How Far Do We Go Beyond the Information Given?
The Impact of Knowledge Activation on Interpretation and Inference

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In a series of 4 studies, the inferential scope of assimilative knowledge accessibility effects was investigated. Evidence was found for the hypothesis that both the breadth and evaluative extremity of activated knowledge affect the range of evaluative inferences made during the interpretation of ambiguous targets. The scope of knowledge accessibility effects was larger when broad and extreme traits were primed than when narrow and moderate traits were primed. The contribution of the extremity component to this effect was stronger than the impact of the breadth component. Furthermore, the authors demonstrated that descriptive overlap between priming and target stimuli is not a necessary precondition for such interpretation effects to occur. Descriptive inapplicability may be compensated for when priming stimuli are sufficiently broad or extreme.

Imagine that during lunch an acquaintance of yours, Olivia, tells you about her new lover, John: "John spends a great amount of his time in search of what he likes to call excitement. He has climbed Mt. McKinley, shot the Colorado rapids in a kayak, and driven in a demolition derby. Now John is in search for new excitement and is thinking perhaps he will do some skydiving or maybe cross the Atlantic in a solo-sailboat" (cf. Higgins, Rholes, & Jones, 1977). Will you think that John is an adventurous person who has a great sense of fun, or is he better portrayed as being reckless and acting without thinking of the consequences? Moreover, which other characteristics would you infer? Would you be able to say whether John is more likely to be an intelligent than a stupid person? Do you like or dislike John?

Scope of Knowledge Accessibility Effects

In this article, we try to answer these questions concerning the impact of knowledge accessibility on interpretation and inference processes. Research on knowledge accessibility effects has demonstrated that the unobtrusive activation of abstract constructs, such as "careless" in the John example given above, may direct the disambiguation of target behaviors and thus lead to assimilative target interpretations (e.g., John is reckless; see Higgins, 1996). Furthermore, Wyer and his colleagues (see Wyer & Srull, 1989) showed that when forming impressions, people often not only interpret stimulus information in terms of descriptive trait concepts, but also make more general, evaluative target inferences—that is, judgments of target characteristics that are not related to the specific, denotative content of the stimulus description (e.g., John is likable). It is not clear, however, if and when accessible knowledge may influence such inferences. What determines the scope of knowledge accessibility effects? What aspects of accessible knowledge determine whether people will go beyond the information given (cf. Bruner, 1957a), and, when they do so, what determines how far these inferences will reach?

In the present research, we tested the hypothesis that when judging a target stimulus that is ambiguous on a specific dimension (e.g., Kate's behavior is thrifty—singly), the extent to which perceivers will go beyond the information given will be relatively high when broad and evaluatively extreme constructs (e.g., "good") have been activated (e.g., Kate is not only thrifty, but also likable and friendly), whereas fewer evaluative inferences will be made when narrow and evaluatively moderate constructs (e.g., "frugal") have been primed. In other words, we hypothesized that the scope of knowledge accessibility effects would depend on the breadth and evaluative extremity of the activated knowledge.

1 It is important to note that the current differentiation between interpretation (disambiguation of given information) and inference (inference of target characteristics from given information) processes is an extension to earlier treatments of inference processes in social judgment. Previous studies did not define interpretation and inference as different processes with regard to the extent to which one infers traits during interpretation (see Uleman, Newman, & Moskowitz, 1996) but equated these processes with "categorization" (Bruner, 1957b), "characterization" (Gilbert, 1989), "identification" (Trope, 1986), or "construction of meaning" (Uleman et al., 1996). Recent conceptualizations of trait inference processes do distinguish between trait terms used to describe the behaviors people engage in and trait terms used to describe the personality profile of a particular person (e.g., "behavior identifications" vs. "dispositional inferences," see Trope, 1986; Uleman et al., 1996), but these "behavior-to-disposition" inferences do not concern us here (but see Stapel, Koomen, & Van der Pligt, 1996).
was the basis for this hypothesis? Why should the scope of knowledge accessibility effects be larger when broad and extreme trait constructs have been activated than when such constructs are narrow and moderate? In answer to this question, we first discuss what determines whether or not accessible knowledge is used at all during target interpretation. Then we relate these determinants of the use of accessible knowledge to the likely determinants of the scope of knowledge accessibility effects.

**Descriptive Applicability, Breadth, Extremity, and Scope**

An important determinant of whether or not accessible knowledge is used in the interpretation of an ambiguous target stimulus is the knowledge’s applicability to the target stimulus. The greater the overlap between the features of an activated construct and the attended features of a stimulus, the greater the construct’s applicability to the stimulus. Whether or not accessible knowledge will exert an effect on judgment is dependent on the extent to which it is applicable to the interpretation of the target stimulus (Higgins, 1996).

The seminal study in which the importance of applicability for knowledge accessibility effects was demonstrated was conducted by Higgins et al. (1977). In this study, participants were assigned to conditions that exposed them either to priming stimuli that were applicable to an ambiguous (adventurous/reckless) target description (e.g., priming adventurous vs. reckless) or to nonapplicable priming stimuli (e.g., priming obedient vs. disrespectful). The results showed that priming effects only occurred when there was descriptive overlap between the primed traits and the target stimulus. Subsequent studies investigating the importance of priming-stimulus overlap for the occurrence of accessibility effects replicated this effect and concluded that priming is most effective when there is a descriptive match between prime and stimulus (e.g., Erdley & D’Agostino, 1988; Sedikides, 1990). In fact, to date applicability is commonly defined as a descriptive match between prime and stimulus. As Wyer and Snell (1989, p. 372) wrote, “Concepts affect the interpretation of information only if their features are descriptively applicable to this information” (see also Banaji, Hardin, & Rothman, 1993; Erdley & D’Agostino, 1988; Higgins et al., 1977; Sedikides, 1990; Sinclair, Mark, & Shotland, 1987).

The notion that accessible knowledge may exert its effects on subsequent target characterizations only when this knowledge is descriptively applicable to the target stimulus seems to make sense when the primed constructs are narrow and evaluatively moderate. When forming an impression of thrifty/stingy Kate, previously activated trait terms like “witty” versus “sarcastic” or “persistent” versus “stubborn” are unlikely to exert an effect. We posit, however, that in the study of priming effects on evaluatively ambiguous person stimuli, descriptive prime–stimulus overlap may not be a necessary precondition for knowledge accessibility effects to occur when the primed constructs are relatively broad and evaluatively extreme. The breadth and extremity of such constructs may compensate for their lack of descriptive applicability. The reasoning behind this argument is as follows:

Breadth (or generality or inclusiveness) of a personality construct is commonly defined as the diversity of behavioral referents of that construct (Hampson, John, & Goldberg, 1986). Broad traits (e.g., extroverted) refer to a large number of distinct behaviors, whereas narrow traits (e.g., talkative) refer to a more limited range of behavioral instances. Traits can be thought to be hierarchically organized, with increasingly narrow behavioral manifestations at the bottom levels and with increasingly broad trait concepts at the upper levels. According to this hierarchical structure, the activation of superordinate (broader) traits may result in the priming of subordinate (narrower) traits, whereas traits at the same level—but associated with different broader traits—are less likely to prime each other (see Hampson et al., 1986). Thus, the activation of broad traits that are, strictly speaking, descriptively inapplicable may indirectly prime descriptively applicable traits. Hence, priming descriptively inapplicable broad traits (e.g., “good” vs. “bad”) is more likely to affect the interpretation of an ambiguous target (e.g., persistent–stubborn Donald) than priming (descriptively inapplicable) narrow traits.

Evaluative extremity (or social desirability) of personality constructs refers to the degree to which constructs are positively or negatively evaluated (Anderson, 1968; Hampson, Goldberg, & John, 1987). Extremely positive traits (e.g., “sweet”) are traits that are generally thought to be more desirable to possess than moderate traits (e.g., “mediocre”) that are again more desirable than extremely negative traits (e.g., “dishonest”). We contended that when priming stimuli are evaluatively extreme traits, individuals may use the connotation of these traits to interpret an ambiguous target, especially when this target is evaluatively ambiguous (as is the case in the standard priming paradigm in person perception studies; see Higgins, 1996). When the question is whether climbing Mt. McKinley, shooting the Colorado rapids, and driving a demolition derby should be interpreted in positive (adventurous) or negative (reckless) terms, the stronger connotation of evaluative extreme traits (e.g., “sweet” vs. “aggressive”) seems to be more likely to aid in the resolution of this evaluative ambiguity than the weaker connotation of moderate traits. This suggests that strong connotation may compensate for a lack of descriptive prime–stimulus overlap. When priming stimuli are sufficiently evaluatively extreme, evaluative prime–stimulus matches may be sufficient to yield interpretation effects. In other words, priming extremely positive traits (“good” or “sweet”) may prompt an interpretation of evaluatively ambiguous behavior in a positive rather than negative direction, and they are likely to do so to a greater extent than evaluatively moderate traits, such as “normal” or “pleasant.”

In sum, we hypothesized that descriptive overlap between prime and stimulus is not a necessary precondition for assimilative knowledge accessibility effects to occur in the interpretation and judgment of an evaluatively ambiguous person description. Broad traits are likely to exert priming effects because the activation of general and inclusive traits is known to spread to narrow traits included in these general traits (see Hampson et al., 1986). Priming (descriptively inapplicable) broad traits may thus indirectly activate narrower but applicable traits. Extreme (and inapplicable) traits are likely to exert effects because their evaluative intensity is likely to make up for their lack of descriptive applicability. When primed with evaluatively extreme constructs, perceivers may use the strong connotative (rather than the denotative) meaning of these constructs to interpret the evaluatively ambiguous target. On the other hand, constructs that are descriptively inapplicable and neither broad nor extreme are unlikely to affect such target characterizations.
One goal of the present studies was to test the hypothesis that broad and extreme trait constructs may serve to interpret an ambiguous target stimulus, even though such constructs are, strictly speaking, descriptively inapplicable to interpretation of the target. More important, however, was our goal of demonstrating that when broad and extreme trait constructs are primed, target interpretations are more likely to be accompanied with evaluative inferences than when relatively narrow and moderate trait constructs are activated. Thus, when perceivers are trying to form an impression of an ambiguous persistent/stubborn target, we expected the range of target characterizations affected to be larger when perceivers were previously primed with “good” versus “bad” (relatively broad and extreme traits) than when they were primed with “persistent” versus “stubborn” (relatively narrow and moderate traits). The reasoning behind this hypothesis is relatively straightforward:

When people are exposed to a target stimulus who is ambiguous on the confident–conceited dimension, this ambiguous input contributes to the excitation level of those alternative constructs (“confident” and “conceited”). Priming (descriptively applicable or broad or extreme) constructs that have a certain valence (positive or negative) will further increase the accessibility of the similarly valenced construct and thus result in assimilation effects (e.g., priming “self-assured” will lead to judgments that the target is “confident” rather than “conceited”). In other words, judgment is a function of the interplay between target (e.g., ambiguous behavior) and prime (e.g., positive traits) characteristics (for similar reasoning, see Higgins, 1989, pp. 86–90; Higgins, 1996, pp. 154–156).

This situation suggests that when perceivers are exposed to an evocatively ambiguous target stimulus and are trying to form an impression of this target, the interplay between target and primes may also affect the extent to which this impression is only disambiguated of the information given or interpretation plus inference (see Footnote 1). The following example illustrates this: The description that “by the way Claudia acted, one could readily guess that she was well aware of her ability to do many things well” is ambiguous on a relatively narrow (confident–conceited) as well as on a relatively broad (positive–negative) level. Whether judgments of this description will reflect only descriptive disambiguations (Claudia is self-assured) or also evaluative inferences (Claudia is likable) may depend on the extent to which priming stimuli show overlap with the descriptive and evaluative aspects of the target. Priming broad and extreme constructs increases the likelihood that the excitation level of both the descriptive and evaluative aspects of the target will be increased.

