge that is activated (e.g., trait versus exemplar). This will allow us to investigate the relation between the (relatively new) goal priming and (relatively well-known) knowledge priming effects. For purposes of generalization it is important to study whether the impact of interpretation versus comparison goal is independent of knowledge priming effects.

² The distinction between mindset and knowledge priming is somewhat artificial. One may argue that to a certain extent, all priming techniques activate knowledge of some kind or another. This becomes especially clear in Experiments 2 and 3, in which the way in which knowledge and mindsets are activated is almost identical (i.e., by the subtle activation of words). However, to warrant a succinct description and discussion of our research, a meaningful label for these types of primes was needed.

³ Similar trait versus exemplar priming effects have been demonstrated in other domains of psychological inquiry, such as attribution, expectancy, stereotyping effects, and judgments of advertisements and politicians (for a relevant review, see Stapel & Koomen, in press). Research by Dijksterhuis, Spears and their colleagues demonstrates that the differences between traits and exemplars may also determine whether priming yields assimilation or contrast in behavior (Dijksterhuis, Spears et al., 1998). All of these studies suggest that priming stimuli may differ in the *kind* (e.g., trait vs exemplar) of knowledge they activate and therefore in the *role* (interpretation frame vs comparison standard) they play in impression formation.

EXPERIMENT 1

To put our hypotheses to a first test, in the current study, interpretation versus comparison sets were primed by having participants first use the mental procedure in question before going on to the target task. Instructing subjects to solve a specific task creates a related cognitive orientation (i.e., a set) that furthers the solution of that task. When a person becomes involved with a given task, relevant cognitive procedures become activated and hence more easily accessible. Interpretation and comparison procedures that are pursued in one task may thus carry over to affect judgments in a subsequent, ostensibly unrelated task, even though participants do not consciously choose the carried-over goal in the second task (see Gollwitzer & Moskowitz, 1996). Previous studies successfully used “carryover” procedures to investigate, *inter alia*, the impact of “deliberative” and “implemental” mindsets on problem-solving tasks (e.g., Gollwitzer, Heckhausen, & Steller, 1990), the impact of impression and accuracy motivations on attitudinal judgments (Chen, Shechter, & Chaiken, 1996), and the impact of consistency goals (the motivation to hold consistent cognitions) on classic cognitive dissonance effects (Bator & Cialdini, 1998; see further Bargh, 1997).

Following these earlier studies, in the present experiment, we presented participants with two ostensibly unrelated tasks. In the first study, participants were presented with a number of short behavior descriptions that strongly implied a certain trait (e.g., “Peter always refuses to listen to other people’s opinions on issues, even when he knows that all the evidence is in their favor” implies stubbornness). Participants in the interpretation condition were instructed to write down the personality trait they thought was implied by the sentences. Participants in the comparison condition were instructed to indicate to what extent the behavior implied the relevant trait compared to a specified other or group of others on a rating dimension (e.g., “To what extent is Peter stubborn when compared to the average student?”).

After performing this mindset priming task, participants were introduced to the second study. In this “managerial decision making” study, participants were presented with two scenarios. The first scenario presented was the context scenario, which described an unambiguous issue that implied either a clear business “opportunity” or a clear business “threat.” The second (target) scenario described an equivocal decision-making issue that could be interpreted either as an opportunity or as a threat.

Our previous work on the interpretation/comparison hypothesis suggests that the impact of the unambiguous (positive vs negative) context scenario on the perception of an equivocal target scenario may switch from assimilation to contrast depending on the level of “context–target similarity” concerning the category to which these stimuli belong

(see Stapel et al., 1996, 1997, 1998). More specifically, when target and context stimuli are categorized as similar (e.g., both refer to threats/opportunities in the domain of organizational decision making), comparison contrast is likely to occur (see Kahneman & Miller, 1986; Manis & Paskewitz, 1984). When, however, context and target are categorized as different (e.g., the context scenario refers to a “nonorganizational” context, the target scenario refers to an “organizational” context), it is more likely that the activated information guides the interpretation of the ambiguous target and results in assimilation. In the present study, we combined the activation of interpretation versus comparison mindsets with manipulations of context–target similarity, thus allowing us to assess the impact of mindset priming context–target similarity on knowledge accessibility effects.

Method

Participants and design. Participants ($n = 497$) were undergraduates who participated in exchange for partial course credit. The participants were randomly assigned either to the conditions of a 2 (Mindset: interpretation vs comparison) \times 2 (Context–target similarity: low vs high) \times 2 (Context valence: positive vs negative) between-subjects design or to one of the two control conditions, in which a goal was primed, but no context scenario was given (interpretation control or, comparison control).

Mindset priming. The experiment was part of a general testing session in which participants received several questionnaires. The goal priming task was entitled “Reading and Meaning” and included 10 behavior descriptions, all of which strongly implied certain traits (e.g., “cultured,” “stubborn,” “helpful,” and “thrifty”). This collection of sentences was pretested to overall activate evaluatively neutral information. An example of one of these sentences is “Monique is a student in Amsterdam. She thinks it is unsafe to leave her house at night.” In the interpretation goal condition, participants’ task was, for each sentence, to write down one word “that best describes the meaning of this sentence. Which personality trait is implied by the described behavior?” In the comparison goal condition, for each sentence participants were instructed to rate on a 7-point scale the protagonist’s behavior in comparison to a specific person or group. For example, participants read the sentence about Monique (see above) and were asked, “To what extent is Monique fearful, when you compare her to other Dutch women?” (1 = *not at all fearful* to 7 = *very fearful*). To give another example, participants read “Peter always refuses to listen to other people’s opinions on issues, even when he knows that all the evidence is in their favor” and were asked, “To what extent is Peter stubborn, when you compare him to the average student” (1 = *not at all stubborn* to 7 = *very stubborn*).

Knowledge priming and measures. After participants had finished the mindset priming task and a filler task (identifying 16 neutral words out of a word puzzle consisting of a matrix of 25×20 letters), they were instructed to put the "Reading and Meaning" booklet in a folder on their desks. Next, participants were administered a questionnaire on "managerial decision making" seeking their evaluations of several "judgment and decision making problems." Participants were asked to read two scenarios and to form an impression of the issues described in these scenarios. On the first page, they were instructed to read the text carefully and attentively and to answer the questions that would be presented on the pages that followed. On the second page, the context scenario was given. In the positive context condition this scenario described a clearly positive prospect. In the negative context condition, the scenario described a clearly negative prospect. On the third page, participants were asked to judge the context scenario on a number of dimensions. On the fourth page, the target scenario was given. This target scenario described an equivocal strategic management issue that could be interpreted either as positive or negative, namely as an opportunity or a threat. On the fifth page, participants were asked to evaluate the target scenario on a number of dimensions. In the high context–target similarity condition both the context and the target scenario referred to organizational issues. In the low context–target similarity condition, the context scenario referred to a nonorganizational issue. These scenarios were loosely based on studies reported by Highhouse, Pease, and Leatherberry (1996) (see the Appendix for context and target scenarios).

