

The Impact of Opposites: Implications of Trait Inferences and Their Antonyms for Person Judgment

Diederik A. Stapel and Willem Koomen

University of Amsterdam, Amsterdam, The Netherlands

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This research investigates the similarities and differences between the impact of priming traits and the impact of priming their antonyms. The findings of five studies demonstrate that person judgments may be affected not only by priming descriptively relevant traits, but also by primes that are antonyms of these traits. The direction of the effect of activating traits versus antonyms is dependent on (1) whether the trait inferences are descriptively relevant or irrelevant and evaluatively moderate or extreme, (2) whether they refer to behavior labels or person descriptions, and (3) whether they activate information that overlaps with the dimension on which the target is to be judged. Implications for models of knowledge accessibility are discussed. © 2000 Academic Press

People are inveterate interpreters. They effortlessly and habitually infer meaning (e.g., “lazy”) from observed behavior (e.g., “taking the elevator up one floor”). Several studies have demonstrated that such spontaneous trait inferences (STIs) may have important consequences for subsequent judgment (see Uleman, Newman, & Moskowitz, 1996). Specifically, they may serve as “primes” and affect the impressions people form of others. Thus, exposure to a person who engages in behavior that strongly implies a particular trait construct (e.g., “He thought he could handle most problems that would come up” implies “confident”) may guide the perception of another person, whose behavior is ambiguously related to this trait (e.g., “By the way he acted one could readily guess that

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Address correspondence and reprint requests to Diederik A. Stapel, who is now at the Department of Social & Organizational Psychology, University of Groningen, Grote Kruisstraat 2/1, 9712TS Groningen, The Netherlands. E-mail: d.a.stapel@PPSW.RUO.NL.

he was well aware of his ability to do many things well"). In other words, "doing X" may result in "priming X."

Traits versus Antonyms

To date, investigations of the consequences of STIs have focused on trait-implicating behaviors that are *descriptively relevant* to the ambiguous target behavior that is to be judged. Typically, what is investigated is the impact of the subtle activation of, say, "adventurous" behavior versus "reckless" behavior on subsequent judgments of an ambiguous "adventurous/reckless" target description (Stapel & Koomen, 1996; Stapel, Koomen, & Van der Pligt, 1996). In the present research, we will address the importance of descriptive prime-target overlap for the occurrence of priming effects in several ways. Our first concern is with comparing the effects of trait inferences that are descriptively relevant to an ambiguous target stimulus to the effects of trait inferences that are opposite or antonymous to these descriptively relevant inferences. Suppose one has to form an impression of someone who is described as follows: "Only rarely did John change his mind even when it might have been better if he had." This behavior description may be taken as an indication of "persistence" as well as "stubbornness." STIs priming "stubborn" activate information that is descriptively relevant to this ambiguous behavior description. Hence such STIs are likely to affect perceivers' impressions of John (see Stapel & Koomen, 1996; Stapel et al., 1996). But what about STIs that activate behavioral information that is an *antonym* of "stubborn" and thus shows no descriptive overlap with the target behavior? Will behavior that implies an antonym of "stubborn," say "flexible" or "agreeable," affect the perception of a persistent/stubborn target, and if so, how? This is the question that started off the research reported in this paper.

There are several reasons why finding an answer to this question may be important. First, previous investigations have not compared the consequences of priming trait inferences versus antonyms of these inferences. To date, no priming study has investigated the impact of priming "traits" versus "antonyms" on subsequent judgment (see, e.g., Higgins, 1996). Second, the question of whether priming trait inferences that are antonyms of descriptively relevant trait inferences may influence target judgments has relevance for the ecological validity of priming effects. In typical priming studies the accessibility of particular constructs is increased through external priming manipulations, for example through the incidental presentation of actual trait words (see Higgins, Rholes, & Jones, 1977; Srull & Wyer, 1979). However, the ecological validity of priming research depends on the assumption that such trait terms are activated as part of everyday psychological functioning. Studies on the priming properties of STIs established the ecological validity of priming research by demonstrating that single behavioral incidents may steer the perception of a subsequently presented target stimulus—given that these incidents are infused with meaning which is relevant to the target stimulus (Stapel et al., 1996). If it is the case that judgments of an ambiguous target are affected not only by trait inferences that are descriptively

relevant to this target, but also by primes that are antonymous to these inferences, the range of *unambiguous* behaviors that may assist in the interpretation of *ambiguous* behaviors is enlarged, thus further increasing the ecological validity of priming research. A third reason for investigating the impact of trait inferences versus antonyms of these inferences concerns the possible ramifications for existing models of priming effects. If target judgments are affected not only by descriptively relevant traits, but also by descriptively *irrelevant* antonyms of these traits, theories that stress the importance of descriptive applicability for the occurrence of priming effects may need to be amended (see Higgins, 1996).

The Present Research

In the present research, we will investigate the impact of trait inferences on impressions of an ambiguous target person (e.g., Mark, whose behavior may be interpreted as “confident” or “conceited”).¹ In our studies, we will compare the impact of particular trait inferences (e.g., inferences which are descriptively relevant to the target, say “confident” vs “conceited”) and the impact of trait inferences that are antonyms of these inferences (e.g., “insecure” vs “modest”).

We present five experiments in which the consequences of exposure to trait-implying behaviors are compared to the consequences of exposure to behaviors that imply antonyms of these traits. In order to be able to relate our study to recent advances in the study of priming effects, we combined our investigation of the consequences of trait inferences versus antonyms of these inferences with manipulations influencing the extremity of the activated trait inference (cf. Stapel & Koomen, 2000) and with manipulations influencing whether trait inferences are likely to instigate interpretation or comparison effects (cf. Stapel et al., 1996). In doing so, we could investigate the similarities and differences between the consequences of activating “traits” versus “antonyms” in situations that are known to yield different types of priming effects.

In Experiment 1, we investigated how participants judged an ambiguous (confident/conceited) target when they were primed with descriptively relevant trait inferences (“confident” vs “conceited”) versus antonyms of these inferences (“insecure” vs “modest”). We also included conditions in which participants were primed with descriptively irrelevant trait inferences (“thrifty” vs “stingy”) and antonyms of these traits (“excessive” vs “generous”). In Experiment 2, we focused on the impact of behaviors implying traits that were descriptively irrelevant but evaluatively very extreme by testing the impact of behaviors implying “extreme” traits (e.g., “honest” vs “aggressive”) versus behaviors

¹ It is important to clearly define the type of stimuli we refer to in the case of “ambiguous” target stimuli. Both cognitive and social psychologists have investigated the impact of different types of ambiguous (vague or mixed) targets (see Stapel & Koomen, 2000). As in most previous studies of priming effects, in the present experiments the target stimuli consist of a behavior description that has features associated to the same degree with two or more constructs that are descriptively similar but imply evaluatively discrepant evaluations (see Higgins, 1996; Higgins & Brendl, 1995; Stapel & Koomen, 2000).

implying antonyms of these traits (e.g., “dishonest” vs “sweet”) on judgments of a persistent/stubborn target.

In Experiments 1 and 2, we used an experimental paradigm in which trait-implicating sentences are likely to activate abstract behavior labels (e.g., “confident”). In previous research, it has been shown that priming abstract concepts is likely to yield different effects than priming specific persons (“Peter is a confident person”; see Stapel & Koomen, 1996; Stapel et al., 1996). In Experiments 3 through 5, we assess the impact of trait inferences versus antonyms under conditions in which person descriptions rather than behavior labels are activated.