In sum, priming broad and extreme trait constructs increases the likelihood that target information will be understood in more inclusive and more evaluative terms. In other words, the assessment that Claudia is “confident” (rather than “conceited”) is a much more general and richer kind of “confident” when “good” (broad/extreme) has been primed than when “self-assured” (narrow/moderate) has been primed. Priming broad and extreme traits increases the likelihood that target interpretations will be so-called supercharged (Peabody & Goldberg, 1989; Wyer & Snell, 1989). Therefore, individuals will more easily extract general, evaluative inferences from these interpretations, and thus the scope of the priming effect will increase. To put it more concretely, when primed with a positively valenced broad and extreme trait, perceivers are more likely to conclude that a confident/conceited target is not only “confident,” but also “likable” and “friendly.”

Measuring the Scope of Knowledge Accessibility Effects

The target descriptions we used in the present studies were evocatively ambiguous on relatively narrow and moderate (rather than broad and extreme) dimensions (e.g., adventurous/reckless, thrifty/stingy, persistent/stubborn). We especially chose these target descriptions for the present investigation because using these descriptions made it actually meaningful to define “going beyond the information given.” When using very broad ambiguous descriptions (likable/dislikable) or descriptions that have clear evaluative implications (“Donald is wonderful”), the target description itself (rather than the priming stimuli) would invite evaluative interpretations. Furthermore, most previous studies of knowledge accessibility effects used target descriptions that were ambiguous on relatively narrow and moderate dimensions (for reviews, see Higgins, 1996; Wyer & Snell, 1989).

Previous studies of knowledge accessibility effects have used a wide variety of dependent variables to measure respondents’ characterizations of ambiguous target descriptions. None of these studies, however, distinguished accessibility effects in terms of the scope or range of the target characterizations affected. Some studies used open-ended descriptions (see Ford & Kruglanski, 1995; Higgins, Bargh, & Lombard, 1985; Higgins et al., 1977; Lombardi, Higgins, & Bargh, 1987; Martin, Seta, & Crella, 1990; Sedikides, 1990; Thompson, Roman, Moskowitz, Chaklen, & Bargh, 1994). Some studies measured relatively broad and extreme trait characterizations of a target person, such as “general likability” (see Higgins et al., 1977; Newman & Uleman, 1990; Sinclair et al., 1987; Stangor, 1990). However, knowledge accessibility studies most frequently have used bipolar rating dimensions anchored by relatively narrow and moderate response categories, such as adventurous–reckless, to investigate the occurrence of priming effects on target interpretations (e.g., Banaji et al., 1993; Martin, 1986; Snell & Wyer, 1979; Stapel, Koomen, & Van der Pligl, 1996, 1997). To date, target characterizations have never been systematically classified according to their breadth, their extremity, and the extent to which they descriptively overlap with the target information given.

In contrast to these previous studies, in the present research we distinguished the following response categories in order to systematically tap the inferential scope of knowledge accessibility effects: description-related, general likability, specific likability, and description-unrelated responses. Each of these response categories can be defined in terms of descriptive overlap with the target, breadth, and evaluative extremity.

Description-related responses measure target characterizations on those dimensions about which specific (albeit ambiguous) target information is given (e.g., confident–conceited). These measures thus refer to the relatively narrow and moderate dimensions that show descriptive overlap with the target description. When measures concern judgments of target characteristics that are not related to the specific descriptive content of the stimulus description, we distinguished the following three types of ratings: General likability responses measure target inferences on dimensions that are both relatively broad and evaluatively extreme (e.g., positive–negative); specific likability ratings measure target inferences on
dimensions that are as extreme but narrower than general likability responses (e.g., nice—not nice); finally, description-unrelated responses measure all kinds of target characterizations that (a) show no descriptive overlap with the narrow/moderate target description and (b) are narrower or less extreme than the (general and specific) likability responses. Thus, when judging an ambiguous confident/conceited target, examples of description-unrelated measures are bipolar rating scales with anchors such as persistent-stubborn (narrow/moderate), normal—plain (moderate/broad), and sweet—aggressive (extreme/narrow).

For each of these different response categories, what is the likelihood that they will be affected by priming stimuli? Taking into account the descriptive applicability, breadth, and extremity of the different response categories, the occurrence of knowledge accessibility effects in target judgments is likely to decrease gradually from description-related to general likability to specific likability to description-unrelated responses. Description-related dimensions show strong descriptive overlap with the target description, and assimilative interpretation effects are thus most likely to show up in these measures. General likability measures are not descriptively applicable to the stimulus and therefore are less likely to be affected, but because of their generality and evaluative strength, they may be more easily affected than specific likability measures, which are similarly extreme but are narrower (and are thus associated with fewer behavioral referents). Description-unrelated measures are least likely to be affected by priming stimuli because these measures lack descriptive applicability and are less extreme or are narrower (or both) than both the general and specific likability measures.

Regarding the extent to which the breadth and extremity of primes determine how far percepts go beyond the target description given, we predicted that the likelihood that these primes would exert effects would decrease not only as a function of the descriptive applicability, breadth, and extremity of the response category, but also as a function of (of course) the descriptive applicability of priming stimuli and (more important here) their breadth and evaluative extremity. In general, the probability that priming stimuli affect target responses decreases gradually from description-related to general likability to specific likability to description-unrelated responses. For each of these response categories, however, we expected the probability of being affected to be higher when priming stimuli are relatively broad and extreme than when these primes are relatively narrow and moderate.

In Study 1, we put these conjectures to a first test by studying the range of response categories affected by (a) applicable, narrow, evaluatively neutral traits (neutral priming); (b) applicable, narrow, evaluatively moderate traits (descriptive priming); and (c) inapplicable, broad, evaluatively extreme traits (evaluative priming). In Studies 2a and 2b, we investigated the similarities and differences between evaluative and mood priming. In Study 3, we extended the design of Study 1 by including descriptively inapplicable, moderate, broad traits (moderate/broad priming) and descriptively inapplicable, extreme, narrow traits (extreme/narrow priming) so that we could investigate whether the impact of (broad and extreme) evaluative primes on target characterizations was primarily driven by the breadth of the primes, by the extremity of the stimuli, or by both these components. In Study 4, we further investigated the contribution of breadth and extremity to the scope of knowledge accessibility effects in an experimental design in which these two variables were crossed factorially.

**Study 1**

To determine whether earlier investigations provided support for our hypothesis, we searched the relevant literature for priming stimuli that differed in their breadth and extremity. Most studies primed relatively narrow and moderate traits that were descriptively applicable to dimensions on which the target person was evaluatively ambiguous (e.g., Ford & Kruglanski, 1995; Higgins et al., 1977; Lombardi et al., 1987; Martin, 1986; Martin et al., 1990; Sedikides, 1990; Sinclair et al., 1987; Stangor, 1990; Strack, Schwarz, Bless, Kübler, & Wänke, 1993; Thompson et al., 1994). This type of priming is often called semantic priming. We prefer to call it descriptive priming. As Osgood (1952) pointed out many years ago, the meaning (semantics) of trait terms may be defined both in a descriptive and an evaluative space. In other words, semantic priming is not really separable from either descriptive or evaluative (see below) priming. A better label for what traditionally has been called semantic priming (see Higgins, 1996; Sedikides & Skowronski, 1991; Wyer & Srull, 1989) is thus descriptive priming, referring to the denotative overlap between priming and target stimuli.

A few studies investigated the impact of accessible knowledge that is descriptively applicable but has no clear evaluative connotations. In these evaluatively neutral priming studies, a mixed procedure was used. People were simultaneously exposed to two constructs, either of which was descriptively applicable but that together were evaluatively inconsistent (e.g., priming "reckless" [−] and "persistent" [+] before exposure to an adventurous–reckless, persistent/stubborn target). The evaluative inconsistency of these constructs neutralizes their valence. Therefore, it is unlikely that neutral priming would exert influence on rating dimensions other than the primed dimensions (see Martin, 1986, Experiment 2).

Although the impact of what could be called evaluative priming has been studied in other domains of social psychological inquiry (see Baldwin, Carrell, & Lopez, 1990; Bargh, 1997; Fazio, Sanbonmatsu, Powell, & Kardes, 1986; Murphy & Zajone, 1993; Niedenthal, 1990), we know of no research investigating what concerned us here—namely, the impact of priming broad and extreme traits (e.g., "good" versus "bad") on judgments of ambiguous target stimuli. Martin (1986, Experiment 3; Martin et al., 1990, Experiments 1 and 2) reported studies in which a mood priming procedure was used to affect individuals' target judgments, but in these studies, inducing mood consisted of inciting

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2 Both cognitive and social psychologists have investigated the effects of priming on "real," "fictitious," "moderate," "unambiguous," "vague," and "mixed" target descriptions. However, the target stimuli most typically and frequently used in past studies of priming effects on person judgments consisted of descriptions of evaluatively ambiguous behaviors that are commonly referred to simply as "ambiguous." Hence, in the present article, we chose to investigate priming effects on judgments of an ambiguous target. A behavioral description is defined as ambiguous when a behavior has features associated to the same degree with two or more constructs that are descriptively similar but imply evaluatively discrepant evaluations (see Higgins, 1996).
positive or negative self-related thoughts; thus, these studies may have somewhat confounded the evaluative strength and breadth of activated knowledge with the self-relatedness of this knowledge.

In sum, it is rather well established that target interpretations may be affected by priming stimuli that differ in their applicability, breadth, and extremity. However, previous studies have neither compared the effects of these different priming stimuli in single experimental designs nor compared different priming stimuli with respect to the range of target characterizations they may affect. In the present study, we began by extending these previous investigations by explicitly and systematically comparing the range of response categories affected by neutral, descriptive, and evaluative priming.

We predicted that the scope of knowledge accessibility effects was linearly dependent on the breadth and extremity of this knowledge. To be specific, because neutral priming activates evaluatively neutral knowledge, it is less likely to affect target judgments that go beyond prime-related interpretations. Descriptive priming, however, activates evaluatively charged knowledge and may thus affect not only description-related judgments, but other judgments as well. Evaluative priming, in turn, activates knowledge that is even broader and more extreme. Hence, the range of response categories affected is likely to be larger when evaluative rather than descriptive trait constructs have been primed.

Method

Pretest: Measuring Breadth and Evaluative Extremity

For a rigorous test of our hypothesis, it was important to know the perceived breadth and extremity of the trait constructs we used as independent (priming stimuli) and dependent (rating dimensions) variables. Therefore, in a pretest we had judges rate a large number of trait constructs on both breadth and social desirability. In this pretest, 35 Dutch undergraduate students were asked to rate 150 terms that are quite commonly used as trait-descriptive adjectives. The selection of the terms was based on a number of sources presenting breadth or social desirability values of personality traits (Anderson, 1968; Brokken, 1978; Hampson et al., 1987). Participants were instructed to rate these terms on breadth and social desirability (for specific instructions, see Hampson et al., 1987, p. 243). This pretest provided us with information concerning the breadth and evaluative extremity of the descriptively applicable and inapplicable trait terms we used as priming stimuli and rating scale anchors in our research. Below, in the description of Studies 1–4, we report the results of the pretest trait ratings whenever it is informative. We use the following abbreviations: BR = breadth rating of the trait term (measured on a scale ranging from 1 [extremely narrow] to 7 [extremely broad]) and SD = social desirability of the trait term (measured on a scale ranging from 1 [extremely undesirable] to 7 [extremely desirable]).