In order to verify that the scenarios in the low context–target similarity conditions were indeed perceived as less similar than the scenarios in the high context–target similarity conditions, 20 students were asked to judge context and target scenarios on a 9-point scale ranging from (1) *very different* to (9) *very similar*. Judges were given three scenarios. Half of the judges were given the positive nonorganizational scenario, the positive organizational scenario, and the target scenario. The other half were given the negative nonorganizational scenario, the negative organizational scenario, and the target scenario. Judges were asked to read the three scenarios carefully and to give two similarity ratings: one for each context scenario (the organizational and non-organizational) compared to the target scenario. An analysis of variance (ANOVA) treating similarity ratings as a within-subjects factor and valence of the context scenarios judged as a between-subjects factor revealed the predicted similarity effect, $F(1, 18) = 45.73, p < .01$ (other $F_s < 1$). Dissimilar context–target pairs were perceived as less similar ($M = 3.3$) than similar context–target pairs ($M = 6.6$).

In the actual experiment, participants rated both the context and the target scenarios on a number of measures

designed to tap the extent to which participants perceived the scenarios more as positive or negative. Participants were given eight judgment dimensions. Four dimensions were labeled positively ("positive," "opportunity," "may gain & won't lose," and "resolution is likely"), and four were labeled negatively ("negative," "may lose & won't gain," "threat," and "bad news"). Participants were asked to indicate the degree to which each item was descriptive of the scenario on a 7-point scale that ranged from (1) *not at all descriptive* to (7) *very descriptive*.

When participants were finished, the questionnaires were collected and participants were probed as to what they thought the study was about. Specifically, participants completed several items tapping their suspicions regarding the purpose of the experiments (see Chartrand & Bargh, 1996). Participants were asked (a) what they thought the purpose of the experiment had been, (b) whether they thought any of the different tasks had been related, (c) whether anything they had done on the first task affected what they had done on the second task, and (d) whether they thought that in the managerial decision-making task the context-scenario task had influenced their judgments of the target scenario. No participant showed any awareness or suspicion of a relation between the experimental tasks of the experiment or indicated that the context scenario had affected how she or he had judged the target scenario.

Results and Discussion

Manipulation check. First it was checked whether the context valence manipulation was effective. A reliability analysis of the context judgments was conducted to form a "Context Evaluation" index (reverse coding negative items). The index was reliable (Cronbach's $\alpha = .90$). Participants' mean scores on this index, ranging from 1 (negative) to 7 (positive) were used to compare participants' impressions of the context scenarios. As expected, a Mindset \times Context–target similarity \times Context valence ANOVA revealed only an effect of Context valence, $F(1, 397) = 1888.23, p < .01$ (other effects $F_s < 1$). Respondents rated the opportunity scenarios as more positive ($M = 5.8$) than the threat scenarios ($M = 2.6$). Thus, in both the high and the low context–target similarity conditions, the context scenarios were perceived as intended.

Main analyses. First it was investigated whether the mindset manipulation had an effect on the target ratings per se; that is, when no context scenario was presented to participants. Analyses of judgments on the "Target Evaluation" index (Cronbach's $\alpha = .79$), which was constructed similarly to the Context Evaluation index, revealed that the interpretation goal ($M = 4.3$) and the comparison goal ($M = 4.4$) control conditions did not differ. In those conditions participants rated the target scenario near the midpoint of the scale. Further analyses showed that in the two control

TABLE 1

Mean Judgments of an Equivocal (Opportunity/Threat) Organizational Decision-Making Issue as a Function of Mindset (Interpretation vs Comparison), Context–Target Similarity (High: Organizational vs Low: Nonorganizational), and Context Valence (Positive vs Negative)

Evaluation target scenario	Low (Nonorganizational context scenario)		High (Organizational context scenario)	
	Positive	Negative	Positive	Negative
	Interpretation	5.3	3.7	5.1
Comparison	4.5	5.3	4.1	5.5

Note. Scale range is from 1 to 7. Higher scores indicate more positive ratings. The mean rating of the target scenario was 4.3 in the interpretation control condition and 4.4 in the comparison control condition.

conditions target scenarios were also rated near the midpoint of the scale when positively labeled items and negative items were analyzed separately. Specifically, in the interpretation control condition, M positive items = 4.4 and M negative items = 4.2, and in the comparison control condition, M positive items = 4.2 and M negative items = 4.5. This confirms the idea that participants who were not primed with positive or negative information indeed perceived the target stimulus as “equivocal” or “ambiguous” (possessing vaguely positive as well as vaguely negative features).

The effects of mindset and knowledge priming on judgments of the target scenario were investigated by performing a Mindset \times Context–target similarity \times Context valence ANOVA, treating judgments on the Target Evaluation index as the dependent variable. This ANOVA revealed the predicted Mindset \times Context valence interaction, $F(1, 394) = 43.73, p < .01$; the predicted Context–target similarity \times Context valence interaction, $F(1, 394) = 16.96, p < .01$; and a main effect of mindset, $F(1, 394) = 5.59, p < .01$ (other effects $ps > .22$). Table 1 presents ratings on the Target Evaluation index for each of the conditions. As can be seen in this table, goal priming determined the direction of knowledge accessibility effects. Whereas previous experiments have shown that context–target similarity can be an important determinant of whether assimilation or contrast occurs (see Stapel et al., 1996, 1997), in the present experiment, interpretation versus comparison priming proved to be an important determinant of whether assimilation or contrast occurred.

The Mindset \times Context valence interaction shows that, aggregating over levels of the context–target similarity factor, assimilation occurred in the interpretation conditions [main effect of context valence within interpretation goal conditions, $F(1, 394) = 63.60, p < .01$], indicating that

participants exposed to a positive context scenario rated the target scenario as more positive than participants exposed to a negative context scenario ($M = 5.2$ vs $M = 4.0$). Contrast occurred in the comparison conditions [main effect of context valence within comparison conditions, $F(1, 394) = 55.82, p < .01$], indicating that participants exposed to a positive context scenario rated the target scenario as less positive than participants exposed to a negative context scenario ($M = 4.3$ vs $M = 5.4$).