EXPERIMENT 1: DESCRIPTIVE RELEVANCE

Previous studies have demonstrated that exposure to trait-implicating behavior may affect subsequent impressions of a target stimulus, *given* that this behavior activates constructs that are relevant to the disambiguation of the target stimulus. In the present experiment, we investigate the impact of priming trait inferences as well as antonyms of these inferences. Thus, the main question of the present experiment is what effect, if any, may a sentence implying “insecure” (e.g., “He thought he could not handle any problem that might come up when writing his thesis”) have on judgments of a person who is described in a way that may be taken as indicating self-confidence as well as arrogance (e.g., “By the way he acted one could readily guess that he was well aware of his ability to do many things well”). Previous research suggests that such “antonymous” behavior descriptions are unlikely to exert effects on judgment because semantic overlap between prime and target stimulus is one of the preconditions for priming effects to occur (Erdley & D’Agostino, 1988; Higgins et al., 1977; Sedikides, 1990; Sinclair, Mark, & Shotland, 1987; Srull & Wyer, 1979; see Higgins, 1996). For example, Higgins et al. (1977) conducted a study in which participants were assigned to conditions that exposed them either to traits that were descriptively relevant to an ambiguous target description (e.g., priming, “adventurous” vs “reckless”; target, “adventurous/reckless”) or to traits that were descriptively irrelevant to this target (e.g., “obedient” vs “disrespectful”). The results showed that only descriptively relevant primes influenced participants’ characterizations of the target stimulus.

Thus, priming “insecure” behavior is unlikely to exert a *direct* effect on the interpretation of a behavior description that may hint at either self-confidence or arrogance because this behavior is descriptively irrelevant to the target stimulus (self-confident/arrogant behavior is unlikely to be characterized as insecure). However, the descriptively irrelevant construct “insecure” bears a special relation to the descriptively relevant construct “confident.” These constructs are each other’s *antonyms* or opposites (see Hampson, 1998). Because of this antonymous relation, it is not unlikely that increasing the activation level of one of these constructs will increase the accessibility of the other construct, so that priming “insecure” is likely to increase the accessibility of “confident” (cf. Higgins, 1996). It is unlikely, though, that such *indirect* priming effects would occur per

se. After all, there is no indication in previous priming research that the impact of priming a positive (or negative) construct may be neutralized because priming this construct concurrently activates its opposite. In fact, research on priming effects is based on evidence from studies in cognitive psychology that activating an evaluatively charged construct, for example “insecure,” will increase the accessibility of constructs of similar valence, not of opposite valence. Good things activate positive, not negative, thoughts (see Bower & Mayer, 1989).

In the present research, we are not concerned with associative priming effects *per se*. We are not interested in assessing whether or not priming “insecure” is likely to activate “confident.” We are interested in whether or not priming “insecure” may affect judgments of a specific, ambiguous target stimulus. This target stimulus is likely to play an important role in whether or not priming effects will occur (see also Higgins & Brendl, 1995; Stapel & Koomen, 2000). Specifically, we hypothesize that when “insecure” behavior is activated and the task is to disambiguate a “confident/conceited” target person, a priming effect *is* likely to occur. The reasoning behind this hypothesis is as follows: Suppose a perceiver is trying to form an impression of a target whose behavior could be interpreted as “confident” or “conceited.” This will increase the activation level of each of these rivaling meanings (Higgins & Brendl, 1995). Priming a construct (e.g., insecure) that is antonymous—and thus closely associated—to *only one* of these meanings (confident) is likely to further increase the accessibility of this meaning. Target judgments are likely to reflect this. In other words, priming antonyms of descriptively relevant constructs will produce priming effects because these antonyms refer to one pole of a dimension (e.g., confident–insecure) of which the opposite pole is descriptively relevant to the target stimulus. Thus, priming “insecure” behavior will result in perceiving a confident/conceited target person as confident rather than conceited.

In the present experiment, we test this hypothesis by exposing participants to behaviors implying traits that are descriptively relevant to an ambiguous target and by exposing them to behaviors implying antonyms of these traits. We also included control conditions in which descriptively irrelevant trait-implicating behaviors were primed (e.g., prime, thrifty vs excessive; target, confident/conceited). We did not expect these descriptively irrelevant behaviors to exert an effect on target judgments because the implied traits as well as their antonyms are unlikely to be used in the interpretation of the target.

Method

Procedure, Materials, and Measures

Participants received a booklet titled “Language Comprehension Questionnaire.” On the front page of this questionnaire, participants were told that on the next pages they would find several texts that were printed in a box and in bold type. Participants were instructed to read these texts carefully and attentively and to answer the questions that accompanied each text.

Trait-implying sentences. On the second page the trait-implying sentence appeared. This sentence was introduced as a behavior description extracted from a text in which “a particular kind of behavior” was described. Depending on experimental condition, different trait-implying sentences were presented. These sentences were based on a listing of trait-inference norms by Uleman (1988). To construct these norms, Uleman’s respondents were asked to generate up to three traits describing the target actors in each sentence. Trait agreement in these sentences was determined by coding the traits listed by participants. Percentages were calculated by dividing each unique trait response to a sentence by the total number of responses. Experimental sentences were chosen that were strong in their ability to imply traits (at least 60% of Uleman’s participants agreed on the trait they believed was implied by the sentence; see also Stapel et al., 1996).

In conditions in which descriptively *relevant* behaviors were primed, the experimental sentences were related to the trait dimension that characterized the target stimuli to be judged later on (confident, conceited), whereas in conditions in which descriptively *irrelevant* traits were primed (thrifty, stingy), the experimental sentences were unrelated to this target dimension. To construct sentences in which actors were described as engaging in behavior that was antonymous of the described behaviors, we took the relevant and irrelevant Uleman sentences and changed them in a way such that the antonym of the implied trait was likely to be activated. These newly constructed sentences were pretested using the Uleman procedure (see above). Thirty-five participants were asked to generate up to three trait words describing the actors in each sentence. For each of the antonym sentences, at least 30 participants (86%) generated one or more trait labels that were antonymous to the trait implied by the original sentences. All these participants generated trait words, not negations of the traits implied by the original sentence (e.g., “insecure” rather than “not confident”). Below, each of the antonym priming sentences is followed by the trait word that was generated by at least 25 pretest participants.

In conditions in which participants were exposed to behaviors implying “basic” traits (*Trait Prime conditions*), the following sentences were used in the “relevant” conditions: “He thought he could handle most problems that would come up” (confident); “He knew he was the best and didn’t hesitate to tell people about it” (conceited). The “irrelevant” sentences were “He only bought clothes and appliances that were on sale” (thrifty); “He earned a lot of money, but never gave anything to charity” (stingy).

In conditions in which participants were exposed to behaviors implying “antonymous” traits (*Antonym Prime conditions*), the following sentences were used in “relevant” conditions: “He thought he would not be able to handle most problems that would come up” (insecure); “People told him he was the best, but he always said others were much better” (modest). The “irrelevant” sentences were “He always bought clothes and appliances that were top of the line and very expensive” (excessive); “He earned a lot of money and gave 50% of his yearly income to charity” (generous).