Participants and Design

One hundred forty-six participants were randomly assigned to the conditions of a 2 (prime valence: positive, negative) \times 3 (prime type: neutral, descriptive, evaluative) between-subjects design.

Procedure

Similar to previous knowledge accessibility studies (see Higgins, 1996), participants were led to believe that they participated in two ostensibly unrelated studies. To ensure that they did not think the two studies were related, the studies were part of a general testing session in which participants were given several questionnaires to fill out. Furthermore, the materials of the two studies were printed in different letter types and on different colors of paper. First, participants performed the priming task. Second, in the impression formation task, they were asked to give judgments of a target description that was ambiguous on the following dimensions: adventurous–reckless, confident–conceited, and persistent–stubborn.

Im position Task

The first study was titled “Reading Comprehension,” and it constituted the priming task. In this study, participants unscrambled sentences that were designed to elicit knowledge of a certain applicability, breadth, and extremity. This priming task consisted of a page of 12 scrambled four-word groups, such as “is table confident he.” Participants’ task was to reorganize the word groups into meaningful sentences, using only three words from each group (cf. Snell & Wyer, 1979). Some of the word groups contained a construct that was relevant to the type of knowledge (e.g., neutral, descriptive, evaluative) that was to be activated. Filler word groups containing constructs not related to the type of knowledge to be activated (e.g., “her vacation knew she”) were interspersed among the word groups containing the priming stimuli.

Im position Stimuli

Neutral priming. In the neutral priming condition, some participants were asked to unscramble word groups that referred to the constructs “persistent” and “reckless.” Others were asked to unscramble word groups that referred to the opposite pole of these two dimensions: “stubborn” and “adventurous.” This so-called mixed priming (see Martin, 1986) procedure thus exposed people simultaneously to two constructs, either of which was descriptively applicable to the target but that together were evaluatively neutral. In the persistent/reckless condition, four word groups contained synonyms of persistent: strong-willed, determined, resolute, and persevering (overall BR = 3.82, SD = 4.82). Four other word groups contained synonyms of reckless: careless, foolhardy, rash, and incautious (overall BR = 3.65, SD = 2.90). In the stubborn–adventurous condition, four of the scrambled word groups in the priming task contained one of the following synonyms of stubborn: obstinate, bullheaded, headstrong, or hard-headed (overall BR = 2.96, SD = 2.36). Four other word groups contained one of the following synonyms of adventurous: bold, brave, daring, or courageous (overall BR = 3.57, SD = 4.97). As we explain in the Results section, in the neutral priming conditions, prime valence was a function of the rating dimension on which the target was to be rated first. In the present experiment, participants first assessed to what extent the target was persistent versus stubborn. Therefore, prime valence was defined in terms of the persistent (+), stubborn (−) part of the priming mix (see further discussion of the results in the neutral priming conditions).

Descriptive priming. In the positive descriptive prime condition, the four relevant word groups in the priming task contained the synonyms of persistent that were used in the neutral priming condition. In the negative descriptive priming condition, these word groups were similar to the synonyms of stubborn used in the neutral priming condition.

Evaluative priming. In the positive evaluative prime condition, the four relevant word groups in the priming task contained the synonyms of persistent that were used in the neutral priming condition. In the negative evaluative priming condition, these word groups contained one of the following words: cold, bad, horrible, or irritating (overall BR = 5.09, SD = 1.63).

Impression Formation Task

When participants finished the priming task, they were instructed to put the booklet in the folder that was lying in the right corner of their desks. Then they were given the impression formation booklets, titled “Person Judgment.” Participants were instructed to read the target paragraph and to try to form an impression of the characteristics of the person described. The
target description was a Dutch translation of a paragraph adopted from Higgins et al. (1977) describing the activities of a character named Donald. The paragraph was ambiguous on three dimensions. It described the target as adventurous/reckless, confident/conceited, and persistent/stubborn. Thus, Donald’s behavior implied moderately narrow and moderately extreme personality traits (see for BR and SD description-related rating dimensions). The paragraph read as follows:

Donald spent a great amount of his time in search of what he liked to call excitement. He had already climbed the Mont Blanc, did some white-water canoeing in a kayak, had driven in the exhausting Paris-Dakar race, and piloted a jet-powered boat—without knowing very much about boats. He had risked injury, and even death, a number of times. Now he was in search of new excitement. He was thinking perhaps he would do some parachuting [adventurous vs. reckless]. By the way he acted, one could readily guess that Donald was well aware of his ability to do many things well [confident vs. conceited]. Once Donald made up his mind to do something it was as good as done, no matter how long it might take or how difficult the going might be. Only rarely did he change his mind even when it might have been better if he had [persistent vs. stubborn].

Dependent Measures

On the next page of the booklet, participants were asked to indicate their impressions of Donald on bipolar 7-point description-related, general likability, specific likability, and description-unrelated rating dimensions.

The description-related rating dimensions were persistent (BR = 3.71, SD = 4.71) — stubborn (BR = 3.37, SD = 2.60), adventurous (BR = 3.77, SD = 5.54) — reckless (BR = 3.37, SD = 2.60), and confident (BR = 4.03, SD = 5.43) — conceited (BR = 3.71, SD = 2.69). Thus, the description-related characterizations consisted of rating scales of which overall the scale anchors were moderately narrow (BR = 3.60) and moderately extreme (SD positive anchors = 4.76, SD negative anchors = 2.63).

The general likability rating dimension was positive (BR = 5.51, SD = 6.11) — negative (BR = 5.54, SD = 1.69) and thus consisted of evasively extreme and relatively broad scale anchors. The specific likability rating dimension was nice (BR = 4.80, SD = 6.20) — not nice (BR = 4.14, SD = 1.74) and thus consisted of trait terms that were also evasively extreme but somewhat narrower than the general likability ratings.

The description-unrelated rating dimensions were independent (BR = 3.74, SD = 5.60) — aloof (BR = 3.91, SD = 2.66), witty (BR = 3.54, SD = 5.83) — sarcastic (BR = 3.34, SD = 2.80), skillful (BR = 3.69, SD = 5.51) — clumsy (BR = 3.51, SD = 2.63), normal (BR = 5.57, SD = 4.78) — plain (BR = 4.85, SD = 2.98), and sweet (BR = 3.61, SD = 6.54) — aggressive (BR = 3.55, SD = 1.64). Thus, similar to both the general and specific likability scales, the description-unrelated rating scales were descriptively unrelated to the target stimulus. More important, however, the description-unrelated scales consisted of trait terms that were narrower or less extreme (or both) than the likability scales.

These rating dimensions were interpersonally with each other in such a way that order effects of type of scale were unlikely to occur. To be specific, the order in which the rating dimensions were presented was as follows: persistent-stubborn (description-related), adventurous-reckless (description-related), independent-aloof (description-unrelated), nice-not nice (specific likability), sweet-aggressive (description-unrelated), confident-conceited (description-related), witty-sarcastic (description-unrelated), skillful-clumsy (description-unrelated), positive-negative (general likability), and normal-plain (description-unrelated). A rating of 1 indicated a positive evaluation, and a rating of 7 indicated a negative evaluation (cf. Martin et al., 1990; Stapel et al., 1996).

To simplify data presentation, we discuss the main analyses in terms of the (composite) rating dimensions: description-related, general likability, specific likability, and description-unrelated. The composite indexes were quite reliable (Cronbach’s alphas > .72).3

Suspicion

Previous research has demonstrated that when respondents are aware that the priming event may bias or contaminate their target judgments, they try to correct for this unwanted influence; thus, contrast, rather than assimilation, is likely to occur (e.g., Martin, 1986; Martin et al., 1990; Strack et al., 1993; Wegener & Petty, 1995). Hence, we included a measure of suspicion of unwanted influences in the impression formation task. Following Thompson et al. (1994), on the final page of the booklet, we asked participants to complete several items tapping their suspicions regarding the purpose of the experiment and the possible relation between the priming task and the subsequent person-judgment task. To qualify as suspicious, respondents had to indicate that they thought the language comprehension task was related to the person-judgment task and had to explain that the constructs in the first task affected the way in which they filled in the rating dimensions in the second task (for details, see Thompson et al., 1994, p. 477). By these criteria, only one participant qualified as suspicious, and her data were not analyzed.

Results

We tested our predictions in an analysis of variance (ANOVA), treating scale, ratings on the four rating dimensions (description-related, general likability, specific likability, description-unrelated), as a within-subjects subject and prime valence (positive, negative) and prime type (neutral, descriptive, evaluative) as between-subjects factors. This analysis revealed a main effect of scale, F(3, 139) = 25.17, p < .01, and a main effect of prime valence, F(1, 139) = 16.73, p < .01. These main effects were

---

3 We used a different number of rating dimensions to assess the four different categories of responses (description-related, description-unrelated, general likability, specific likability), which may have caused the stability of the means generated on each of these four categories to differ (but see Studies 3 and 4). However, we would like to note that for each of the studies reported here, analyses for single items showed similar patterns of results (in terms of both direction and strength) as the analyses over the indexes. We also note that for Studies 2–4, all the composite indexes were reliable (Cronbach’s alphas > .70).

We would like to stress that univariate analyses of the description-related dimensions showed no differences between descriptive prime-related scales (e.g., persistent-stubborn, in Experiment 1) and prime-unrelated (e.g., adventurous-reckless, in Experiment 1) scales. This finding supports our contention that although in our experiments priming did not result in general evaluative response tendencies toward the target, activated traits guided all target dimensions that were ambiguous (see also Stapel et al., 1996, Footnote 8).

The description-unrelated scales included two scales that have endpoints that are descriptively related but evasively opposite (independent-aloof, witty-sarcastic) and three scales that have endpoints that are both descriptively and evasively opposite (skillful-clumsy, normal-plain, sweet-aggressive). Furthermore, these three scales have endpoints that are relatively narrow and moderate (independent-aloof, witty-sarcastic, skillful-clumsy), one scale has broad/moderate endpoints (normal-plain), and one scale has narrow/extreme endpoints (sweet-aggressive). It is therefore important to note that across all the four studies reported, we found identical results for those different types of description-unrelated scales. This finding suggests that differences between priming effects on description-unrelated scales and other scales cannot be explained in terms of the type of scale endpoints (see also General Discussion).
Neutral Priming Conditions

Before analyzing the specifics of the neutral priming conditions, it is important to note that one problem with presenting participants with evaluatively mixed priming stimuli, such as the persistent/reckless and stubborn/adventurous primes we used in the present study, is the creation of conflicting sources of input to the judgment task. Moskowitz and Roman (1992, Experiment 2) demonstrated that after priming evaluatively incongruent traits, one source of influence is the expressive impression of the target stimulus formed by applying the primed concepts (e.g., priming persistent and reckless yields the impression that Donald is persistent and reckless). However, a second source of influence, exerting itself only on the second and later rating dimensions, is the judgment respondents make on the first prime-related rating dimension. That is, when participants primed with persistent and reckless first judge Donald on the persistent/stubborn dimension and then on the adventurous/reckless dimension, the influence of the primes on the first dimension is straightforward ("Donald is persistent," a positive trait). However, when it concerns the second judgment (adventurous/reckless), two sources of influence will be in opposition to each other. On the adventurous-reckless dimension, participants should rate Donald negatively (reckless) and then on the persistent-stubborn dimension, the influence of persistent and reckless yields the impression that Donald is persistent/stubborn ("prime-related" in the neutral priming conditions), adventurous-reckless, and confident-conceited rating dimensions. Scales ranged from 1 to 7, with lower scores indicating more positive ratings. For each of the five measures, means with different subscripts differ significantly at $p < .05$.