The Context–target similarity \times Context valence interaction shows that, aggregating over levels of the goal priming factor, assimilation occurred when context–target similarity was low [main effect of context valence within low context–target similarity conditions, $F(1, 394) = 7.05, p < .01$], indicating that participants exposed to a positive context scenario rated the target scenario as more positive than participants exposed to a negative context scenario ($M = 4.9$ vs $M = 4.5$). Contrast occurred when context–target similarity was high [main effect of context valence within high context–target similarity conditions, $F(1, 394) = 5.74, p < .05$], indicating that participants exposed to a positive context scenario rated the target scenario as less positive than participants exposed to a negative context scenario ($M = 4.6$ vs $M = 5.0$).

These results provide the first support for the hypothesis that interpretation and comparison sets can be primed subtly in an unrelated task paradigm and thus support earlier findings reported by Chartrand and Bargh (1996) that cognitive information-processing sets can be activated without people being aware of their consequences (see also Bargh, 1997; Gollwitzer & Moskowitz, 1996). Furthermore, the present study provides the first evidence that accessible knowledge results in assimilation when an interpretation mindset is activated, whereas contrast occurs when a comparison goal is activated. Most important, however, these findings present the first evidence that subtly activated information-processing sets that are inherent to the impression formation process may determine the direction of knowledge accessibility effects and thus the outcome of this process. In other words, interpretation and comparison sets are important navigators in the way accessible knowledge is used during the construction of judgments, thus determining whether assimilation or contrast is more likely to occur.

It is interesting to note how these findings relate to our previous studies, in which we demonstrated that some types of priming stimuli (i.e., those that belong to the same category as the target) will predominantly exert their effect as a comparison standard and yield contrast effects, whereas other types of primes (i.e., those that are dissimilar from the target) will mainly be used as interpretation frame and color the encoding of ambiguous stimuli. That is, in previous studies of the impact of accessible knowledge on judgments of an ambiguous person description, priming person exem-

plars (high context–target similarity) resulted in contrast (prime “Mandela” → judgment negative), whereas priming animal exemplars or traits (low context–target similarity) resulted in assimilation (prime “Bunny” → judgment positive; prime “friendly” → judgment positive) (see Stapel et al., 1996, 1997, 1998). In the present study, context–target similarity was manipulated, but the most important determinant of whether assimilation or contrast occurred was the mindset (interpretation or comparison) that was active during impression formation. In other words, the impact of interpretation versus comparison mindsets on knowledge accessibility effects seems to be independent of the type of knowledge that is activated, even when knowledge type “normally” is an important determinant of the way it affects judgment.

EXPERIMENT 2

Experiment 1 provided encouraging support for the impact of interpretation versus comparison priming on knowledge accessibility effects. Nevertheless, it is important to assess whether our findings generalize to a different domain of judgment. In Experiment 1, we investigated the effects of goal and knowledge priming on judgments of an equivocal business scenario. In the present experiment, we investigate such effects on person judgment.

Moreover, the present experiment provides a more conservative test of goal activation and operation. The evidence of the previous experiment shows that interpretation and comparison sets, recently consciously adopted and pursued, have a lingering influence in subsequent contexts in which they are not consciously chosen. In the present experiment, we assessed whether these ways of thinking can be triggered directly and unconditionally with no intervening role played by intentional, conscious, goal-directed processing (see Bargh, 1997; Chartrand & Bargh, 1996). This will increase the ecological validity of the present investigation. After all, the focused interpretation and comparison tasks participants engaged in the first experiment are not part and parcel of the kind of tasks people perform in their daily lives.

Whereas in Experiment 1 participants intentionally pursued an interpretation or comparison goal in the priming task, in the present experiment these goals were activated by environmental stimuli unconditionally. Specifically, interpretation and comparison mindsets were primed by having participants partake in a “language experiment” in which words related to these sets were activated. This manipulation of interpretation versus comparison goal activation was crossed orthogonally with a manipulation of “trait” versus “person exemplar” priming. As noted above, earlier studies have shown—given that no specific processing set has been activated—that trait priming (“hostile” and “friendly”) is likely to result in assimilation, whereas person exemplar

priming (“Dracula” and “Mandela”) often yields contrast (Stapel et al., 1997). Therefore, similar to the way mindsets were activated, in the present experiment trait and exemplar primes were words embedded in a language experiment participants completed before the target task was presented.

In our earlier work (Stapel et al., 1997), we argued and demonstrated that assimilative interpretation effects should be obtained only when judging a target requires interpretation or interpretative effort, i.e., when a certain “vagueness” or “ambiguity” needs to be resolved (recall the equivocal target scenario in Experiment 1). No such assimilation effects should emerge when the target stimulus is well known rather than ambiguous. Conversely, contrastive comparison effects reflect the use of accessible information as a comparison standard during judgment. Accordingly, the emergence of such contrast effects should be independent of whether the target is ambiguous (and requires interpretation) or unambiguous (see Philippot, Schwarz, Carrera, De Vries, & Van Yperen, 1991; Stapel et al., 1997). In other words, the emergence of comparison contrast effects should thus obtain in judgments of ambiguous targets *and* in judgments of unambiguous targets. To test whether the assimilation and contrast effects expected to follow mindset and knowledge priming are indeed interpretative versus comparative effects, in the present study participants were asked to judge both ambiguous and unambiguous target stimuli.

Method

Participants and Design

Participants ($n = 144$) were undergraduates who participated in exchange for partial course credit. The experiment was conducted in groups of four to six persons. The participants were randomly assigned either to the conditions of a 2 (Mindset: interpretation vs comparison) \times 2 (Knowledge type: trait vs person exemplar) \times 2 (Knowledge valence: positive vs negative) between-subjects design or to one of the two control conditions in which mindsets, but no traits or exemplars, were primed (interpretation control or comparison control).