TABLE 1

Experiment 1: Mean Ratings of Confident/Conceited Mark on the Dimension “Confident–Conceited” after Exposure to Trait-Implying Behaviors as a Function of Prime Trait Valence, Prime Relevance, and Prime Type

Prime valence:	Prime type			
	Trait		Antonym	
	Positive trait	Negative trait	Antonym of positive trait	Antonym of negative trait
Prime relevance:				
Relevant	<i>Confident</i> 3.6	<i>Conceited</i> 5.0	<i>Insecure</i> 3.5	<i>Modest</i> 4.9
Irrelevant	<i>Thrifty</i> 4.5	<i>Stingy</i> 4.3	<i>Excessive</i> 4.3	<i>Generous</i> 4.4

Note. Scale range is from 1 to 7. Higher scores indicate more negative ratings. Words printed in italics refer to trait terms describing the trait-implying sentence participants were exposed to in each condition.

Target stimulus and rating scales. On the third page the ambiguous target description appeared. Participants were instructed to read this description and to form an impression of the person described. The description was pretested and determined to be ambiguous along the dimension implied by the trait-implying sentence. The description contained behavior that was ambiguous along the “confident–conceited” dimension, and read as follows: “By the way he acted one could readily guess that Mark was well aware of his ability to do many things well.” After reading this description, participants were asked to indicate their impression of Mark by circling a number on a relevant 7-point scale (1 = “confident,” 7 = “conceited”) (cf. Stapel et al., 1996).

Participants and Design

One hundred one undergraduate students participated in this experiment for partial course credit. Participants were assigned randomly to the conditions of a 2 (Prime Trait Valence: positive, negative) \times 2 (Prime Relevance: relevant, irrelevant) \times 2 (Prime Type: trait, antonym) factorial between-subjects design.

Results and Discussion

We performed a 2 (Prime Trait Valence) \times 2 (Prime Relevance) \times 2 (Prime Type) analysis of variance (ANOVA) to test our predictions. This ANOVA revealed a main effect of prime trait valence, $F(1, 93) = 6.28, p < .05$, that was qualified by a Prime Trait Valence \times Prime Relevance interaction, $F(1, 93) = 7.07, p < .01$. No other main or interaction effects reached ordinary levels of significance. As can be seen in Table 1, these effects support our predictions. Ratings of the target stimulus were unaffected for participants who were shown sentences implying descriptively irrelevant traits or antonyms to

these traits ($M = 4.4$). Target ratings were affected, however, when participants were exposed to behavior descriptions priming descriptively relevant traits or antonyms of these traits. Comparisons of the relevant means showed that participants primed with “confident” behavior rated the target as more confident ($M = 3.6$) than did participants primed with “conceited” behavior ($M = 5.0$), $F(1, 93) = 6.83, p < .05$. Participants primed with “insecure” behavior rated the target as more confident ($M = 3.5$) than participants primed with “modest” behavior ($M = 4.9$), $F(1, 93) = 6.85, p < .05$.

These findings support the general idea that trait inferences may guide the manner in which subsequent behavior is judged and thus replicate earlier studies of the consequences of STIs (e.g., Stapel et al., 1996). Moreover, this experiment provides the first evidence that not only descriptively relevant traits, but also antonyms of these traits, may affect subsequent judgments.

EXPERIMENT 2: EVALUATIVE EXTREMITY

The findings of Experiment 1 show that priming descriptively relevant behavior or antonyms of such behavior is likely to result in similar target judgments. Respondents perceived a confident/conceited target as relatively confident when they were primed with either “confident” or “insecure” behavior, whereas they perceived this target as relatively conceited when they were primed with “conceited” or “modest” behavior. Priming descriptively irrelevant behavior showed no effect at all, independent of whether traits or their antonyms were primed. This may lead one to conclude that a descriptively irrelevant construct is likely to affect the perception of an ambiguous target only if this construct is an antonym of one of the meanings implied in the target.

In the present experiment, we will demonstrate that there is yet another route via which descriptively irrelevant antonyms may affect judgments. As in the “irrelevant” conditions in Experiment 1, we will prime trait inferences that are descriptively irrelevant for interpretation of a target stimulus. In Experiment 1, these trait constructs were evaluatively moderate, namely “thrifty” versus “stingy,” traits that do not have strong evaluative implications (see Anderson, 1968). In the present experiment we will prime trait inferences that have strong evaluative implications, such as “honest” or “aggressive.”² One may argue that when the task is to judge an ambiguous target in relation to which these inferences are descriptively irrelevant, for example a persistent/stubborn person, these inferences are unlikely to exert any effect. An alternative hypothesis, however, is that the evaluative extremity of these behaviors may be sufficient to guide target interpretation, overriding their descriptive inapplicability. This, of course, implies that distinguishing between evaluatively extreme “traits” and

² It is important to note that in each of the five experiments reported here, priming stimuli, target descriptions, and judgment dimensions referred to personality traits that were pretested in an earlier study on dimensions such as “evaluative extremity” and “categorical breadth” (Stapel & Koomen, 2000). Pretest results may be obtained by writing to Diederik A. Stapel.

“antonyms” becomes relatively meaningless. As the findings of Experiment 1 suggest, when one is investigating the impact of *evaluatively moderate* constructs, it is important to distinguish between primes, for example “persistent” and “lazy,” because one of these antonymously related constructs may be descriptively relevant to an ambiguous (e.g., persistent/stubborn) target stimulus, whereas the other may not. However, when one is testing the effects of antonymously related constructs that are *evaluatively extreme*, such as “honest” versus “dishonest” and “fantastic” versus “horrible,” the effects will be driven by the evaluative extremity (positive vs negative) rather than by the descriptive relevance of the activated information. In other words, the impact of traits versus antonyms will differ importantly when one compares the impact of descriptively relevant traits and their antonyms to the impact of evaluatively extreme traits and their antonyms.

Although several models of priming effects have suggested that semantic overlap between prime and target stimulus is one of the preconditions for priming effects to occur (see Higgins, 1996; Wyer & Srull, 1989), there are several studies that provide support for the argument that when primed information is evaluatively extreme, descriptive applicability is less of an issue. For example, studies on the impact of mood on social perception have demonstrated how people’s moods may affect their judgments of ambiguous targets. These studies show how rather general, positive or negative thoughts and ruminations may affect subsequent judgments of ambiguous target descriptions (e.g., Forgas & Bower, 1987; Martin, 1986). Furthermore, in a set of recent studies on the differences between descriptive and evaluative priming effects, we showed that judgments of an ambiguous person description were affected by descriptively irrelevant priming stimuli, *given* that these stimuli were evaluatively extreme (Stapel & Koomen, 2000).

Thus, previous investigations suggest that priming evaluatively extreme information may successfully be imported into the present paradigm. Therefore, in the present experiment, we investigate the influence of descriptively irrelevant, evaluatively extreme trait inferences and their antonyms, as primed by a single behavior description. Participants were exposed to trait-implying sentences before they were asked to judge an ambiguous, persistent/stubborn target. We predicted that participants’ target judgments would show a different pattern than in the “relevant” conditions in Experiment 1, that is a pattern of *evaluative* priming effects: Priming extremely positive constructs (traits or antonyms) should result in positive judgments and priming extremely negative constructs (traits or antonyms) should result in negative judgments.