The implication of this influence is that when two descriptively applicable constructs are primed that are evaluatively neutral, subsequent assimilation effects should only occur for the first prime-related rating dimension participants are exposed to. No effects should occur on the second prime-related rating dimension participants are exposed to because of the competing influences exerted on it. Furthermore, because the primed concepts are evaluatively neutral (the number, extremity, and breadth of positive and negative priming stimuli are completely balanced), no clear impression can be formed of the person on other target dimensions. In other words, the effect of evaluatively incongruent priming stimuli depends on which rating dimension comes first. We tested this notion in a separate experiment. In this experiment, we used the same mixed priming procedure, target stimulus, and rating scales as in the present study, but we varied the dimension participants were exposed to first. Participants first rated Donald on the persistent/stubborn dimension, the adventurous-reckless dimension, or the positive-negative dimension. The results were as expected: assimilation to the adventurous/reckless part of the primes when that was the first dimension to be rated and assimilation to the persistent/stubborn part of the primes when it was the first dimension to be rated. When the positive-negative dimension was the first dimension participants rated, no effects were found. In this condition, participants' conscious judgment of their general impression of Donald—that is, likely to be neither positive or negative in the case of neutral priming—probably decreased the implications of the primed traits.

In order not to complicate the design of the present study, we did not include a first-rating factor. The impact of this factor on neutral priming effects was firmly established by the study described above. In the present study, the first rating dimension participants were exposed to was the same in all conditions: All participants were first given the persistent-stubborn rating dimension. Follow-

Table 1
Neutral (Persistent/Reckless vs. Stubborn/Adventurous), Descriptive (Persistent vs. Stubborn), and Evaluative (Good vs. Bad) Priming: Mean Ratings of Donald as a Function of Prime Type × Prime Valence (Positive vs. Negative)

<table>
<thead>
<tr>
<th>Prime type</th>
<th>Neutral</th>
<th>Descriptive</th>
<th>Evaluative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Positive</td>
<td>Negative</td>
<td>Positive</td>
</tr>
<tr>
<td>Prime-related</td>
<td>2.4a</td>
<td>3.9c</td>
<td>1.8a</td>
</tr>
<tr>
<td>Description-related</td>
<td>2.0ab</td>
<td>3.0bc</td>
<td>2.8a</td>
</tr>
<tr>
<td>General likability</td>
<td>3.1ab</td>
<td>3.2bc</td>
<td>3.5a</td>
</tr>
<tr>
<td>Specific likability</td>
<td>3.7ab</td>
<td>3.6bc</td>
<td>3.1bc</td>
</tr>
</tbody>
</table>

Note. In the neutral priming condition, only prime-related ratings—that is, judgments on the (description-related) persistent-stubborn rating dimension—were predicted to show assimilation to the persistent/reckless (positive) or stubborn/adventurous (negative) neutral priming stimuli. Description-related ratings always refer to the persistent-stubborn ("prime-related" in the neutral priming conditions), adventurous-reckless, and confident-conceited rating dimensions. Scales ranged from 1 to 7, with lower scores indicating more positive ratings. For each of the five measures, means with different subscripts differ significantly at $p < .05$.

qualified by a $Scale \times Prime Valence$ interaction, $F(3, 139) = 8.76, p < .01$; a Prime Type $\times$ Prime Valence interaction, $F(1, 139) = 4.45, p < .05$; and the Predicted Scale $\times Prime Valence \times Prime Type$ interaction, $F(6, 139) = 2.28, p < .05$. No other effects were found ($Fs < 1$).

To further investigate this pattern of results (see also Table 1) and to more specifically test our hypotheses, we conducted separate analyses for each of the four rating dimensions within each level of the prime type factor, using the pooled error term of the complete design.

4 Because of space limitations, we do not discuss this experiment at length. A detailed description of this study is available from Diederik A. Stapel or Willem Koomen.
ing the reasoning above, for the neutral (persistent-reckless vs. stubborn/adventurous) priming conditions, we predicted assimilation to occur only on this scale. Thus, the two levels of the prime valence factor (see Table 1 and ANOVAs below) refer to the effects of persistent/reckless versus stubborn/adventurous priming on the persistent-stubborn rating dimension. Our prediction was that ratings would be more positive after persistent-reckless priming and more negative after stubborn-adventurous priming.

An ANOVA, treating scale, ratings on the prime-related (persistent-stubborn), description-related (adventurous-reckless, confident-conceited), general likability, specific likability, and description-unrelated rating dimensions, as a within-subjects factor and prime valence as a between-subjects factor, revealed a main effect of scale, $F(4, 139) = 5.30, p < .01$, and the predicted Prime Valence $\times$ Scale interaction, $F(4, 139) = 9.44, p < .01$. When exposed to persistent-reckless or stubborn-adventurous priming, only participants’ ratings on the first, prime-related rating dimension they were exposed to (persistent-stubborn) were affected. Participants rated Donald as more persistent ($M = 2.4$) when primed with persistent-reckless constructs than when primed with stubborn-adventurous constructs ($M = 3.9$), $F(1, 139) = 9.10, p < .01$ (see Table 1).

**Descriptive Priming Conditions**

An ANOVA, treating scale, ratings on the description-related, general likability, specific likability, and description-unrelated rating dimensions as a within-subjects factor and prime valence as a between-subjects factor, revealed a main effect of scale, $F(3, 139) = 12.63, p < .01$; a main effect of valence, $F(1, 139) = 11.60, p < .01$; and the predicted Prime Valence $\times$ Scale interaction, $F(3, 139) = 12.33, p < .01$. As predicted, on the description-related scales, participants rated Donald as more positive when the descriptive prime was positive ($M = 1.8$) than when it was negative ($M = 3.6$), $F(1, 139) = 23.52, p < .01$. In a similar manner, on the general likability scales, participants rated Donald as more positive when the descriptive prime was positive ($M = 2.8$) than when it was negative ($M = 3.6$), $F(1, 139) = 5.50, p < .05$, whereas on the specific likability and the description-unrelated scales, no effects were found ($ps > .29$, see Table 1).

**Evaluative Priming Conditions**

A Scale $\times$ Prime Valence ANOVA revealed a main effect of scale, $F(3, 139) = 17.22, p < .01$; a main effect of valence, $F(1, 139) = 23.48, p < .01$; and the predicted Prime Valence $\times$ Scale interaction, $F(3, 139) = 11.40, p < .01$. As predicted, on the description-related scale, participants rated Donald as more positive when the evaluative prime was positive ($M = 2.5$) than when it was negative ($M = 3.6$), $F(1, 139) = 7.71, p < .01$. In a similar manner, on the general likability scale, participants rated Donald as more positive when the evaluative prime was positive ($M = 2.9$) than when it was negative ($M = 3.9$), $F(1, 139) = 11.66, p < .01$. This assimilation effect was also found on the specific likability scale. On this dimension, participants rated Donald as more positive when the evaluative prime was positive ($M = 3.3$) than when it was negative ($M = 4.3$), $F(1, 139) = 3.86, p < .05$. For the description-unrelated scales, no effects were found ($p > .35$, see Table 1).

**Discussion**

These results provide the first support of our hypothesis that the broader and more extreme primed traits, the more response categories will be affected by these priming stimuli. The scope of knowledge accessibility effects thus seems to be dependent on the breadth and extremity of the activated knowledge.

Neutral priming affected only prime-related judgments. This finding indicates that when participants are exposed to neutral priming stimuli, they are able to develop a clear descriptive impression of the target on the primed dimensions by applying these concepts. However, because the primed concepts are evaluatively neutral, no clear evaluative impression of the target can be formed on other dimensions. When accessible knowledge is descriptively relevant to a target stimulus but evaluatively neutral, individuals cannot form a strongly valenced general evaluative concept of a target person. Thus, when a descriptively relevant positive trait concept and a descriptively relevant negative trait concept are primed, participants may not be able to develop a clear evaluative impression of the target, but they can develop a clear descriptive impression of a target by applying these concepts to the relevant dimensions on which the target is ambiguous.

In the descriptive priming condition, assimilation was found both on description-related and general likability ratings. This finding is in line with previous research that investigated assimilation effects on judgments of an ambiguous target (e.g., Higgins et al., 1977; Newman & Uleman, 1990; Sinclair et al., 1987; Stangor, 1990; Strack et al., 1993). That specific likability ratings were not affected by descriptive priming may be due to the fact that, although evafulatively stronger than in the case of neutral priming, descriptive priming consists of traits that are relatively narrow and evaluatively moderate. Therefore, descriptive priming influenced broad (general) likability judgments more easily than narrow (specific) likability judgments.

In the evaluative priming condition, priming affected description-related, general likability, and specific likability ratings. Thus, the first evidence is provided that descriptively inapplicable trait constructs may indeed affect the interpretation of an evafulatively ambiguous target, given that these constructs are relatively broad and extreme. Moreover, the range of response categories affected by such descriptively inapplicable, broad, and extreme priming stimuli is greater than when descriptively applicable, narrow, and moderate traits have been primed.

**Study 2a: Evaluative Priming**

As noted before, we know of no previous studies investigating the effect of evaluative priming (e.g., "good" vs. "bad") on judgments of an ambiguous target stimulus. Previous studies did use mood priming procedures to affect individuals’ judgments of ambiguous targets (e.g., Martin, 1986; Martin et al., 1990). This situation begs the question of to what extent the scope of mood and evaluative priming effects is similar. On the one hand, mood priming may be defined as a special case of evaluative priming because both priming procedures are likely to elicit cognitions that are strongly valenced and relatively broad. Thus, one might expect evaluative and mood priming to be similar when it concerns the scope of their effects. On the other hand, mood and evaluative priming should be defined as different because mood priming
consists of inciting positive or negative self-related thoughts, thus confounding the accessibility of evaluative constructs with self-relatedness. Because we did not assess participants’ mood in our first study, we did not know whether our evaluative priming manipulation was actually successful in activating broad and extreme traits while not changing people’s moods.

We performed two studies to investigate these issues. In Study 2a, we replicated the evaluative priming conditions of Study 1. Some participants were asked to unscramble word groups that referred to the constructs “positive” and “good,” whereas others unscrambled word groups that referred to the constructs “negative” and “bad.” To check whether evaluative trait constructs rather than a general feeling state was induced, we included a measure that tapped participants’ mood. In Study 2b, we investigated the effects of mood priming (e.g., Erber, 1991; Forgas & Bower, 1987; Martin, 1986; Martin et al., 1990). Some participants were asked to unscramble self-referent word groups meant to induce a positive mood state (“I feel good,” “I am happy”), whereas others unscrambled self-referent word groups meant to induce a negative mood state (“I feel bad,” “I am unhappy”). Similar to Study 2a, in Study 2b we included a measure that tapped participants’ mood.

On the basis of the results of Study 1, we predicted that knowledge that is activated by evaluative and mood priming would result in assimilation on description-related dimensions. Furthermore, because the cognitions activated by evaluative and mood priming should be evaluatively strong and broad, we predicted that in both cases priming would affect both general and specific likability ratings.

**Method**

Thirty-one participants were randomly assigned to positive or negative evaluative prime conditions. The procedure, priming stimuli, target description, and target rating dimensions were similar to the ones used in the evaluative priming conditions of Study 1. One participant qualified as suspicious of the purpose of the experiment; his data were not analyzed. Mood was measured after participants were finished rating Donald’s behavior. Participants used a scale ranging from 1 (negative) to 7 (positive) to rate “how positive or negative your mood is at this moment.”