Procedure

The experiment was part of a general testing session in which participants received a total of seven questionnaires. Filler word and number puzzle tasks and problem-solving tasks alternated with the mindset priming, knowledge priming, and the person judgment tasks. To familiarize participants with the kind of experimental tasks included in this study, the first task was a word puzzle task and involved unscrambling the names of seven fruits and vegetables. Then, participants were given the knowledge priming task (see below). The third and the fourth task were again short

filler tasks. The fifth task was the goal priming task (see below). The sixth task was a filler task and the final task was the person judgment task (see below). When participants were finished, the questionnaires were collected and participants were probed carefully for awareness of the relation between the priming tasks and the person judgment task.

It is important to note that in the present experiment (see also Experiment 3) the sequence of events is knowledge priming → mindset priming → target stimulus, whereas in the first experiment the order in which the knowledge and mindset priming were presented was reversed. Furthermore, in the present experiment we included more filler tasks between the mindset and knowledge priming tasks. We made these changes to rule out the possibility that the activation of interpretation versus comparison mindsets not only affected perceptions of the target stimulus, but also perceptions of the knowledge primes.

Knowledge priming. The knowledge priming task was entitled “Word Puzzle” and consisted of one page with a 20 × 20 matrix of letters with seven words embedded therein (cf. Herr, 1986). A list of these words was provided to ensure that participants could find all the words. Four of the seven words were priming stimuli, the other two words were fillers (“table” and “painting”). In the positive person exemplar condition the primes were “Ghandi,” “Mandela,” “Santa Claus,” and “Jesus.” In the negative person exemplar condition the primes were “Hitler,” “Stalin,” “Dracula,” and “Devil.” In the positive trait condition the primes were “nice,” “gentle,” “sweet,” and “kind.” In the negative trait condition the primes were “mean,” “violent,” “aggressive,” and “unkind” (see for details on pretests of these priming stimuli; Stapel et al., 1997).

Mindset priming. For the mindset priming task we used a version of The Scrambled Sentence Test (Srull & Wyer, 1979; see also Chartrand & Bargh 1996). This task was entitled “Language Comprehension” and included 20 items, each requiring the participant to form a grammatically correct five-word sentence from five words presented in a scrambled order. Examples of the test items are “table the he understands book” (interpretation goal) and “table the he compares books” (comparison). In the interpretation condition, words related to interpretation (e.g., “understand,” “interpret,” “meaning,” “comprehend,” “make sense,” and “grasp”) were embedded in 10 of the items. In the comparison condition, words related to comparison (e.g., “compare,” “contrast,” “difference,” “distinguish,” “dissimilarity,” and “opposition”) were embedded in 10 of the items. The remaining words in both conditions were neutral with respect to both mindsets.

Person judgment. After participants had finished the priming and filler tasks, they were given a booklet, entitled “Impression Formation.” On the first page of the booklet was a paragraph identifying the experiment as a study

investigating impression formation processes. On the second page was an ambiguous description of a target person’s behavior. The description consisted of an account of “Erik,” whose behavior could be characterized as somewhat hostile, but not necessarily so (see Higgins, 1996). Erik was a modification of the famous “Donald,” introduced by Srull and Wyer (1979) and used in many subsequent priming studies. Because the interpretation/comparison model has different predictions for priming effects on judgments of ambiguous and unambiguous targets, after reading the Erik paragraph we asked our participants to indicate their impressions of both Erik and a friend of their own sex (cf. Stapel et al., 1997).⁴ The order in which these judgments were given was counterbalanced. Because this order manipulation showed no (main or interaction) effects on judgment ($F_s < 1$), it is not discussed further here.

Participants rated Erik and a friend on the following seven unipolar trait dimensions: “hostile,” “considerate,” “friendly,” “intelligent,” “dependable,” “helpful,” and “arrogant.” Inclusion of the last four scales would decrease the possibility that participants would become suspicious that the concept of interest was hostility-related. Related and unrelated rating scales were interspersed with each other. Ratings were made along a scale from 1 (*not at all*) to 9 (*extremely*). Because our manipulations had no (main or interaction) effects on the unrelated rating scales for ratings of Erik and participants’ friends ($F_s < 1$), they are not discussed further here. Reliability analyses of the three applicable trait ratings were conducted to form a composite scale for ratings of Erik and the participant’s friend (Cronbach’s $\alpha = .74$ and $.85$, respectively). Participants’ score on this scale, ranging from 1 (negative) to 9 (positive) was used as the dependent variable.

Suspicion. After the person judgment task, participants completed a debriefing form that probed for awareness and suspicion concerning our manipulations. Specifically, participants were given the funneled debriefing procedure designed by Chartrand and Bargh (1996) to check whether the relation between the priming and judgment tasks was cam-

⁴ It is important to note that it is somewhat unclear to what extent the differences between this target and “ambiguous Donald” center around the concept of “ambiguity.” Of course, by definition well-known, familiar targets are well-defined objects that hardly need interpretation. It is unlikely that respondents will have to encode new information about their close friends. However, respondents are also likely to have relatively more information about “good friends” and to evaluate them relatively positively. These features (quantity and valence of information) distinguish these targets from “ambiguous” Erik in addition ambiguity per se. This being said, however, most relevant for the present concerns is the notion that comparing a “well-known” target to an “ambiguous” target allows us to study the differences between the interpretation and comparison effects of accessible knowledge. It is likely that the ambiguity of target information rather than its quantity or valence is most relevant to the occurrence of such differences (see Stapel et al., 1997).

TABLE 2

Mean Judgments of (Vaguely Hostile) Erik and Friend as a Function of Mindset (Interpretation vs Comparison), Knowledge Type (Trait vs Exemplar), and Knowledge Valence (Positive vs Negative)

	Trait		Exemplar	
	Positive	Negative	Positive	Negative
Ratings of Erik				
Interpretation	4.7	2.5	4.1	3.1
Comparison	3.0	3.9	2.5	4.5
Ratings of friend				
Interpretation	7.9	8.0	8.1	7.6
Comparison	7.3	8.0	6.7	8.5

Note. Scale range is from 1 to 9. Higher scores indicate more positive ratings. Mean ratings of Erik were 3.7 in the interpretation control condition and 3.6 in the comparison control condition. Mean ratings of participants' friends were 7.7 in the interpretation control condition and 7.6 in the comparison control condition.

ouflagged successfully. This debriefing form was similar to the one we used in Experiment 1, except that participants were also asked specifically which strategy they used to construct the target judgments ("What were you trying to do when you constructed your judgment of Erik (your friend)?" "Did you have any particular goal or strategy?"). No participant showed any awareness or suspicion of a relation between the experimental tasks of the experiment, indicated that one of the priming tasks had affected target judgments, or stated that the way person judgments were constructed was congruent with words activated in the mindset priming task.