Method

Procedure, Materials, and Measures

The procedure, materials, and measures were the same as in Experiment 1, except that different (i.e., extreme) trait-implying sentences were used (see

below). These were pretested in the pilot study described earlier ($n = 35$; see Experiment 1). Below, each of the priming sentences is followed by the trait word that was generated by at least 31 pretest participants.

Trait-implying sentences. To activate evaluative extreme trait constructs, we used trait-implying sentences implying exceptional levels of “honesty” and “aggressiveness.” Studies of the extremity (or social desirability) of personality traits suggest that these trait constructs are perceived as socially very desirable and undesirable, respectively (Anderson, 1968; Stapel & Koomen, 2000).

In *Trait Prime conditions*, the following sentences were used: “When he found a lost wallet with an address and a lot of money in it, he immediately took the train to return it to the lawful owner” (honest); “He was very angry and felt hurt by what she said, threatened her with a knife, and said he would hurt her unless she took back what she said” (aggressive). In *Antonym Prime conditions*, the following sentences were used: “When he found a lost wallet with an address and a lot of money in it, he immediately took the money out of it and threw the wallet away” (dishonest); “He was very angry and felt hurt by what she said, but he contained himself and tried to solve the conflict in a mature, civilized way” (sweet).

Participants and Design

Fifty-one undergraduate students participated in this experiment for partial course credit. Participants were assigned randomly to the conditions of a 2 (Prime Trait Valence: positive, negative) \times 2 (Prime Type: trait, antonym) factorial between-subjects design.

Results and Discussion

We performed a 2 (Prime Trait Valence) \times 2 (Prime Type) ANOVA to test our predictions. This ANOVA revealed the predicted Prime Trait Valence \times Prime Type interaction, $F(1, 47) = 8.44$, $p < .01$ (other effects, $F_s < 1$). As can be seen in Table 2, the interaction supports our prediction. Comparisons of the relevant means show that participants primed with “honest” behavior rated the target as more confident ($M = 3.8$) than did participants primed with “aggressive” behavior ($M = 4.9$), $F(1, 47) = 3.80$, $p = .05$. Participants primed with “dishonest” behavior rated the target as less confident ($M = 5.1$) than participants primed with behavior implying “sweet” ($M = 3.9$), $F(1, 47) = 4.26$, $p < .05$.

These findings again support the notion that inferences may guide the subsequent interpretation and judgment of ambiguous behavior. Furthermore, these findings replicate previous studies showing that priming evaluatively extreme constructs may affect judgments of an ambiguous target, even when these constructs are descriptively irrelevant to this target (see Stapel & Koomen, 2000). When we view the present results in combination with the findings of Experiment 1, the differences between evaluative and descriptive priming demonstrate an interesting pattern of results concerning the impact of priming antonyms. In the

TABLE 2

Experiment 2: Mean Ratings of Confident/Conceited Mark on the Dimension "Confident-Conceited" after Exposure to Descriptively Irrelevant, Evaluatively Extreme Trait-Implying Behaviors as a Function of Prime Trait Valence and Prime Type

Prime valence:	Prime type			
	Trait		Antonym	
	Positive trait	Negative trait	Antonym of positive trait	Antonym of negative trait
	<i>Honest</i> 3.8	<i>Aggressive</i> 4.9	<i>Dishonest</i> 5.1	<i>Sweet</i> 3.9

Note. Scale range is from 1 to 7. Higher scores indicate more negative ratings. Words printed in italics refer to trait terms describing the trait-implying sentence participants were exposed to in each condition.

case of descriptively relevant trait inferences, priming trait inferences results in *evaluatively identical* effects as priming antonyms of these inferences. The data of Experiment 1 indicate that when a perceiver is forming an impression of a confident/conceited target description, both the activation of "confident" (positive) and "insecure" (negative) behavior results in more positive judgments. However, in the case of descriptively irrelevant, evaluatively extreme trait inferences, priming traits versus antonyms is likely to produce *evaluatively opposite* effects. The data of Experiment 2 suggest that when a perceiver is forming an impression of a confident/conceited target description, the activation of "honest" (positive) will yield positive judgments, whereas the activation of "dishonest" will result in negative judgments. In other words, the impact of activating antonymous constructs is dependent on the descriptive relevance and evaluative extremity of what these constructs are antonyms of.

EXPERIMENT 3: PRIMING PERSONS

Previous research on the implications of STIs suggests that when one is investigating the impact of trait inferences on subsequent person judgments, the direction of this impact may be dependent on whether these inferences refer to behavior labels or to person descriptions (Stapel & Koomen, 1996; Stapel et al., 1996). In the present experiment, we set out to further our understanding of the impact of traits versus antonyms by assessing the impact of trait inferences in a situation in which concrete *persons* rather than abstract *behavioral categories* are activated.

As social cognition research has shown time and again, when an abstract trait concept is activated at the time information about a target person is received, this concept is relatively likely to be used to *categorize* the target (see Fiske & Neuberg, 1990) or *interpret* the target's behavior (see Higgins, 1996) in a way that reflects the use of the activated information as an interpretation frame (see

Stapel et al., 1996). On the other hand, when trait inferences refer to specific persons, the social perceiver may be more likely to consider the target information in *comparison* to this specific and distinctive person representation. When this is the case, people will use the activated person concept as a comparison standard, resulting in contrastive comparison effects.

Investigations of comparative and social judgment have shown that if specific category exemplars are cognitively activated, these exemplars are likely to serve as an anchor to which the target is compared and contrasted (see Eiser, 1990; Kahneman & Miller, 1986). When the task is to judge a target person, activated behavior labels such as "confident" may not be perceived as sufficiently distinct to be used as a judgmental anchor. Furthermore, such *behavior* labels may not be similar enough to the target *person* to serve as a relevant comparison standard. Specific actor-trait links such as "Peter is confident," on the other hand, are relatively distinct and similar to the target and are therefore more likely to produce contrastive comparison effects. This does not mean, however, that the effect of priming abstract behavior labels is null. Accessible abstract behavior labels are likely to function as a general interpretation frame when information about the target stimulus is categorized, so that assimilation may occur (see Higgins, 1996; Stapel et al., 1996). An important determinant of whether or not behavior labels will be a guide to interpretation is their (descriptive or evaluative) applicability to the interpretation of the target stimulus, as is testified by the findings of Experiments 1 and 2.

In the present experiment, we extend our investigation of the impact of trait inferences versus antonyms to a situation in which person concepts rather than abstract behavior labels are activated. Thus we move from the domain of "interpretation effects" to the domain of "comparison effects." In Experiments 1 and 2, participants were given a trait-implying sentence and told that this sentence described a particular *behavior* (cf. Stapel & Koomen, 1996). Not surprisingly, participants' judgments showed assimilative interpretation effects: Their judgments of the target stimulus reflected the use of (directly or indirectly) primed information as an interpretation frame.

In the present experiment, participants were given a trait-implying sentence and told that this sentence described a particular *person* (see Stapel & Koomen, 1996). The predictions for the impact of trait inferences are rather straightforward: Participants who are told that the trait-implying sentences describe a person are expected to form trait inferences of which the referents are person concepts and should exhibit contrast effects in their judgments. Thus, when participants have to judge a target (Mark) whose behavior may be interpreted as confident or conceited, exposure to a sentence activating "Peter is confident" is likely to result in contrast effects, indicating that confident/conceited Mark will be judged as relatively less confident (and more conceited) when Peter serves as an accessible comparison standard. Similarly, Mark will be perceived as less conceited (and more confident) when participants are primed with a description of arrogant Peter.