**Results**

We tested our predictions in an ANOVA, treating scale, ratings on the four rating dimensions (description-related, general likability, specific likability, description-unrelated) as a within-subjects factor and evaluative prime valence as a between-subjects factor. This analysis revealed a main effect of scale, $F(3, 26) = 11.44$, $p < .01$, and main effect of prime valence, $F(1, 28) = 5.39$, $p < .05$. These main effects were qualified, however, by a marginally significant Prime Valence × Scale interaction, $F(3, 26) = 2.37$, $p < .08$. To further investigate these effects, we conducted separate analyses for each of the four rating dimensions.

As predicted, on the description-related scale, participants rated Donald as more positive when the evaluative prime was positive ($M = 1.8$) than when it was negative ($M = 2.8$), $F(1, 28) = 5.28$, $p < .05$. In a similar manner, on the general likability scale, participants rated Donald as more positive when the evaluative prime was positive ($M = 2.9$) than when it was negative ($M = 3.7$), $F(1, 28) = 4.83$, $p < .05$. This assimilation effect was also found on the specific likability scale. On this dimension, participants rated Donald as more positive when the evaluative prime was positive ($M = 3.0$) than when it was negative ($M = 3.9$), $F(1, 28) = 4.41$, $p < .05$. For the description-unrelated scales, no effects were found ($F < 1$). On these latter scales, participants’ ratings did not differ between conditions (see Table 2).

An analysis of participants’ mood judgments revealed no effect of prime valence ($F_{3, 34} < 1$). Participants’ mood judgments did not differ between conditions (positive $M = 5.1$, negative $M = 4.9$).

**Study 2b: Mood Priming**

**Method**

Thirty-eight participants were randomly assigned to positive or negative mood conditions. The procedure, materials, and measures were identical to those used in Study 2a, with the exception that in the present study the priming task was titled “Reading Comprehension and Mood” and in addition to the unscrambling instructions participants were asked to “try to feel the mood suggested” in each of the scrambled word groups that had an asterisk next to it. The mood-inducing word groups were based on statements from Velten’s (1968) mood-induction task. In the positive mood prime condition, five word groups (with an asterisk) could be unscrambled in one of the following self-referent statements: “I feel good,” “I can do everything,” “My life is wonderful,” “I am happy,” and “Everybody understands me.” In the negative mood prime condition, five word groups (with an asterisk) could be unscrambled in the following ways: “I feel bad,” “I can do nothing,” “Life is horrible,” “I am unhappy,” and “Nobody understands me.” The suspicion check revealed that none of the participants was aware of the purpose of the experiment.

**Results**

We tested our predictions in an ANOVA, treating scale, ratings on the four rating dimensions (description-related, general likability, specific likability, description-unrelated) as a within-subjects factor and mood as a between-subjects factor. This analysis revealed a main effect of scale, $F(3, 34) = 19.01$, $p < .01$, and a main effect of prime valence, $F(1, 36) = 15.76$, $p < .01$. These main effects were qualified, however, by a significant Prime Valence × Scale interaction, $F(3, 34) = 4.85$, $p < .01$. To further investigate these effects, we conducted separate analyses for each of the four rating dimensions.

**Table 2**

| Evaluative (Good vs. Bad) Priming: Mean Ratings of Donald as a Function of Evaluative Prime Valence |
|--------------------------------------------------|--------------------------------------------------|
| **Scale** | **Positive** | **Negative** |
| Description-related | 1.8 | 2.8 |
| General likability | 2.9 | 3.7 |
| Specific likability | 3.0 | 3.9 |
| Description-unrelated | 3.1 | 2.9 |

**Note.** Scales ranged from 1 to 7, with lower scores indicating more positive ratings. For each of the four measures, means with different subscripts differ significantly at $p < .05$. 
As predicted, on the description-related scale, participants rated Donald as more positive when the induced mood was positive (M = 2.6) than when it was negative (M = 3.9), F(1, 36) = 13.16, p < .01. In a similar manner, on the general likability scale, participants rated Donald as more positive when the elicited mood was positive (M = 2.7) than when it was negative (M = 3.8), F(1, 36) = 8.67, p < .01. This assimilation effect was also found on the specific likability scale: Participants rated Donald as more positive when the induced mood was positive (M = 3.9) than when it was negative (M = 5.1), F(1, 36) = 12.05, p < .01. For the description-unrelated scales, no effects were found (F < 1). On these latter scales, participants' ratings did not differ between conditions (see Table 3).

An analysis of participants' mood judgments revealed that, as expected, participants in the positive mood conditions reported that they were in a more positive mood (M = 5.0) than participants in the negative mood conditions (M = 4.1), F(1, 36) = 4.43, p < .05.

### Discussion

Together, Studies 2a and 2b show that both evaluative and mood priming are similar when it concerns the range of target judgments they affect. Both priming manipulations yielded assimilation on description-related dimensions and on general and specific likability dimensions. Our mood measure demonstrated where the effects of evaluative and mood priming differed as intended: Activating strongly valenced, broad trait concepts (evaluative priming) did not affect participants' mood judgments, whereas the mood manipulation did change participants' reported global affective state.

The pattern of results of our mood study (Study 2b) speaks to a debate in the literature on mood–judgment relations. As recent reviews of this relation have noted, it is unclear whether a positive or negative mood induces a general response tendency or only exerts its effects on specific kinds of judgments (see Petty, Schumann, Richman, & Strathman, 1993; Schwarz, 1990). One view asserts that the scope of mood-based judgment effects is narrow. According to this view, the effects of mood inductions may be restricted to specific (but not all) probability judgments (Johnson & Tversky, 1983), to self-relevant (but not to self-irrelevant) judgments (Forgas, Bower, & Krantz, 1984), or to description-related (but not to description-unrelated) judgments (Erber, 1991). A second view, however, asserts that the scope of mood-based judgment effects is broad. According to this view, mood-based judgment is a general (mood-as-information) effect that may generalize to all judgments. Effects of people's mood automatically occur for every judgment for which there is a legitimate response that can be classified according to its mood congruence (e.g., Mayer, Gaschke, Braverman, & Evans, 1992; Stapel & Veltkamp, 1996). The results of Study 2b seem to indicate that, at least for judgments of ambiguous target descriptions, mood-based effects may be called both narrow and broad: Mood affects not only specific, description-related judgments, but also both general and specific likability ratings. However, in the present study, mood effects did not represent a general response tendency: On narrow, relatively descriptive dimensions about which no relevant information was given (i.e., description-unrelated dimensions), mood had no effect.

### Study 3: A Replication of Neutral, Descriptive, and Evaluative Priming and an Exploration of the Contribution of Breadth and Extremity

The studies reported so far provide clear support for the hypothesis that the scope of knowledge accessibility effects depends on the breadth and extremity of the activated knowledge. In Study 3, we attempted to further replicate and extend these findings.

Our model posited that when primed with broad and evaluatively extreme constructs, individuals would more easily accompany their interpretations with evaluative inferences. Broad traits are associated with a large number of behavioral referents. Therefore, priming people with such traits increases the likelihood that target information will be understood in more inclusive, more general terms (see Hampson et al., 1986). In a similar manner, broad and extreme traits are more likely to point strongly to the evaluative meaning of the target information and thus prompt a more evaluatively charged interpretation than would narrow and moderate traits. Thus, when broad and extreme traits are primed, there is a greater likelihood that target interpretations will get tagged with general evaluative inferences (see Bargh, 1997).

In Studies 1 and 2a, we used evaluative priming stimuli, that is, traits that were pretested to be both relatively broad and relatively extreme (e.g., "good" versus "bad"). The results of these studies clearly suggested that evaluative priming affects a larger range of response categories (i.e., description-related, general likability, specific likability measures) than either descriptive or neutral priming. It was less clear, however, whether the scope of evaluative priming effects is primarily driven by the breadth of the activated information, by the extremity of the activated information, or by a combination of these components. In an attempt to investigate this question, in the present study we replicated the design of Study 1 (using neutral, descriptive, and evaluative priming stimuli) but also extended it by exposing one group of participants to descriptively inapplicable moderate/broad priming stimuli, that is, traits that are broad but not extreme (e.g., "agreeable" vs. "half-hearted"), and another group of participants to descriptively inapplicable extreme/narrow priming stimuli, that is, traits that are extreme but not broad (e.g., "sweet" vs. "aggressive"). Adding these conditions to the design and comparing their effects with those of the extreme/broad evaluative priming condition would, we hoped, enable us to better understand what is driving evaluative priming effects.

In Studies 1 and 2, we investigated the scope of knowledge accessibility effects by using Higgins et al.'s (1977) description
of adventurous/reckless, confident/conceited, persistent/stubborn Donald. To increase the generality of the test of our hypothesis, in the present study we used a target description that was ambiguous on three different dimensions (i.e., Sedikides' (1990) description of witty/sarcastic, cultivated/artificial, thrifty/stingy Ralph). Furthermore, in order to tap more reliably participants' general and specific likability ratings, in the present study we measured these types of target characterizations with two rating dimensions rather than with one rating dimension as was done in Studies 1 and 2 (see also Footnote 3).

In sum then, the present study used a Prime Type (neutral, descriptive, evaluative, moderate/broad, extreme/narrow) × Prime Valence (positive, negative) design. On the basis of our theoretical perspective and the results of Studies 1 and 2, our predictions were as follows: Neutral priming would affect judgments only on the first prime-related rating dimension participants are exposed to. Descriptive priming would affect description-related and general likability ratings. Evaluative priming would also affect description-related judgments and general likability ratings but in addition would exert an effect on specific likability ratings.

Because this study represented a first attempt to identify the effects of (a) moderate/broad and (b) extreme/narrow priming, we had no specific predictions for the scope of the effects of these priming stimuli. We did predict, however, that descriptively inapplicable traits might compensate for their inapplicability when they are either very broad or very extreme. Broad and extreme constructs may thus affect the interpretation of an ambiguous target stimulus. Broad constructs refer to such a large range of behaviors (Hampson et al., 1986, 1987) that priming such constructs may indirectly activate narrower, descriptively applicable trait terms. The evaluative connotations of extreme constructs may be so salient and clear that the valence of these constructs may be sufficient to direct target disambiguation, even when their description content is inapplicable to the target.

Method

Participants, Procedure, and Design

One hundred and seventy-five participants were randomly assigned to the conditions of a 2 (prime valence: positive, negative) × 5 (prime type: neutral, descriptive, evaluative, moderate/broad, extreme/narrow) between-subjects design. The procedure was identical to that used Studies 1 and 2. The suspicion check revealed that two of the participants were aware of the purpose of the experiment; their data were not analyzed.

Target Description

In the present study, the target description was a Dutch translation of a paragraph adopted from Sedikides (1990) describing the activities of a character named Ralph. The paragraph was ambiguous on three dimensions: witty/sarcastic, cultivated/artificial, and thrifty/stingy. The paragraph read as follows:

In order to improve his life Ralph 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 Ralph'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]. Ralph recently started making attempts to keep up to date with the world of arts and culture. He read a book about Africa, sat in a course on "modern music theory" and enjoys going to artists' cafes. When being with friends, Ralph talks at length about culture and abstract art [cultivated-artificial].

Priming Stimuli

Neutral priming. In the thrifty/sarcastic condition, four of the scrambled word groups in the priming task contained one of the following synonyms of thrifty: frugal, economical, efficient, or careful (overall BR = 3.91, SD = 4.70). Four other word groups contained one of the following synonyms of sarcastic: cynical, offensive, impertinent, or bitter (overall BR = 3.31, SD = 2.24). In the stingy-witty condition, four of the scrambled word groups in the priming task contained one of the following synonyms of stingy: miserly, greedy, egoistic, or niggling (overall BR = 2.92, SD = 1.86). Four other word groups contained one of the following synonyms of witty: clever, sharp, acute, or pointed (overall BR = 3.38, SD = 5.02).