Results and Discussion

Table 2 shows participants' mean ratings on the composite scale of Erik and a friend as a function of the manipulations. As is clear from this table, participants evaluated their friend more positively than Erik, resulting in a main effect of this within-subjects factor, $F(1, 108) = 917.18$, $p < .01$. This theoretically less interesting effect of "target" is not discussed in further analyses. Analyses of the control conditions revealed that person judgments in the interpretation (Erik $M = 3.7$, Friend $M = 7.7$) and the comparison (Erik $M = 3.6$, Friend $M = 7.6$) control conditions did not differ.

Similar to the findings of Experiment 1, Table 2 clearly shows the impact of mindset priming on judgments of the ambiguous target. In the trait as well as in the exemplar priming conditions, assimilation occurred when an interpretation mindset was implicitly primed, whereas contrast occurred when a comparison mindset was subtly activated.

The effect of mindset and knowledge priming on judg-

ments of Erik and participants' friends was investigated by performing a Mindset \times Knowledge type \times Knowledge valence \times Target ANOVA on the dependent variable. This ANOVA revealed the predicted Mindset \times Knowledge valence \times Target interaction, $F(1, 108) = 8.33$, $p < .01$; a Mindset \times Knowledge valence interaction, $F(1, 108) = 75.13$, $p < .01$; and a Knowledge type \times Knowledge valence interaction, $F(1, 108) = 8.02$, $p < .01$. The predicted Knowledge type \times Knowledge valence \times Target interaction was marginally significant, $F(1, 108) = 2.69$, $p < .10$. There were no other significant effects.

To further test our predictions and to assess the precise pattern of these interactions, we conducted separate analyses for ratings of Erik and participants' friends. In these analyses, we followed the same strategy as in Experiment 1, thus making comparisons across experiments easier.

Judgments of Erik

For ratings of Erik, an ANOVA revealed the predicted Mindset \times Knowledge valence interaction, $F(1, 108) = 55.48$, $p < .01$, and the predicted Knowledge type \times Knowledge valence interaction, $F(1, 108) = 8.46$, $p < .01$. The Mindset \times Knowledge type \times Knowledge valence interaction, $F(1, 108) = 5.34$, $p < .05$, that appeared here did not interact significantly with Target in the earlier general analysis and is therefore disregarded (other F s < 1). As can be seen in Table 2, the impact of the mindset manipulations was similar to that in Experiment 1.

The Mindset \times Knowledge valence interaction indicates that, aggregating over levels of the Knowledge type factor, assimilation occurred in the interpretation goal conditions [main effect of knowledge valence within interpretation goal conditions, $F(1, 108) = 22.07$, $p < .01$]: Participants exposed to positive information rated Erik as more positive ($M = 4.4$) than did participants exposed to negative information ($M = 2.8$). When a comparison mindset was activated, these effects reversed [main effect of knowledge valence within comparison goal conditions, $F(1, 108) = 21.74$, $p < .01$]: Participants exposed to positive information rated Erik as more negative ($M = 2.7$) than did participants exposed to negative information ($M = 4.2$).

The Knowledge type \times Knowledge valence interaction shows that, aggregating over mindset levels, weak assimilation occurred in trait priming conditions, [main effect of knowledge valence within trait priming conditions, $F(1, 108) = 2.52$, $p = .12$]: Participants exposed to positive traits rated Erik as slightly more positive ($M = 3.7$) than did participants exposed to negative traits ($M = 3.2$). Weak contrast occurred when exemplars were primed [main effect of context valence within exemplar priming conditions, $F(1, 108) = 3.09$, $p = .08$]: Participants exposed to positive exemplars rated Erik as slightly more negative ($M = 3.3$) than did participants exposed to negative exemplars ($M = 3.9$).

Judgments of Participants' Friends

For ratings of participants' friends, an ANOVA revealed the predicted Mindset \times Knowledge valence interaction, $F(1, 108) = 16.50, p < .01$, and a main effect of mindset, $F(1, 108) = 16.50, p < .01$. There were no other significant effects. As can be seen in Table 2, the impact of the mindset manipulations was as predicted. In the interpretation goal conditions, both trait and exemplar priming did not exert an effect on participants' judgments of their friends (main effect of knowledge valence within interpretation conditions, $F < 1$). In the comparison conditions, however, both trait and exemplar priming yielded contrast [main effect of context valence within comparison goal conditions, $F(1, 108) = 24.27, p < .01$]: Participants exposed to positive priming stimuli rated their friends as more negative ($M = 7.1$) than did participants exposed to negative priming stimuli ($M = 8.3$).

These results provide further direct support for the hypothesis that activating mindsets that are strongly associated with specific components of the impression formation process (interpretation and comparison) may affect the impact of accessible knowledge on judgment. Accessible knowledge results in assimilation when an interpretation mindset is activated, whereas contrast occurs when a comparison mindset has been activated. These findings thus replicate and extend the results of the first experiment: replicate because a similar pattern of results was found and extend because a different judgment domain was investigated (person impressions), a different knowledge type manipulation was used (trait versus exemplar), priming effects on both an ambiguous and an unambiguous target were assessed (to be able to distinguish interpretation from comparison effects), and, most importantly, because a priming technique was used that triggered interpretation and comparison mindsets more directly and unconditionally; that is, with no intervening role of intentional, conscious, goal-directed processing (see Bargh, 1997; Chartrand & Bargh, 1996). Together, these extensions indicate even more clearly and strongly than the first experiment that interpretation and comparison mindsets may impact the way accessible knowledge is used without people being aware of this impact. The present evidence also seems to indicate again that the impact of interpretation versus comparison mindsets on the use and effect of accessible knowledge is somewhat stronger than the impact of trait versus exemplar priming.