In conditions in which a person description is activated that is antonymous to descriptively relevant trait constructs, we also expect contrast effects to occur. Here, the activated actor–trait links are likely to provide anchor points that are the exact opposite of the ones in the “relevant” conditions. These anchor points relate to constructs that are descriptively irrelevant to interpreting the target (e.g., “Peter is insecure”), but because they are *opposites* of the anchors that form the relevant judgment dimension (e.g., confident–conceited), they are likely to be perceived as meaningful comparison standards when judging the target on this dimension. To put it more concretely, in comparison with an insecure person, the behavior of confident/conceited Mark is likely to be viewed as relatively confident. And similarly, the behavior of Mark is more likely to be judged as conceited when a modest person is activated as the norm. Thus, we predict that the impact of descriptively relevant trait inferences versus antonyms of these inferences is different when these inferences refer to person descriptions (trait and antonym priming lead to evaluatively opposite target judgments) than when they refer to behavior labels (see Experiment 1; trait and antonym priming lead to evaluatively similar target judgments).

Method

Procedure, Materials, and Measures

The procedure, materials, and measures were similar to the ones used in the experiments reported earlier. The ambiguous (confident/conceited) behavior of the target person (Mark) was to be judged after participants were exposed to trait-implying sentences that implied “confident” or “conceited” or antonyms of these descriptively relevant traits (see Experiment 1). In Experiments 1 and 2, participants were told that the trait-implying sentence they had to read was a behavior description extracted from a text in which “a particular kind of behavior” was described. In the present experiment, participants were told that this sentence was a person description extracted from a text in which “a particular person” was described. Furthermore the protagonists in these sentences were given a name (Peter). Thus a specific person description rather than an abstract behavior label was likely to be activated (see Stapel & Koomen, 1996, pp. 831–833).

Participants and Design

Fifty undergraduate students participated in this experiment for partial course credit. Participants were assigned randomly to the conditions of a 2 (Prime Trait Valence: positive, negative) \times 2 (Prime Type: trait, antonym) factorial between-subjects design.

Results and Discussion

We performed a 2 (Prime Trait Valence) \times 2 (Prime Type) ANOVA to test our predictions. This ANOVA revealed the predicted two-way interaction, $F(1,$

TABLE 3

Experiment 3: Mean Ratings of Confident/Conceited Mark on the Dimension "Confident-Conceited" after Exposure to Descriptively Relevant Trait-Implying Behaviors Designed to Activate Person Descriptions as a Function of Prime Trait Valence and Prime Type

Prime valence:	Prime type			
	Trait		Antonym	
	Positive trait	Negative trait	Antonym of positive trait	Antonym of negative trait
	<i>Confident</i> 5.1	<i>Conceited</i> 3.8	<i>Insecure</i> 3.4	<i>Modest</i> 4.8

Note. Scale range is from 1 to 7. Higher scores indicate more negative ratings. Words printed in italics refer to trait terms describing the trait-implying sentence participants were exposed to in each condition.

46) = 10.41, $p < .01$ (other effects, $F_s < 1$). As can be seen in Table 3, the interaction effect supports our predictions. Comparisons of the relevant means show that participants primed with a "confident" person rated the target as less confident ($M = 5.1$) than did participants primed with a "conceited" person ($M = 3.8$), $F(1, 46) = 4.27$, $p < .05$. Participants primed with an "insecure" person rated the target as more confident ($M = 3.4$) than participants primed with a "modest" person ($M = 4.8$), $F(1, 46) = 5.34$, $p < .05$.

This experiment was designed to extend our investigation of the consequences of trait inferences and antonyms of these inferences to the domain of comparison (instead of interpretation) effects. The findings show that when exposure to trait-implying behavior activates a person description (e.g., "Peter is confident"), subsequent judgment is more likely to show comparison contrast.

We prefer to view the contrast effects that followed priming participants with descriptively relevant "persons" in terms of comparison contrast. It is important to note, however, that in conditions in which antonyms were primed, these "contrast" effects were very similar to the effects we found in those conditions in Experiment 1. For example, in Experiment 1, we found that a confident/conceited target was judged as more confident when an "insecure" behavior description was primed. We explained this effect in terms of spreading activation and *interpretation processes*. (When one is interpreting a confident/conceited target, "insecure" is likely to increase the accessibility of "confident.") In the present experiment, we found that a confident/conceited target was judged as more confident when an "insecure" person description was primed. This effect we explained in terms of *comparison processes*. (When one is judging a confident/conceited target, an "insecure person" is likely to be used as a negative comparison standard, so that this target is likely to be perceived as relatively positive.) Why do we choose to explain these similar effects in terms of different mechanisms? Why not apply similar explanations to these similar results?

We agree that these effects may be explained using similar psychological processes. However, explanatory parsimony is seriously threatened when one does view these effects in isolation and does not relate them to our other findings. For example, an explanation of the impact of antonymous *behavior* descriptions in terms of contrastive comparison processes is difficult to maintain when in relevant other conditions, the impact of such descriptions is likened to assimilative interpretation processes. Similarly, an explanation of the impact of antonymous *person* descriptions in terms of indirect activation and interpretation processes is difficult to maintain when in relevant other conditions, the impact of such descriptions is likened to contrastive comparison processes. Hence, we prefer to explain the effects of priming antonyms in terms of interpretation when behavior descriptions are primed and in terms of comparison when person descriptions are primed, because this best explains the *complete* pattern of results across Experiments 1, 2, and 3 and is in accordance with previous studies of the consequences of trait inferences (Stapel & Koomen, 1996; Stapel et al., 1996).

EXPERIMENT 4: PRIMING EVALUATIVELY EXTREME PERSONS

In Experiment 3, we predicted and found that priming person descriptions that are descriptively relevant to an ambiguous target description yields contrastive comparison effects. Moreover, antonyms of descriptively relevant person descriptions also yield contrast. The findings of the first two experiments clearly indicate that the impact of trait inferences is in an important way dependent on whether descriptively relevant versus evaluatively extreme (but descriptively irrelevant) constructs are activated. Therefore, in the present investigation of the impact of person priming, we include conditions in which evaluatively extreme traits versus antonyms are activated. What do we predict?

In conditions in which descriptively relevant actor–trait links are activated, the predictions are of course identical to those in Experiment 3: contrast in both trait and antonym conditions. In conditions in which information is activated that is evaluatively extreme but descriptively irrelevant to Mark's confident/conceited behavior, we predict that priming traits or antonyms will result in assimilation rather than contrast. The reasoning behind this is as follows: It is important to know whether trait inferences refer to abstract behavior labels or specific person descriptions, but recent research by Stapel and Winkielman (1998) suggests that when it concerns the impact of evaluatively extreme trait inferences yet another factor may come into play. These authors showed that accessible information will be used only as a comparison standard when this information possesses "dimensional relevance." That is, accessible information influences the subsequent evaluation of a target stimulus by means of comparison processes only if the accessible information is relevant to the dimension of judgment (see also Schwarz, Münkler, & Hippler, 1990). For most psychophysical stimuli, dimensional relevance is an inherent stimulus property. The size, color, or weight of context stimuli will be used to judge the size, color, or weight of target stimuli. However, complex sociopsychological stimuli may be thought about in quite a

number of dimensions, some of which will and some of which will not be relevant for the judgment task at hand. When accessible information is thought about in a way that is unrelated to the target judgment, for instance when one thinks of Einstein when judging the physical attractiveness of a colleague, comparison contrast is less likely to occur than when one thinks of Einstein when judging the intelligence of this colleague (Schwarz et al., 1990; Stapel & Winkielman, 1998; Upshaw & Ostrom, 1984).