Descriptive priming. In the positive descriptive prime condition, the four relevant word groups in the priming task contained the synonyms of thrifty that were used in the neutral priming condition. In the negative descriptive prime condition, these word groups were similar to the synonyms of stingy used in the neutral priming condition.

Evaluative priming. In the positive evaluative prime condition, the four relevant word groups contained one of the following words: warm, good, excellent, or wonderful (overall BR = 5.34, SD = 6.04). In the negative evaluative prime condition, these word groups contained one of the following words: cold, bad, horrible, irritating, or unpleasant (overall BR = 5.09, SD = 1.63).

Moderate and broad priming. In the positive moderate/broad prime condition, the four relevant word groups contained one of the following words: normal, pleasant, reasonable, or agreeable (overall BR = 5.46, SD = 4.64). In the negative moderate/broad prime condition, these word groups contained one of the following words: unpleasant, half-hearted, plain, or mediocre (overall BR = 4.74, SD = 2.69).

Extreme and narrow priming. In the positive extreme/narrow prime condition, the four relevant word groups contained one of the following words: sweet, honest, decisive, or reliable (overall BR = 3.65, SD = 6.21). In the negative extreme/narrow prime condition, these word groups contained one of the following words: aggressive, hypocritical, dishonest, or narrow-minded (overall BR = 3.60, SD = 1.77).

Dependent Measures

The description-related rating dimensions were thrifty (BR = 3.14, SD = 4.00) - stingy (BR = 2.91, SD = 1.57), witty (BR = 3.57, SD = 5.83) - sarcastic (BR = 3.34, SD = 2.80), and cultured (BR = 2.94, SD = 4.54) - artificial (BR = 2.71, SD = 1.97). Thus, the description-related characterizations consisted of rating scales of which overall the scale anchors were moderately narrow (BR = 3.10) and not very extreme (SD positive anchors = 4.79, SD negative anchors = 2.11).

The general likability rating dimensions were positive (BR = 5.51, SD = 6.11) - negative (BR = 5.54, SD = 1.69) and likeable (BR = 5.39, SD = 6.06) - disliked (BR = 4.89, SD = 2.04) and thus consisted of evaluatively extreme and relatively broad scale anchors. The specific likability rating dimensions were nice (BR = 4.80, SD = 6.20) - not nice (BR = 4.14, SD = 1.74), and friendly (BR = 4.49, SD = 6.14) - unfriendly (BR = 4.09, SD = 1.66) and thus consisted of trait terms that were also evaluatively extreme but narrower than the general likability ratings.

The description-unrelated rating dimensions were independent (BR = 3.74, SD = 5.60) - aloof (BR = 3.91, SD = 2.66), confident (BR = 4.03, SD = 5.43) - conceited (BR = 3.71, SD = 2.69), skill-
ful (BR = 3.69, SD = 5.51) – clumsy (BR = 3.51, SD = 2.63), and polite (BR = 4.40, SD = 5.57) – crude (BR = 3.31, SD = 2.54). Thus, the description-unrelated rating scales were descriptively unrelated to the target stimulus and consisted of trait terms that were narrower or less extreme than the likability dimensions.

Similar to Studies 1 and 2, Study 3's rating dimensions were interspersed with each other in such a way that order effects of type of scale were unlikely to occur. That is, the order in which the rating dimensions were presented was as follows: thrifty-stingy (description-related), witty-sarcastic (description-related), independent-altoof (description-unrelated), nice–not nice (specific likability), cultured–artificial (description-related), confident–conceited (description-unrelated), skillful–clumsy (description-unrelated), positive–negative (general likability), polite–crude (description-unrelated), friendly–unfriendly (specific likability), and likable–dislikable (general likability).

Results and Discussion

We tested our predictions in an ANOVA, treating scale, ratings on the four rating dimensions (description-related, general likability, specific likability, description-unrelated) as a within-subjects factor and prime valence (positive, negative) and prime type (neutral, descriptive, evaluative, moderate/broad, extreme/narrow) as between-subjects factors. This analysis revealed a main effect of scale, F(3, 163) = 24.85, p < .01, and a main effect of prime valence, F(1, 163) = 11.72, p < .01. These main effects were qualified, however, by a significant Scale × Prime Valence interaction, F(3, 163) = 15.91, p < .01, and a nonsignificant Scale × Prime Valence × Prime Type interaction, F(12, 163) = 1.52, p = .11. No other effects were found (Fs < 1).

To test the reliability of the part of the design that was a replication of Study 1, we further conducted Scale × Prime Valence × Prime Type ANOVAs, with three levels of prime type (neutral, descriptive, evaluative). These analyses revealed a main effect of scale, F(3, 98) = 15.47, p < .01, and a main effect of prime valence, F(1, 98) = 8.24, p < .01. These main effects were qualified by a significant Scale × Prime Valence interaction, F(3, 98) = 15.91, p < .01, and a nonsignificant Scale × Prime Valence × Prime Type interaction, F(6, 98) = 2.40, p = .05.

To further investigate this pattern of results (see also Table 4) to more specifically test our hypotheses, and also to explore the effects of breadth and extremity of the prime, we conducted separate analyses for each of the four rating dimensions within each level of the prime type factor, using the pooled error term of the complete design. Below, we first report the analyses for the replication conditions (neutral, descriptive, evaluative).

Neutral Priming Conditions

An ANOVA, treating scale, ratings on the five rating dimensions as a within-subjects factor and prime valence as a between-subjects factor, revealed a marginally significant main effect of scale, F(4, 163) = 1.98, p = .10, and the predicted Prime Valence × Scale interaction, F(4, 163) = 3.69, p < .05. When participants were exposed to thrifty-sarcastic or stingy-witty priming, only their ratings on the first, prime-related rating dimension they were exposed to (thrifty-stingy) were affected (see Study 1). Participants rated Ralph as more thrifty (M = 2.4) when primed with thrifty-sarcastic constructs than when primed with stingy-witty constructs (M = 4.2), F(1, 163) = 8.28, p < .01.

Descriptive Priming Conditions

A Scale × Prime Valence ANOVA revealed a main effect of scale, F(3, 163) = 5.24, p < .01; a main effect of valence, F(1, 163) = 4.04, p < .05; and the predicted Prime Valence × Scale interaction, F(3, 163) = 7.27, p < .01. As predicted, on the description-related scales, participants rated Ralph as more positive when the descriptive prime was positive (M = 2.7) than when it was negative (M = 3.7), F(1, 163) = 5.77, p < .01. In a similar manner, on the general likability scales, participants rated Ralph as more positive when the descriptive prime was positive (M = 3.2) than when it was negative (M = 4.5), F(1, 163) = 6.97, p < .01, whereas on the specific likability and the description-unrelated scales, no effects were found (Fs < 1, see Table 4).

Evaluative Priming Conditions

A Scale × Prime Valence ANOVA revealed a main effect of scale, F(3, 163) = 10.26, p < .01; a main effect of valence, F(1, 163) = 6.52, p < .01; and the predicted Prime Valence × Scale

Table 4

Neutral (Thrifty/Sarcastic vs. Stingy/Witty), Semantic (Thrifty vs. Stingy), Moderate/Broad (Reasonable vs. Mediocre), Extreme/Narrow (Sweet vs. Aggressive), and Evaluative (Good vs. Bad) Priming: Mean Ratings of Ralph as a Function of Prime Type × Prime Valence (Positive vs. Negative)

<table>
<thead>
<tr>
<th>Prime type</th>
<th>Scale</th>
<th>Neutral (Positive)</th>
<th>Negative (Negative)</th>
<th>Semantic (Positive)</th>
<th>Negative</th>
<th>Evaluative (Positive)</th>
<th>Negative</th>
<th>Moderate and broad (Positive)</th>
<th>Negative</th>
<th>Extreme and narrow (Positive)</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prime-related</td>
<td>2.4a</td>
<td>4.2a</td>
<td>3.5a</td>
<td>4.2a</td>
<td></td>
<td>2.5a</td>
<td>3.7c</td>
<td>2.7c</td>
<td>3.5c</td>
<td>2.7c</td>
<td>4.1c</td>
</tr>
<tr>
<td>Description-related</td>
<td>3.0c</td>
<td>3.7c</td>
<td>2.7c</td>
<td>3.7c</td>
<td></td>
<td>3.5c</td>
<td>3.7c</td>
<td>3.5c</td>
<td>3.7c</td>
<td>3.5c</td>
<td>4.1c</td>
</tr>
<tr>
<td>General likability</td>
<td>3.9c</td>
<td>4.1c</td>
<td>3.6c</td>
<td>4.5c</td>
<td></td>
<td>3.6c</td>
<td>4.2c</td>
<td>3.6c</td>
<td>4.2c</td>
<td>3.6c</td>
<td>4.5c</td>
</tr>
<tr>
<td>Specific likability</td>
<td>3.6c</td>
<td>3.6c</td>
<td>3.5c</td>
<td>3.6c</td>
<td></td>
<td>3.2c</td>
<td>4.6c</td>
<td>4.3c</td>
<td>3.9c</td>
<td>3.8c</td>
<td>4.4c</td>
</tr>
<tr>
<td>Description-unrelated</td>
<td>3.7c</td>
<td>3.6c</td>
<td>3.5c</td>
<td>3.6c</td>
<td></td>
<td>3.5c</td>
<td>3.6c</td>
<td>3.5c</td>
<td>3.6c</td>
<td>3.7c</td>
<td>4.3c</td>
</tr>
</tbody>
</table>

Note. In the neutral priming condition, only prime-related ratings—that is, judgments on the (description-related) thrifty-stingy rating dimension—were predicted to show assimilation to the thrifty-sarcastic (positive) or stingy-witty (negative) neutral priming stimuli. Description-related ratings always refer to the thrifty-stingy ("prime-related" in the neutral priming conditions), witty-sarcastic, and cultured-artificial rating dimensions. Scales ranged from 1 to 7, with lower scores indicating more positive ratings. For each of the five measures, means with a different subscript differ significantly at p < .05.
interaction, $F(3, 163) = 10.10$, $p < .01$. As predicted, on the description-related scale, participants rated Ralph as more positive when the evaluative prime was positive ($M = 2.5$) than when it was negative ($M = 3.7$), $F(1, 163) = 6.86$, $p < .05$. In a similar manner, on the general likability scale, participants rated Ralph as more positive when the evaluative prime was positive ($M = 3.3$) than when it was negative ($M = 4.6$), $F(1, 163) = 6.89$, $p < .05$. This assimilation effect was also found on the specific likability scale. On this dimension, participants rated Ralph as more positive when the evaluative prime was positive ($M = 3.2$) than when it was negative ($M = 4.6$), $F(1, 163) = 8.37$, $p < .01$. For the description-unrelated scales, no effects were found ($F < 1$, see Table 4).

These results provide further support for our hypothesis concerning the determinants of the scope of knowledge accessibility. In the neutral, descriptive, and evaluative priming conditions, the pattern of assimilation effects of Study 1 was replicated reliably. Neutral priming affected only prime-related judgments; descriptive priming affected description-related judgments and general likability ratings; and evaluative priming affected description-related judgments and both general and specific likability ratings.

Next, we report the analyses for the exploratory conditions (moderate and broad, extreme and narrow) of the design.