EXPERIMENT 3

In the present experiment, we further test our hypotheses concerning the consequences of interpretation versus comparison mindsets for the use and impact of accessible knowledge on subsequent judgments. In Experiment 1, we investigated the

effects of mindset and knowledge priming on judgments of an "equivocal business scenario." In Experiment 2, we investigated these effects on judgments of "vaguely hostile Erik" and "participants' friends." In the present experiment we set out to further assess the generalizability of the interpretation/comparison logic to priming effects on judgments of an ambiguous target stimulus. Several authors have argued that priming effects may at least partly be determined by the kind of target description investigated (see Higgins, 1996; Wyer & Srull, 1989). And indeed, the findings of Experiment 2 show that the outcome of mindset \times knowledge priming is partly dependent on whether the target stimulus needs interpretative effort. In Experiment 1, we found interpretation and comparison effects on judgments of a business scenario because this scenario could be interpreted as either an opportunity or a threat. In Experiment 2, we found interpretation and comparison effects on judgments of a description of Erik because his behavior could be described as "vaguely hostile" (Srull & Wyer, 1979; see also Higgins, 1996). That is, Erik's behavior had *sufficient* features to be labeled hostile, but although this trait was the most likely candidate to describe Erik's behavior, it was not the only candidate ("assertive" is an alternative, see Higgins, 1996).

The target stimuli most typically and frequently used in past studies of knowledge accessibility effects on person judgments have consisted of behavior descriptions that are strongly related to at least two descriptively similar but evaluatively discrepant constructs (Higgins, 1989, 1996). In the present experiment, we investigated our hypotheses concerning mindset \times knowledge priming effects on this "classic" type of ambiguous target stimulus. Participants first engaged in mindset and knowledge activation tasks similar to the ones used in Experiment 2. Subsequently, they were given a person description that was ambiguous on four dimensions (thrifty–stingy, witty–sarcastic, persistent–stubborn, and confident–conceited) and were asked to judge this person on several rating dimensions.

Similarly to Experiment 2, in the present experiment interpretation and comparison mindsets were activated directly and unconditionally by having participants partake in a "language experiment" in which words related to these mindsets were activated. This manipulation was again crossed orthogonally with a manipulation of "trait" versus "person exemplar" priming. Participants in a control condition received neither the "mindset" nor the "knowledge" activation manipulation.

Method

Participants and Design

Participants ($n = 172$) were undergraduates who participated in exchange for partial course credit. The experiment was conducted in groups of seven to eight persons. The participants were randomly assigned either to the conditions

of a 2 (Mindset: interpretation vs comparison) \times 2 (Knowledge type: trait vs person exemplar) \times 2 (Knowledge valence: positive vs negative) between-subjects design or to the control condition in which no mindsets, no traits, and no exemplars were primed.

Procedure

The procedure was similar to the one used in Experiment 2. Participants received a total of seven questionnaires. Filler tasks alternated with the mindset priming, knowledge priming, and the person judgment tasks in the same order as in Experiment 2. When participants were finished, they were probed carefully for awareness of the relation between the priming tasks and the person judgment task. No participant showed suspicion of a relation between the experimental tasks of the experiment, indicated that one of the priming tasks had affected target judgments, or stated that the way person judgments were constructed was congruent with words activated in the mindset priming task.

Knowledge priming. For the knowledge priming task we used a version of The Scrambled Sentence Test that was entitled "Language Comprehension" and consisted of four pages of (in total) 40 scrambled four- or five-word groups. In the experimental conditions, 12 of these sentences described behaviors relevant to interpretation of the target stimulus and 28 described neutral behaviors. In the *control* condition, all 40 sentences were neutral. Participants' task was to reorganize the word groups into meaningful sentences.

In the *positive* priming conditions, four word groups in the Language Comprehension task contained a synonym of "persistent" ("strong-willed," "determined," "resolute," and "persevering"), four words groups contained a synonym of "thrifty" ("frugal," "economical," "efficient," and "careful"), and four words groups contained a synonym of "witty" ("clever," "sharp," "acute," and "keen").

In the *negative* priming conditions, four word groups contained a synonym of "stubborn" ("obstinate," "bull-headed," "headstrong," and "close-minded"), four word groups contained a synonym of "stingy" ("miserly," "greedy," "egoistic," and "selfish"), and four word groups contained a synonym of "sarcastic" ("cynical," "offensive," "bitter," and "mocking").

In the *trait* priming conditions, participants were told that the word groups "all describe a particular behavior" and that they "should try to form an impression of this behavior." The 40 word groups were presented on four pages. Each page was titled "Description of Behavior." In the positive trait priming conditions, for example, participants had to unscramble word groups such as "A. is table determined." The initial was understood by participants to represent the name of the actor of each behavior.

In the *person* exemplar priming conditions, participants were told that the word groups "describe a particular person, namely Ralph" and that they had to unscramble sentences that *all* referred to Ralph and that they "should try to form an impression of Ralph." Each page was titled "Description of Ralph." Participants had to unscramble word groups such as "Ralph is table determined" (see Stapel et al., 1998).

In the *control* condition, participants were told that the word groups "describe objects" and that they "should try to form an impression of these objects." Each page was titled "Description of Objects." Participants had to unscramble word groups such as "the test after easy was."

Mindset priming. The mindset priming task was entitled "Word Puzzle" and consisted of one page with a 25 \times 25 matrix of letters with seven words embedded therein. A list of these words was provided to ensure that participants could find all the words. Four of the eight words were priming stimuli, the other words were fillers ("table," "painting," "book," and "accordion"). In the interpretation condition the primes were "understand," "comprehend," "interpret," and "construe." In the comparison condition the primes were "compare," "contrast," "difference," "distinguish," and "opposition").

Person judgment. After participants had finished the priming and filler tasks, they were given the booklets titled "Person Judgment" and were instructed to try to form an impression of the characteristics of the person described. The target description was adopted from pretested material used by Higgins, Rholes, and Jones (1977) and Sedikides (1990) and described the activities of a person called Peter. The description was ambiguous on four dimensions as follows:

In order to improve his life Peter tries to constantly save money. He accommodates his eating habits to what is on sale in the supermarket, delays big purchases until there is a special offer somewhere, and practically never does he donate money to charity or does he lend money to friends. (*thrifty-stingy*)

A lot of people enjoy Peter's humor. He is in the habit of making jokes out of the blue. Often times in parties his humor is quick to address the faults that people have or the mistakes they make. (*witty-sarcastic*)
By the way he acted one can readily guess that Peter is well aware of his ability to do many things well. (*confident-conceited*)

Once Peter makes up his mind to do something it is as good as done, no matter how long it might take or how difficult the going might be. Only rarely does he change his mind, even when it might have been better if he had. (*persistent-stubborn*)

Participants rated Peter on the following six bipolar 7-point rating dimensions: stubborn-persistent, sarcastic-witty, conceited-confident, unfriendly-friendly, stingy-thrifty, and negative-positive.