In the present experiment (as in Experiments 1 through 3), participants were asked to decide the extent to which ambiguous Mark is confident or conceited on a rating dimension anchored by terms that describe this ambiguity: confident–conceited. Thus, in conditions in which descriptive relevant person descriptions or their antonyms are activated, the primed “traits” are similar to one of the judgment anchors (confident), whereas the primed “antonyms” are the exact opposite of one of these anchors (insecure). In both cases, the activated information is likely to be used as a comparison standard and contrast is likely to occur (see our predictions above). In the evaluative priming conditions, however, the primed information lacks dimensional relevance. Evaluatively extreme person descriptions such as “Peter is honest” or “Peter is dishonest” are unlikely to serve as comparison standards when one is to decide the extent to which Mark is to be evaluated as relatively “confident” or “conceited” (cf. Stapel & Winkielman, 1998). It should be noted that this should not be taken to mean that the impact of evaluatively extreme person descriptions is null. Although extreme person descriptions and their “antonyms” may lack the dimensional relevance to be used as a comparison standard, they may still serve as an interpretation frame and thus yield assimilative priming effects. This argument implies that in conditions in which evaluative person descriptions or their antonyms are primed, participants’ target judgments should show a pattern of evaluative, assimilative priming effects. Priming extremely positive person descriptions should result in positive judgments, and priming extremely negative person descriptions should result in negative judgments.

Method

Procedure, Materials, and Measures

The procedure, materials, and measures were largely similar to the ones used in Experiment 3. The behavior of the target person (Mark) could be interpreted as “confident” or “conceited.” In conditions in which descriptively relevant person descriptions were primed, participants were exposed to trait-implying sentences that implied “confident” or “conceited” or antonyms of these traits. In conditions in which descriptively irrelevant, evaluatively extreme traits were primed, participants were exposed to trait-implying sentences that implied “honest” or “aggressive” or antonyms of these traits. In all conditions, participants were told explicitly that the trait-implying sentence described a particular person, named Peter.

In the present experiment, we changed the priming task in an attempt to strengthen the activation potential of the relevant actor–trait links: After participants had read the trait-implying sentence, they were presented with a multiple-choice question. Specifically, they were given two behavior descriptions and had to choose which of these descriptions corresponded best with the behavior described in the trait-implying sentence they had just read. For each of the trait-implying sentences, one multiple-choice question was designed. These multiple-choice questions were pretested to have participants think about the actor–trait link implied by the sentences more elaborately and thus heighten the activation level of these primes (see Stapel & Koomen, 1996, pp. 831–833). Participants had to choose between two alternatives: One clearly corresponded with the implied trait and one did not. For example, participants who read the confident-implying sentence were asked which of the two following descriptions corresponds best with the description of Peter in the “prime” sentence: (A) At a formal reception start a conversation with somebody you have never met before, or (B) At a formal reception wait at the bar until somebody walks up to you. Participants who read the conceited-implying sentence were asked which of the two following behavior descriptions corresponds best with the behavior described in that sentence: (A) When asked who is the smartest person in the class answering with “That’s a difficult question,” or (B) When asked who is the smartest person in the class answering with “That’s quite clear.” For each of the multiple-choice questions, *all* participants chose the answer that corresponded with the trait implied by the sentences they were exposed to earlier.

Participants and Design

One hundred two undergraduate students participated in this experiment for partial course credit. Participants were assigned randomly to the conditions of a 2 (Prime Trait Valence: positive, negative) \times 2 (Prime Relevance: relevant, irrelevant–extreme) \times 2 (Prime Type: trait, antonym) factorial between-subjects design.

Results and Discussion

We performed a 2 (Prime Trait Valence) \times 2 (Prime Relevance) \times 2 (Prime Type) ANOVA to test our predictions. This ANOVA revealed the predicted three-way interaction between prime trait valence, prime relevance, and prime type, $F(1, 94) = 26.38, p < .01$. No other main or interaction effects reached ordinary levels of significance. As can be seen in Table 4, the interaction effect supports our predictions.

Descriptively relevant conditions. In this part of the design, the results replicated the results of Experiment 3. Target ratings showed contrast when participants were primed with a descriptively relevant person description or an antonym of this description. Comparisons of the relevant means showed that participants primed with a “confident” person rated the target as less confident ($M = 5.3$) than did participants primed with a “conceited” person ($M = 4.2$), $F(1, 94) =$

TABLE 4

Experiment 4: Mean Ratings of Confident/Conceited Mark on the Dimension "Confident-Conceited" after Exposure to Trait-Implying Behaviors Designed to Activate Person Descriptions as a Function of Prime Trait Valence, Prime Relevance, and Prime Type

Prime valence:	Prime type			
	Trait		Antonym	
	Positive trait	Negative trait	Antonym of positive trait	Antonym of negative trait
Prime relevance:				
Relevant	<i>Confident</i> 5.3	<i>Conceited</i> 4.2	<i>Insecure</i> 4.0	<i>Modest</i> 4.9
Irrelevant and evaluatively extreme	<i>Honest</i> 4.1	<i>Aggressive</i> 5.0	<i>Dishonest</i> 4.7	<i>Sweet</i> 3.5

Note. Scale range is from 1 to 7. Higher scores indicate more negative ratings. Words printed in italics refer to trait terms describing the trait-implying sentence participants were exposed to in each condition.

8.14, $p < .01$. Participants primed with an "insecure" person rated the target as more confident ($M = 4.0$) than participants primed with a "modest" person ($M = 4.9$), $F(1, 94) = 3.66$, $p = .06$.

Evaluatively extreme conditions. Target ratings showed assimilation when participants were primed with a descriptively irrelevant, evaluatively extreme person description or an antonym of this description. Comparisons of the relevant means showed that participants primed with an "honest" person rated the target as more confident ($M = 4.1$) than did participants primed with an "aggressive" person ($M = 5.0$), $F(1, 94) = 3.93$, $p = .05$. Participants primed with a "dishonest" person rated the target as less confident ($M = 4.7$) than participants primed with a "sweet" person ($M = 3.5$), $F(1, 94) = 9.07$, $p < .01$.

These findings replicate and extend the findings of Experiment 3. They show that when exposure to trait-implying behavior activates a person description (e.g., "Peter is confident"), subsequent judgment is more likely to show comparison contrast, *given* that there is dimensional overlap between the dimension that this description activated (e.g., confident or insecure) and the dimension on which the target needs to be judged (e.g., confident-conceited). If a person description is primed that shows no dimensional overlap with the judgment dimension but is evaluatively extreme, assimilation is more likely to occur.