**Moderate/Broad Priming Conditions**

A Scale $\times$ Prime Valence ANOVA revealed a main effect of scale, $F(3, 163) = 6.28$, $p < .01$, and the predicted Prime Valence $\times$ Scale interaction, $F(3, 163) = 4.55$, $p < .05$. On the description-related scales, participants rated Ralph as more positive when the moderate/broad prime was positive ($M = 2.7$) than when it was negative ($M = 3.5$), $F(1, 163) = 4.01$, $p < .05$. However, no significant effects were found on the general likability scales, $F(1, 163) = 2.15$, $p = .15$, or on the specific likability and the description-unrelated scales ($F < 1$, see Table 5).

**Extreme/Narrow Priming Conditions**

A Scale $\times$ Prime Valence ANOVA revealed a main effect of scale, $F(3, 163) = 4.31$, $p < .05$: a main effect of valence, $F(1, 163) = 4.32$, $p < .05$; and a marginally significant Prime Valence $\times$ Scale interaction, $F(3, 163) = 2.39$, $p < .10$. On the description-related scales, participants rated Ralph as more positive when the extreme/narrow prime was positive ($M = 2.7$) than when it was negative ($M = 4.1$), $F(1, 163) = 10.24$, $p < .01$. In a similar manner, on the general likability scale, participants rated Ralph as more positive when the extreme/narrow prime was positive ($M = 3.6$) than when it was negative ($M = 4.5$), $F(1, 163) = 4.45$, $p < .01$, whereas no significant effects were found on the specific likability scales, $F(1, 163) = 2.33$, $p = .13$, or on the description-unrelated scales ($F < 1$, see Table 5).

These findings suggest that the range of target characterizations affected by moderate/broad priming is somewhat smaller than the scope of extreme/narrow priming. Across scales, the main effect of valence was much smaller in the moderate/broad ($F < 1$) conditions than in the extreme/narrow ($F = 4.32$) conditions. Whereas after moderate/broad priming only description-related judgments showed reliable assimilation effects, after extreme/narrow priming, significant assimilation effects were found for both description-related and general likability judgments (see Table 4). This finding seems to suggest that the effects of priming evaluative constructs—terms that are both broad and extreme—are driven more by the extremity than the breadth of these constructs. However, the fact that fewer rating scales show assimilation effects after both moderate/broad and extreme/narrow priming than after broad/extreme (evaluative) priming (see Table 4) suggests that the scope of knowledge accessibility effects is likely to be highest when the information primed is both extreme and broad.

### Table 5

| Extremity $\times$ Breath Priming: Mean Ratings of Donald as a Function of Prime Extremity (Moderate vs. Extreme) $\times$ Prime Breadth (Narrow vs. Broad) $\times$ Prime Valence (Positive vs. Negative) |
|---------------------------------|---------------|---------------|---------------|---------------|
|                                  | Moderate      | Extreme       | Moderate      | Extreme       |
|                                  | Narrow Positive | Positive | Negative | Positive | Negative | Narrow Positive | Positive | Negative | Positive | Negative |
| Description-related             | 2.6<sub>M</sub> | 2.7<sub>M</sub> | 1.9<sub>N</sub> | 3.3<sub>E</sub> | 2.2<sub>M</sub> | 3.6<sub>M</sub> | 1.8<sub>N</sub> | 3.4<sub>E</sub> |
| General likability              | 3.6<sub>M</sub> | 3.5<sub>M</sub> | 3.5<sub>N</sub> | 3.4<sub>E</sub> | 2.9<sub>M</sub> | 4.5<sub>M</sub> | 3.0<sub>N</sub> | 4.2<sub>E</sub> |
| Specific likability             | 4.1<sub>M</sub> | 4.1<sub>M</sub> | 4.1<sub>N</sub> | 3.9<sub>E</sub> | 4.0<sub>M</sub> | 4.3<sub>M</sub> | 3.3<sub>N</sub> | 4.7<sub>E</sub> |
| Description-unrelated           | 3.1<sub>M</sub> | 3.4<sub>M</sub> | 3.1<sub>N</sub> | 3.5<sub>E</sub> | 3.0<sub>M</sub> | 2.6<sub>M</sub> | 3.2<sub>N</sub> | 3.4<sub>E</sub> |

**Note.** In all conditions, priming stimuli were descriptively inapplicable. Scales ranged from 1 to 7, with lower scores indicating more positive ratings. For each of the four measures, means with different subscripts differ significantly at $p < .05$. 

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**Extremity $\times$ Breath Priming**

In Study 3, we made a first attempt to separate the breadth and extremity (Hampson et al., 1986, 1987) components of the evaluative priming stimuli we used before (Studies 1–2). The findings suggested at least three things:

1. Breadth or extremity is sufficient for descriptively inapplicable traits to exert assimilative interpretation effects on an ambiguous stimulus. Priming descriptively inapplicable, broad (but moderate), extreme (but narrow), or broad and extreme constructs guides target interpretations.

2. The effects of priming evaluative (broad and extreme) constructs seem to be driven by the extremity as well as the breadth of these constructs.
3. However, the extremity component of primed constructs seems to have a stronger effect on the scope of knowledge accessibility effects than the breadth component.

In Study 4, we hoped to corroborate these findings by investigating the effects of (inapplicable) broad versus extreme priming stimuli in a complete, orthogonal design. That is, in the present study, in all conditions participants were exposed to descriptively inapplicable trait constructs, but the extremity and breadth of primed trait constructs were crossed with two levels in a fully factorial design.

On the basis of our theoretical perspective and the results of Studies 1–3, our predictions were the following: Moderate/narrow priming would have no effects on any of the rating dimensions. These primes lack both the breadth and the extremity to compensate for their descriptive inapplicability. Moderate/broad primes would only affect description-related judgments. Extreme/narrow priming would affect description-related judgments and general likability ratings. Extreme/broad (evaluative) priming would affect description-related judgments, general likability ratings, and specific likability ratings.

**Method**

**Participants, Procedure, and Design**

One hundred and thirty-one participants were randomly assigned to the conditions of a 2 (prime valence: positive, negative) × 2 (prime extremity: moderate, extreme) × 2 (prime breadth: narrow, broad) between-subjects design. The procedure was identical to that used in Studies 1–3. The suspicion check revealed that none of the participants was aware of the purpose of the experiment.

**Target Description**

The target description was identical to the one used in Study 3. That is, participants were exposed to a paragraph about Ralph, whose behavior is not discussed in the analyses below.

**Priming Stimuli**

In each of the conditions, participants were primed with trait constructs that were descriptively inapplicable to the target description.

**Moderate/narrow priming.** In the positive moderate/narrow prime condition, the four relevant word groups contained one of the following synonyms of (the descriptively inapplicable trait) persistent: strong-minded, determined, resolute, or persevering (overall BR = 3.82, SD = 4.82). In the negative moderate/narrow prime condition, four of the scrambled word groups in the priming task contained one of the following synonyms of stubborn: obstinate, bullheaded, headstrong, or hard-headed (overall BR = 2.96, SD = 2.36).

**Moderate/broad priming.** In the positive moderate/broad prime condition, the four relevant word groups contained one of the following words: normal, pleasant, reasonable, or agreeable (overall BR = 5.46, SD = 4.64). In the negative moderate/broad prime condition, these word groups contained one of the following words: unpleasant, half-hearted, plain, or mediocre (overall BR = 4.74, SD = 2.69).

**Extreme/narrow priming.** In the positive extreme/narrow prime condition, the four relevant word groups contained one of the following words: sweet, honest, decisive, or reliable (overall BR = 3.65, SD = 6.21). In the negative extreme/narrow prime condition, these word groups contained one of the following words: aggressive, hypocritical, dishonest, or narrow-minded (overall BR = 3.60, SD = 1.77).

**Extreme/broad priming.** In the positive extreme/broad (evaluative) prime condition, the four relevant word groups contained one of the following words: warm, good, excellent, or wonderful (overall BR = 5.34, SD = 6.04). In the negative extreme/broad (evaluative) prime condition, these word groups contained one of the following words: cold, bad, horrible, or irritating (overall BR = 3.09, SD = 1.65).

**Dependent Measures**

The dimensions on which Ralph was judged were the same as in Study 3, with the exception that the likability measures consisted of three (instead of two) rating dimensions: (a) general likability: positive (BR = 5.51, SD = 6.11) – negative (BR = 5.34, SD = 1.69), likeable (BR = 5.39, SD = 6.08) – dislikeable (BR = 4.89, SD = 2.04), and warm (BR = 5.21, SD = 5.94) – cold (BR = 5.14, SD = 1.87); and (b) specific likability: nice (BR = 4.80, SD = 6.20) – not nice (BR = 4.14, SD = 1.71), friendly (BR = 4.49, SD = 6.14) – unfriendly (BR = 4.09, SD = 1.66), and kind (BR = 4.72, SD = 6.01) – unkind (BR = 4.24, SD = 1.83). Furthermore, several description-unrelated dimensions were added to ensure that this measure included ratings on descriptively inapplicable narrow/moderate, extreme/narrow, and moderate/broad dimensions (see Footnote 3). The description-unrelated rating dimensions were as follows: independent (BR = 3.74, SD = 5.60) – aloof (BR = 3.91, SD = 2.66), confident (BR = 4.03, SD = 5.43) – conceited (BR = 3.71, SD = 2.69), adventurous (BR = 3.77, SD = 5.54) – reckless (BR = 3.37, SD = 2.60), skillful (BR = 3.69, SD = 5.51) – clumsy (BR = 3.51, SD = 2.63), polite (BR = 4.40, SD = 5.57) – crude (BR = 3.31, SD = 2.54), normal (BR = 5.57, SD = 4.78) – plain (BR = 4.85, SD = 2.98), sweet (BR = 3.61, SD = 6.54) – aggressive (BR = 3.35, SD = 1.64), tender (BR = 3.63, SD = 5.54) – mean (BR = 4.46, SD = 1.74), and honest (BR = 3.43, SD = 6.17) – dishonest (BR = 3.87, SD = 1.60). Similar to Studies 1–3, these rating dimensions were interspersed with each other in such a way that order effects of type of scale were unlikely to occur. Furthermore, the order in which the rating dimensions were presented was counterbalanced. ANOVAs showed no significant (main or interaction) effects of this order variable (F < 1); therefore, this variable is not discussed in the analyses below.

**Results and Discussion**

We tested our predictions in an ANOVA, treating scale, ratings on the four rating dimensions (description-related, general likability, specific likability, description-unrelated) as a within-subjects factor and prime valence (positive, negative), prime extremity (moderate, extreme), and prime breadth (narrow, broad) as between-subjects factors. This analysis revealed main effects of scale, F(3, 123) = 71.40, p < .01, and prime valence, F(1, 123) = 28.05, p < .01. These main effects were qualified, however, by a Scale × Prime Valence interaction, F(3, 123) = 9.55, p < .01; a Scale × Prime Valence × Prime Extremity interaction, F(3, 123) = 8.72, p < .01; a marginally significant Scale × Prime Breadth interaction, F(3, 123) = 2.49, p = .06; and the predicted Scale × Prime Valence × Prime Extremity × Prime Breadth interaction, F(3, 123) = 3.66, p < .05. No other effects reached ordinary levels of significance (p > .12).

To investigate further this pattern of results (see Table 5) and to more specifically test our hypotheses, we conducted separate analyses for each of the four rating dimensions within each of the four conditions of the Prime Extremity × Prime Breadth interaction.

**Moderate/Narrow Priming Conditions**

As predicted, an ANOVA, treating scale as a within-subjects factor and prime valence as a between-subjects factor, revealed no
significant effects. Priming descriptively inapplicable, moderate/narrow trait constructs did not influence participants’ ratings of Ralph on any of the four scale types.