Results and Discussion

A composite scale (1 = *negative* to 7 = *positive*) was constructed of the six rating dimensions on which Peter was

TABLE 3

Mean Judgments of Ambiguous (Thrifty/Stingy, Witty/Sarcastic, Confident/Conceited, and Persistent/Stubborn) Peter as a Function of Mindset (Interpretation vs Comparison), Knowledge Type (Trait vs Exemplar), and Knowledge Valence (Positive vs Negative)

	Trait		Exemplar	
	Positive	Negative	Positive	Negative
Ratings of Peter				
Interpretation	5.2	4.1	4.9	4.2
Comparison	4.3	4.9	3.9	5.1

Note. Scale range is from 1 to 7. Higher scores indicate more positive ratings. Mean ratings of Peter were 4.6 in the no mindset, no knowledge priming control condition.

judged (Cronbach's $\alpha = .80$). The effect of mindset and knowledge priming on judgments of Peter was investigated by performing a Mindset \times Knowledge type \times Knowledge valence ANOVA on this dependent variable. This ANOVA revealed the predicted Mindset \times Knowledge valence interaction, $F(1, 153) = 44.00, p < .01$, and the predicted Knowledge type \times Knowledge valence interaction, $F(1, 153) = 4.07, p < .05$ (other effects $F_s < 1$). Table 3 presents composite ratings of Peter for each of the conditions. As can be seen in this table, the impact of the mindset manipulations was as predicted. The table clearly shows that the results of this experiment nicely corroborate the findings of our previous two experiments. In the control condition, ratings of Peter were halfway ($M = 4.6$) between those in the experimental conditions.

The Mindset \times Knowledge valence interaction indicates that, aggregating over knowledge type levels, assimilation occurred when an interpretation mindset was activated [main effect of knowledge valence within interpretation conditions, $F(1, 153) = 19.29, p < .01$]: Participants exposed to positive information rated Peter as more positive than did participants exposed to negative information ($M = 5.1$ vs $M = 4.2$). Contrast occurred when a comparison mindset was activated [main effect of knowledge valence within comparison conditions, $F(1, 153) = 18.65, p < .01$]: Participants exposed to positive information rated Peter as more negative than did participants exposed to negative information ($M = 4.1$ vs $M = 5.0$).

The Knowledge type \times Knowledge valence interaction attests to the finding that, aggregating over levels of the mindset factor, participants exposed to positive traits rated Peter as slightly more positive than did participants exposed to negative traits ($M = 4.8$ vs $M = 4.5$), whereas this effect reversed in the exemplar priming conditions ($M = 4.4$ vs $M = 4.7$). Neither of these main effects, however, came close to reaching ordinary levels of significance ($p_s > .26$).

Together with the first two experiments, these results

show that interpretation versus comparison mindsets may navigate the direction of knowledge accessibility effects across a variety of priming stimuli and target stimuli. Results indicate that independent of the type of knowledge (e.g., similar scenario or dissimilar scenario and trait or exemplar) that is activated, interpretation mindsets yield assimilation and comparison mindsets yield contrast effects. We tested the impact of interpretation and comparison mindsets with regard to judgments of a business scenario that could be interpreted as an opportunity or a threat (cf. Highhouse et al., 1996), with regard to judgments of a vaguely hostile person description (cf. Srull & Wyer, 1979), with regard to judgments of participants' friends (cf. Philippot et al., 1991), and with regard to judgments of a behavior description that was ambiguous on several dimensions (cf. Higgins et al., 1977). The findings of these experiments show the adaptability and generalizability of the interpretation/comparison logic to several kinds of target stimuli.

GENERAL DISCUSSION

Previous studies of knowledge accessibility effects have demonstrated that the *magnitude* of knowledge accessibility effects may be affected by communication, accuracy, and correction goals. In general, these studies have shown that knowledge accessibility effects may amplify or reduce when certain goals, motivations, or mindsets are made relatively important (see Stapel et al., 1998). The present experiments studied the impact on knowledge accessibility effects of information processing mindsets that are closely associated to two components inherent to the impression formation process, namely interpretation and comparison. Compared to previous investigations of more general motivation \times accessibility effects, the present studies show the impact of these interpretation and comparison mindsets is relatively strong. Whether an "interpretation" or "comparison" set is activated during impression formation importantly determines the *direction* of knowledge accessibility effects, such that interpretation sets produce assimilation and comparison sets produce contrast effects. An important feature of our studies is that these sets were triggered implicitly, such that participants were consciously unaware of their effects on subsequent judgments (cf. Bargh, 1997; Chartrand & Bargh, 1996).

Together, these experiments show that implicit activation of these mindsets may navigate the use and thus the impact of accessible knowledge. Moreover, these mindset effects on the impact of primed knowledge provide a relatively direct and stringent test of the interpretation/comparison hypothesis that forms the (implicit) basis for several (but not all, see footnote 1) models of accessibility effects (e.g., Biernat et al., 1997; Manis & Paskewitz, 1984; Stapel et al.,

1996, 1997, 1998; Trope, 1986): When perceivers are in an interpretation mode, covertly primed knowledge is more likely to be used as an interpretation frame and thus result in assimilation in judgments of ambiguous targets. Conversely, when a comparison mode, accessible knowledge is more likely to serve the role of a comparison standard and yield contrast.

It is important to note that these effects of mindset activation on the use of accessible knowledge are not easily explained in terms of moods or response modes that are associated with either interpretative or comparative modes of thinking. Previous studies on the effects of mindset priming on social judgments have suffered from that criticism (see Taylor & Gollwitzer, 1995). One could argue, for example, that our interpretation-manipulation activated a "warmer," more positive response mode because it stressed "understanding" and "comprehension," whereas our comparison-manipulation made participants focus on more negative concepts, such as "difference" and "opposition." Thus, in the interpretation conditions, target judgments may have been more positive than in the comparison conditions. However, compared to investigations interested in main effects of mindsets on judgment (e.g., Chartrand & Bargh, 1996; Gollwitzer et al., 1990; Taylor & Gollwitzer, 1995), one advantage of the present studies is that the impact of mindset priming was predicted (and found) to be *interacting* with the effects of the valence of the activated knowledge primes: Whether judgments were more or less positive was determined by knowledge valence \times mindset effects. Thus, the present studies are less liable to the criticism that the findings could be explained in terms of mood or response mode effects.