EXPERIMENT 5: JUDGMENT DIMENSION

In Experiment 4, we predicted and found that priming person descriptions would yield contrast if the content of these descriptions overlapped with the dimension on which the target was to be judged. Assimilation was found when there was no dimensional overlap between the prime and the judgment dimension. Participants were asked to rate an ambiguous, confident/conceited target on

a rating dimension anchored by terms that described this ambiguity: confident-conceited. Priming a person description that showed overlap with this dimension, such as "Peter is confident" or the antonym of this description, "Peter is insecure," resulted in contrast, whereas priming an evaluatively extreme person description that showed no overlap with this dimension or an antonym of this description (e.g., "Peter is honest" or "Peter is "dishonest") resulted in assimilation. Thus we further increased our understanding of the determinants of the impact of trait inferences versus antonyms of these inferences.

In the present experiment, we further investigated the "dimensional relevance principle" using the same experimental paradigm as in Experiment 4. However, we made one subtle but important change: Participants were asked to rate the confident/conceited target not on the descriptive and specific confident-conceited dimension, but on a *broader* dimension, namely "positive-negative." The breadth of a personality construct is commonly defined as the diversity of behavioral referents of that construct (Hampson, John, & Goldberg, 1986; Stapel & Koomen, 2000). When respondents' task is to judge the extent to which a confident/conceited target is "positive" or "negative," the category of information that may be used as a relevant comparison standard is likely to be much broader than when this target is to be judged on a dimension anchored by "confident" and "conceited." Because of this breadth, primed person descriptions can be generally expected to be appropriate comparison standards for judging the target description. Whether these primes are evaluatively moderate or extreme, traits or antonyms, will not matter. In relation to the (broad) judgment dimension, the primed person descriptions will provide relevant comparison information. Thus, our hypothesis is that in this case (a confident/conceited target is to be judged on a broad rating dimension, anchored by "positive" and "negative"), priming a person description should result in contrast, *independent* of the type of trait or antonym (e.g., confident, insecure, honest, dishonest) these person descriptions refer to.

Method

Procedure, Materials, and Measures

The procedure, materials, and measures were identical to the ones used in Experiment 4, with one exception: Participants were asked to indicate their impression of the confident/conceited target person (Mark) on a 7-point scale that was anchored by "positive" (1) and "negative" (7), instead of "confident" and "conceited."

Participants and Design

One hundred undergraduate students participated in this experiment for partial course credit. Participants were assigned randomly to the conditions of a 2 (Prime Trait Valence: positive, negative) \times 2 (Prime Relevance: relevant, irrelevant-extreme) \times 2 (Prime Type: trait, antonym) factorial between-subjects design.

TABLE 5

Experiment 5: Mean Ratings of Confident/Conceited Mark on the Dimension "Positive–Negative" after Exposure to Trait-Implying Behaviors Designed to Activate Person Descriptions as a Function of Prime Trait Valence, Prime Relevance, and Prime Type

	Prime type			
	Trait		Antonym	
Prime valence:	Positive trait	Negative trait	Antonym of positive trait	Antonym of negative trait
Prime relevance:				
Relevant	<i>Confident</i> 5.5	<i>Conceited</i> 4.4	<i>Insecure</i> 4.1	<i>Modest</i> 4.9
Irrelevant and evaluatively extreme	<i>Honest</i> 4.7	<i>Aggressive</i> 3.6	<i>Dishonest</i> 4.1	<i>Sweet</i> 5.0

Note. Scale range is from 1 to 7. Higher scores indicate more negative ratings. Words printed in italics refer to trait terms describing the trait-implying sentence participants were exposed to in each condition.

Results and Discussion

We performed a 2 (Prime Trait Valence) \times 2 (Prime Relevance) \times 2 (Prime Type) ANOVA to test our predictions. This ANOVA revealed a Prime Relevance \times Prime Type interaction, $F(1, 92) = 5.10, p < .05$, and a Prime Trait Valence \times Prime Type interaction, $F(1, 92) = 24.38, p < .05$. No other main or interaction effects reached ordinary levels of significance. As can be seen in Table 5, these effects are in line with our predictions.

Descriptively relevant conditions. Target ratings showed contrast when participants were primed with a descriptively relevant person description or an antonym of this description. Comparisons of the relevant means showed that participants primed with a "confident" person rated the target as more negative ($M = 5.5$) than did participants primed with a "conceited" person ($M = 4.4$), $F(1, 92) = 5.72, p < .05$. Participants primed with an "insecure" person rated the target as more positive ($M = 4.1$) than participants primed with a "modest" person ($M = 4.9$), $F(1, 92) = 3.30, p = .07$, although this effect did not reach ordinary levels of significance.

Evaluatively extreme conditions. Target ratings also showed contrast when participants were primed with a descriptively irrelevant, evaluatively extreme person description or an antonym of this description. Comparisons of the relevant means showed that participants primed with an "honest" person rated the target as more negative ($M = 4.7$) than did participants primed with an "aggressive" person ($M = 3.6$), $F(1, 92) = 8.56, p < .01$. Participants primed with a "dishonest" person rated the target as more positive ($M = 4.1$) than participants primed with a "sweet" person ($M = 5.0$), $F(1, 92) = 4.04, p < .05$.

These findings show that when exposure to trait-implying behavior activates a person description (Peter is confident), subsequent judgment of an ambiguous

target (confident/conceited Mark) is likely to show contrast, independent of the kind of trait this person description activates, *given* that this target is to be judged on rating dimensions anchored by nonspecific, general constructs (positive–negative). These results are in line with the dimensional relevance principle of comparison contrast (see Schwarz et al., 1990; Stapel & Winkielman, 1998; Upshaw & Ostrom, 1984). When one is constructing a judgment of a particular target, the dimension on which this target is to be judged determines which information may or may not be used as a comparison standard. In other words, judgment dimensions act as stimulants when the question concerns whether or not activated information may be used as a standard of comparison. These dimensions “recruit their own alternatives” (cf. Kahneman & Miller, 1986). Together with the results of Experiments 3 and 4, the present findings show that when the task is to judge a target on a general dimension, a broader category of information may play the role of comparison standard than when a target needs to be judged on a relatively specific dimension. As a result of this, one may conclude that whether person descriptions activating a certain trait or an antonym of this trait are likely to instigate contrastive comparison or assimilative interpretation effects is importantly determined by the interplay between the dimension that is primed by the person description and the dimension on which the target is to be judged.

It is important to note that in our investigation of the impact of traits versus antonyms in the domain of person priming, there was a slight change in procedure from Experiment 3 to Experiments 4 and 5. One may argue that with this change (adding a multiple-choice question to strengthen the priming manipulation), we introduced a confound. The multiple-choice questions presented participants with an alternative that included a behavior that was consistent with the earlier priming sentence and with an alternative that was inconsistent with that sentence. All participants correctly chose the consistent description and thus understood the priming sentence as intended. However, because the alternatives in the multiple-choice question included consistent and inconsistent descriptions, in the antonym priming conditions, the inconsistent description itself was sometimes descriptively related to the target description. For example, participants primed with “insecure Peter” before judging confident/conceited Mark were asked to choose between alternatives implying “insecure” (the primed construct) and “confident” (not primed, but applicable to the target). To what then do we ascribe the observed effects? To the activation of a distinct actor–trait link (“insecure Peter”) that resulted in comparison contrast or to the (indirect) activation of an *applicable* trait construct (“confident”) that resulted in interpretation assimilation? We chose to explain the results in terms of contrast for several reasons.