**Extreme/Narrow Priming Conditions**

A Scale × Prime Valence ANOVA revealed a main effect of scale, $F(3, 123) = 30.49, p < .01$; a main effect of valence, $F(1, 123) = 17.35, p < .01$; and the predicted Prime Valence × Scale interaction, $F(3, 123) = 15.39, p < .01$. As predicted, on the description-related scales, participants rated Ralph as more positive when the extreme/narrow prime was positive ($M = 2.2$) than when it was negative ($M = 3.6$), $F(1, 123) = 11.17, p < .01$. In a similar manner, on the general likability scales, participants rated Ralph as more positive when the extreme/narrow prime was positive ($M = 2.9$) than when it was negative ($M = 4.5$), $F(1, 123) = 23.09, p < .01$, whereas on the specific likability and the description-unrelated scales, no effects were found ($ps > .2$, see Table 5).

**Moderate/Broad Priming Conditions**

A Scale × Prime Valence ANOVA revealed a main effect of scale, $F(3, 123) = 11.75, p < .01$; a marginally significant effect of valence, $F(1, 123) = 2.86, p < .10$; and the predicted Prime Valence × Scale interaction, $F(3, 123) = 5.10, p < .01$. As predicted, on the description-related scales, participants rated Ralph as more positive when the moderate and broad prime was positive ($M = 1.9$) than when it was negative ($M = 3.3$), $F(1, 123) = 9.89, p < .01$. On the general likability, specific likability, and description-unrelated scales, no effects were found ($ps > .13$, see Table 5).

**Extreme/Broad (Evaluative) Priming Conditions**

A Scale × Prime valence ANOVA revealed a main effect of scale, $F(3, 123) = 26.46, p < .01$; a main effect of valence, $F(1, 123) = 38.31, p < .01$; and the predicted Prime Valence × Scale interaction, $F(3, 123) = 6.98, p < .01$. As predicted, on the description-related scales, participants rated Ralph as more positive when the extreme/broad prime was positive ($M = 1.8$) than when it was negative ($M = 3.4$), $F(1, 123) = 13.71, p < .01$. In a similar manner, on the general likability scales, participants rated Ralph as more positive when the extreme/broad prime was positive ($M = 3.0$) than when it was negative ($M = 4.2$), $F(1, 123) = 12.25, p < .01$. This assimilation effect was also found on the specific likability scales. Participants rated Ralph as more positive when the prime was positive ($M = 3.3$) than when it was negative ($M = 4.7$), $F(1, 123) = 23.24, p < .01$. For the description-unrelated scales, no effects were found ($F < 1$, see Table 5).

These findings nicely corroborate our earlier findings (Study 3). The range of target characterizations affected by broad (but moderate) priming was smaller than the scope of the effects of extreme (but narrow) priming (see Table 5). In the present study, this situation was clearly indicated by the fact that the Extremity × Valence × Scale interaction was significant, whereas the Breadth × Valence × Scale interaction was not. Moreover, across scales, the main effect of valence was much smaller in the moderate and broad conditions ($F = 2.86$) than in the extreme/narrow conditions ($F = 17.35$). Moderate and broad priming affected description-related judgments. Extreme and narrow priming affected description-related, general likability, and specific likability ratings. The finding that evaluative (extreme/broad) priming yielded effects on more rating scales than extreme (but narrow) priming showed again that the impact of evaluative priming is not solely driven by extremity. Extreme primes affect a larger range of target judgments than broad primes, but extremity and breadth are jointly necessary to increase the scope of knowledge accessibility effects to its fullest.

**General Discussion**

Together, the studies reported here support the hypothesis that the extent to which people infer characteristics from an evaluatively ambiguous person description is determined by the breadth and extremity of the constructs that are accessible during the impression formation process. Thus, the first evidence was generated for the notion that the scope of knowledge accessibility effects increases with the extent to which accessible knowledge represents so-called broad and extreme constructs (see Figure 1). We found this evidence by applying a new, more fine-grained approach to the study of knowledge accessibility effects. Compared with previous studies, our study systematically varied the breadth and extremity of priming stimuli and used response categories that allowed us to actually tap the inferential scope of target characterizations (i.e., description-related, general likability, specific likability, and description-unrelated).

Whereas previous investigations studied knowledge accessibility effects on judgments of an evaluatively ambiguous target, the present set of studies seem to address a lacuna in the literature by providing evidence that descriptive applicability is not necessary for priming stimuli to affect target interpretations. Knowledge accessibility effects have often been portrayed as the result of a denotative overlap between prime and stimulus (see Higgins, 1996; Sedikides & Skowronski, 1991; Wyer & Srull, 1989). However, the current finding that priming descriptively inapplicable, broad, or evaluatively extreme traits also affects target interpretations suggests that a lack of descriptive applicability may be compensated by breadth and extremity.

The primary goal of the present investigation was to test the hypothesis that the range of response categories affected by priming stimuli is a function of the breadth and extremity of these stimuli. We based this hypothesis on the simple and intuitively appealing notion that target interpretations and inferences following extreme/broad priming will be both more inclusive (because of the breadth of each stimuli) and more evaluative (because of the evaluative extremity of such stimuli). That is, when primed with a positively valenced broad and extreme trait (e.g., "good"), perceivers are more likely to conclude that an ambiguous confident/conceited target is not only "confident," but also "likeable" and "friendly."

Across all studies, we found that the occurrence of knowledge accessibility effects in target judgments is likely to decrease gradually from description-related to general likability to specific likability to description-unrelated responses. This finding suggests that when predicting or explaining priming effects, it is important...
to take into account the descriptive applicability, breadth, and evaluative extremity of the response categories one uses as dependent variables. Description-related dimensions show strong denotative overlap with the target description; thus, priming effects are most likely to show up in these measures. General likability measures are not descriptively applicable to the stimulus and therefore are less likely to be affected; however, because of their generality and evaluative strength, they may be more easily affected than specific likability measures, which are similarly extreme but narrower. Description-unrelated measures are relatively unlikely to be affected by priming stimuli because these measures lack descriptively applicability and are either less extreme or narrower than the (general and specific) likability measures.

When thinking of alternative processes that may mediate the present findings, it is important to note that we did not find accessibility effects on the description-unrelated rating dimensions. This finding is in line with the notion that people are reluctant to judge persons on trait dimensions about which they have absolutely no information (see also Yzerbyt, Shadron, Leyens, & Rocher, 1994), especially when they have recently been exposed to target information (e.g., have just read a paragraph about Ralph or Donald) and are thus unlikely to have forgotten this information (Carlston, 1980; Schneider, 1973). Thus, our results address a concern expressed by Higgins and Bargh (1987, p. 371), who noted that “Social perception and cognition researchers have tended to take as their domain of inquiry the study of the ways in which people go beyond the information given. There has been relatively little emphasis on the ways in which people stay within the bounds of the given data.” The present studies show that when knowledge is activated and people are exposed to ambiguous behavior, they will both go beyond and stay within the given data. While disambiguating the target behavior, they may make general evaluative inferences (“John is adventurous and he is likable”). Yet this fact does not necessarily mean that they will be willing to subsequently translate these general inferences to specific dimensions about which no information is given (“Is John more likely to be intelligent than stupid?” “I don’t know.”).
The fact that we found no priming effects on description-unrelated rating dimensions argues against explanations of the present scope effects using implicit personality theory or order-of-judgment terminology (people use responses to earlier trait dimensions to construct their responses on later rating dimensions; see Schneider, 1973; Schwarz & Bless, 1992). First, in all studies presented here, no priming effects were found on description-unrelated dimensions, whereas ratings on these dimensions were always interspersed with judgments on rating dimensions (e.g., description-related ratings or general likability ratings) that in some conditions were and in other conditions were not affected by priming stimuli presented (see Method section). Second, interpretations of the present results that refer to implicit personality theories or judgment-order effects cannot explain the fact that although the order in which rating dimensions were presented to respondents did not differ between prime type conditions, the type of response categories affected by priming manipulations did.

Third, such explanations would imply differences in effects for scales that belong to the same response category (e.g., description-related scales) but are presented early or late in the questionnaire. However, in all of the studies reported here, the effect size for separate scales was similar to the effects for the response categories these scales belonged to (see Footnote 3). Finally, in Study 4, the order in which rating scales were presented to participants was counterbalanced. This manipulation had no effects on target judgments.

The finding that there were no priming effects on description-unrelated rating dimensions provides evidence for the notion that in the present studies—even in the case of evaluative or mood priming—participants were not merely responding to the evaluative aspects of the primes and subsequently forming evaluatively consistent judgments, as Martin (1986) suggested (see also Erdley & D'Agostino, 1988; Higgins et al., 1977; Sinclair et al., 1987; Stapel et al., 1996). One may argue, however, that under conditions where effects on likability ratings were found, this could be explained by prime-response overlap. Thus, when priming “good” or “bad” before judging adventurous/reckless Donald, the following may happen: Description-related judgments will be affected because of the evaluative applicability of the primes to the target description. Likability judgments will be affected because the evaluative aspects of the primes directly influence evaluatively charged rating scales (e.g., positive-negative). In other words, when both primes and response categories are strongly valenced, primes may directly (rather than though inferences made during target interpretation) affect judgment.

There are several arguments that can be made against such an interpretation of the effects. First, the prime–response match explanation is not very parsimonious: Effects on description-related judgments are explained through interpretation processes (evaluatively applicable primes may affect target interpretations), whereas effects on likability judgments are explained in terms of a prime–response match. Second, a prime–response match explanation would imply that priming extreme traits will affect not only description-related and likability measures, but also narrow, description-unrelated measures if these are anchored by extreme traits. After all, such strongly valenced anchors (e.g., sweet–aggressive) should be as likely to be activated by evaluative primes as the anchors of likability scales (e.g., positive–negative). Previous investigations also suggest that knowledge accessibility effects are unlikely to occur on such measures (see Erber, 1991; Erdley & D'Agostino, 1988; Martin, 1986). More important, in both Study 1 and Study 4, such measures (sweet–aggressive, honest–dishonest) were included in the description-unrelated response category, but no effects were found on these measures (see Footnote 3).

In sum, the present research investigated inference processes that have gone unnoticed in previous studies of knowledge accessibility effects. The present research extends previous investigations of trait inference processes by adding studies of categorization → evaluation inferences to well-known studies of trait → trait inferences (e.g., “implicit personality theory” research; see Schneider, 1973), behavior → trait inferences (e.g., “spontaneous trait inferences” research; see Uleman, Newman, & Moskowitz, 1996), behavior → disposition inferences (e.g., “dispositional attribution” research; see Fiske & Neuberg, 1990). An important question for future research seems to be how the present effects are related to these other inference effects. For example, might the breadth and extremity of information that is accessible during behavior interpretation affect the kind of traits that are spontaneously inferred from behavior we observe? In other words, if you saw a man step on his girlfriend's feet during the tango, you might spontaneously infer that he is “clumsy,” but will you be more likely to also infer that he is “stupid” or “not nice” when negative cognitions have been activated? That is, will dispositional inferences become relatively extreme, get an evaluative twist, and become less related to the denotative meaning of the behavior on which they are based when people muse about generally good or bad things? The present research suggests that the answer to these questions is yes.

In conclusion then, the studies reported clearly indicate that when investigating the effects of knowledge accessibility on judgments of an evaluatively ambiguous target, it is essential to know not only the descriptive applicability, but also the breadth and extremity of this knowledge. These variables determine if people will go beyond the information given and, when they do so, how far they will go.

References


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