In sum then, the present findings demonstrate that an important determinant of the direction of knowledge accessibility effects is the type of processing set that is relatively accessible in a particular situation. Especially the results of Experiment 2 and 3 show that these sets may be activated unconditionally by environmental stimuli, thus corroborating Bargh's (1997) "automotive" model, which hypothesizes that given the presence of relevant situational features, mindsets can become active automatically and operate without any role played by conscious intention. In the present experiments, as in the great majority of priming studies, we used a somewhat artificial technique to activate the relevant mindset representations (see Chartrand & Bargh, 1996). We used priming stimuli that were directly relevant to the representation they were supposed to activate. For example, we used words such as "understand" and "meaning" to prime an interpretation motivation and words such as "distinguish" and "opposition" to prime a comparison motivation. Although this may seem to be a rather crude proxy for the automatic activation of impression formation sets via environmental features, it should be noted that earlier prim-

ing studies have successfully used both the controlled priming techniques used here and more naturalistic cues (see Bargh, 1997; Berkowitz, 1984; Pryor, 1987). Following Chartrand and Bargh (1996), we are therefore confident that the present findings will also be obtained when more natural priming manipulations are used. Especially because it is relatively easy to imagine naturalistic settings in which interpretation and comparison mindsets may be primed by certain environmental cues. Interpretation and comparison are part and parcel of our daily interactions with others. As we noted in the introduction of this article, in many theories of impression formation interpretation (or encoding) and comparison (or judgmental inference) are seen as essential components of the impression formation process (e.g., Biernat et al., 1997; Devine, 1989; Manis & Paskewitz, 1984; Philippot et al., 1991; Schwarz & Bless, 1992; Trope, 1986; Wyer & Srull, 1989). In some situations or judgmental settings, however, interpretation may be relatively important (e.g., when trying to understand what your sister finds so attractive in her new boyfriend, Michael), whereas in others comparison motives are more salient (e.g., when trying to understand why your sister wants to marry Michael instead of John, your best friend). Thus, some situations may be associated more with "interpretative" thinking, whereas others may activate a relatively "comparative" thinking mode. Hence, like "knowledge primes" (see footnote 2), such as traits ("friendly"), exemplars ("Jesus Christ"), or events ("a business opportunity"), "mindset primes" exert their influence once they are situationally activated.

One interesting implication of the importance of interpretation/comparison mindsets for the occurrence of assimilation and contrast effects may lie in our understanding of previous studies of knowledge accessibility effects. Given the importance of the mindset with which one approaches an impression formation task for the use and impact of accessible knowledge on target judgments, one may argue that perhaps in studies in which assimilation was found, interpretation was participants' implicit motivation, whereas in studies in which contrast occurred, a comparison mindset was implicitly primed by the experimental setting (cf. Bator & Cialdini, 1998). And indeed, two separate research traditions in social psychology address the impact of contextually activated knowledge on judgment. Each of these traditions tends to focus on either the interpretative or comparative effects of accessible knowledge. And accordingly, each of these traditions tends to conclude that either assimilation or contrast is the most "natural" knowledge accessibility effect.

Social cognition research, with its focus on the ways in which cognitive structures such as traits, stereotypes, and expectancies affect the construal and categorization of social stimuli has documented abundant evidence for the

notion that accessible knowledge yields assimilation effects. This has led some authors to conclude that assimilation is the “basic effect of recent and frequent activation” (Higgins, 1989, p. 78) and one of the more “fundamental” findings of modern social psychology (Sedikides & Skowronski, 1991, p. 170). *Social judgment research*, on the other hand, focuses on the comparative nature of judgment. Here the evidence points to the ways in which contextually activated information may provide a comparison standard against which target stimuli are contrasted (see Eiser, 1990) such that some have concluded that “the most predictable effect” and “predominant” context effect is the contrast effect (Eiser, 1990, p. 11; Herr, Sherman, & Fazio, 1983, p. 325). Thus, whereas social judgment studies suggest that contrast is the most typical context effect, social cognition research suggests that assimilation is more common than contrast. The present interpretation/comparison findings suggest that one way to remedy this paradox is to point at the metatheoretical interests the two approaches have been taken. Social cognition research is primarily concerned with issues of categorization and interpretation, whereas the social judgment approach primarily focuses on the comparative nature of social judgment (see for a review of the relevant literature, Stapel & Koomen, in press). Although we can only speculate on this issue, it is plausible that these metatheoretical interests have shaped researchers’ tools and methods such that experimental paradigms focusing on interpretation tasks dominate social cognition research, whereas more comparative tasks are relatively common in social judgment research. This may have led to the abundance of assimilation effects in social cognition studies of knowledge accessibility effects, whereas contrast is the “natural” effect in experiments with a comparison or judgment focus (see Bator & Cialdini, 1998, and Cialdini, Trost, & Newsom, 1995, for a similar conclusion in the domain of dissonance research). Thus, when designing future studies of knowledge accessibility effects it is important to take the differences between social cognition and judgment research into account. Each experimental paradigm may implicitly activate a specific information processing set.

APPENDIX: SCENARIOS USED IN STUDY 1

Context Scenarios

Low Context–Target Similarity

Nonorganizational opportunity context scenario. “Imagine that you are studying hard for a very difficult exam that you failed the first time you took it. In the cafeteria of the University Library you run into a friend and fellow student who offers you to prepare for the exam together. You know he is an excellent student and a great teacher. In the past he has successfully helped others pass their exams.”

Nonorganizational threat context scenario. “Imagine that you are studying hard for a very difficult exam. In the cafeteria of the University Library you run into a friend and fellow student who tells you that he failed the exam last time he took it because he had not attended the small-group seminars that were given after each lecture. He also tells you that most questions in the exam deal with topics and problems that have been discussed in the seminars. Not only did not you go to the small-group seminars, you also missed several of the lectures.”

High Context–Target Similarity

Organizational opportunity context scenario. “Imagine that you are on the board of directors of a large manufacturing company. You have been approached by a potential customer with a government order that would ensure business throughout the decade. Such a contract would discourage potential competitors from entering into your unique product area.”

Organizational threat context scenario. “Imagine that you are the owner of a distributing company that supplies goods throughout The Netherlands. You have found out that legislators of the European Union have just passed a new law that makes it possible for new, foreign companies to enter your market. Previously you were protected from any form of international competition.”

Target Scenario

“Imagine that you are the owner of a retail clothing store. You have historically prospered by occupying a choice downtown location. You have just found out that plans are underway to construct a large Shopping Plaza, at approximately ten minutes walking distance from your current place of business.”

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