First, the results of Experiments 4 and 5 are in line with the results of Experiment 3, in which the person priming task did not include multiple-choice questions. Experiment 3 showed clear comparison contrast. It is then theoretically parsimonious to assume the same process is underlying the findings of

Experiments 4 and 5. Furthermore, *if* the multiple-choice questions indirectly activate relevant information, it is unclear what their impact should be. How is the activated information represented? As an abstract trait (and likely to result in assimilation) or as a person (and likely to result in contrast)? Finally, what determines whether the “consistent” or the “inconsistent” multiple-choice alternative is weighed more heavily in the impression formation process? One may argue that if the “inconsistent” alternative is descriptively applicable to the target whereas the “consistent” alternative is not (see example above), information activated by the inconsistent alternative is likely to be weighed more heavily and will thus more easily exert an effect. However, in the case of priming descriptively irrelevant but evaluatively extreme information, this applicability advantage does not exist. Since the results of Experiments 3 through 5 demonstrate that the activation of descriptively relevant *and irrelevant* actor–trait links may result in contrast effects, our explanation, which refers to the valence of the “initial” person prime and the “consistent” alternative, seems to fit the data best.

GENERAL DISCUSSION

The experiments reported in this paper were all driven by an investigation of the similarities and differences between the impact of “traits” versus “antonyms” through exposing participants to trait-implying behaviors. Will behavior that implies an antonym of “confident,” such as “insecure,” affect the perception of a target who may be described as either self-confident or conceited (but not as insecure or modest)? And if so, how?

In five experiments we addressed these questions. The results of these experiments provide the first evidence in support of the hypothesis that not only descriptively relevant traits, but also antonyms of these traits, may affect subsequent judgments. Moreover, these experiments clearly show that the nature and direction of the impact of priming traits versus antonyms are determined by a number of variables. They show that the consequences of trait inferences versus antonyms of these inferences are dependent on (1) whether the trait inferences are (a) descriptively relevant, (b) descriptively irrelevant and evaluatively moderate, or (c) descriptively irrelevant and evaluatively extreme; (2) whether they refer to behavior labels or person descriptions; and (3) whether they activate information that overlaps with the dimension on which the target is to be judged.

Summary of Results

A summary of the present findings is perhaps best presented in terms of the example from the introduction of this paper: Suppose one has to form an impression of John, whose behavior is described as follows: “Only rarely did John change his mind even when it might have been better if he had.” This description may be taken as an indication of “persistence” as well as “stubbornness.” Under what conditions will exposure to trait-implying behaviors affect subsequent judgments of John? More specifically, which variables determine

whether trait inferences and antonyms of these trait inferences may affect people's impressions of John?

Descriptively relevant behavior labels and person descriptions. Trait inferences that are descriptively relevant to John's behavior are likely to influence people's impressions of him. The direction of this influence is dependent on whether "traits" or "antonyms" are activated and whether "abstract behavior labels" or "specific person descriptions" are activated.

Priming descriptively relevant behavior labels is likely to instigate interpretation processes. The effects of these processes are dependent on whether traits or antonyms are primed. Priming descriptively relevant behavior labels results in interpretation effects that are evaluatively congruent with the primed information. Priming "persistent" will produce relatively positive judgments of persistent/stubborn John, whereas priming "stubborn" will produce relatively negative target judgments (Higgins et al., 1977). Priming behavior labels that are antonyms of descriptively relevant constructs results in interpretation effects that are evaluatively incongruent with the primed information. In this case, the fact that the primed behavior labels are antonymously related to descriptively relevant information increases the activation level of this information. Thus, priming "lazy" will produce relatively positive judgments of John, whereas priming "flexible" will produce relatively negative judgments.

Descriptively relevant person descriptions may serve as relevant comparison standards during judgment of a target stimulus. Priming such descriptions is thus likely to instigate contrastive comparison effects (see Eiser, 1990; Stapel et al., 1996). Therefore, in this case the impact of priming traits is likely to be similar to the impact of priming antonyms. Priming a persistent (stubborn) person is likely to produce relatively negative (positive) judgments of John. Conversely, priming a lazy (flexible) person is likely to produce relatively positive (negative) judgments of John. These contrast effects will occur independent of whether John is judged on a "narrow" persistent–stubborn or on a "broad" positive–negative rating dimension.

Descriptively irrelevant behavior labels and person descriptions. Whether or not trait inferences that are descriptively irrelevant to John's behavior are likely to influence judgments of him will depend on these traits' evaluative extremity. Evaluatively moderate trait inferences are unlikely to affect target judgments when these inferences lack descriptive relevance. In this case, the impact of priming traits or antonyms is likely to be null. Evaluatively extreme trait inferences may affect target judgments. Here, the lack of descriptive applicability may be compensated for by evaluative extremity.

When one is delineating the impact of evaluatively extreme trait inferences, distinguishing between "traits" and "antonyms" becomes relatively meaningless. Here, the impact is evaluation-based, not description-based. Thus, whether the impact of extreme trait inferences is assessed by priming "fantastic" or "horrible," the effects will be based on the connotation rather than on the denotation of

the activated dimension. This leads to a different pattern of effects than when descriptively relevant trait inferences are primed.

Priming extreme behavior labels is likely to instigate interpretation effects that are evaluatively congruent with the primed information. Priming "honest" or "sweet" will produce relatively positive judgments of persistent/stubborn John, whereas priming "dishonest" or "aggressive" is likely to produce relatively negative judgments.

Priming extreme person descriptions is likely to instigate comparison processes, given that these descriptions activate information that is relevant to the dimension on which the target is to be judged. If the judgment task consists of rating persistent/stubborn John on a dimension anchored by "persistent" and "stubborn," priming extreme person descriptions is likely to cause assimilative interpretation effects. In this case, evaluatively extreme constructs are unlikely to be perceived as relevant comparison standards, but they could be used to guide the interpretation of John's behavior. If, however, the judgment task consists of rating John on a dimension anchored by broader constructs, such as "positive" and "negative," extreme person descriptions are likely to be perceived as relevant comparison standards and contrast is obtained.

In the present study, we studied the impact of activating traits versus antonyms on interpretations of ambiguous behavior descriptions by exposing people to behavior descriptions that strongly imply traits (or antonyms). We used this particular priming technique because it activates the construct of interest in a relatively subtle manner. That is, traits are activated upon exposure to a trait-implying sentence because people infer its meaning from the given sentence relatively spontaneously (Uleman et al., 1996). Traits are abstract summary terms for categories of behaviors. Hence, for each trait construct, there is an indefinite number of behavior descriptions that may be used to activate it cognitively. This opens the possibility that the effects reported here are actually artifacts of the specific type of behavior descriptions used to activate traits and antonyms. We think this is unlikely because all the trait-implying sentences used in the current studies were pretested and designed to strongly imply the trait constructs of interest. For the "basic" trait-implying sentences we used sentences shown to activate the relevant traits in earlier studies (see Uleman, 1988; Uleman et al., 1996). For the "antonym" trait-implying sentences we changed these sentences in ways such that their opposite meaning was most likely to be inferred and thus activated. An avenue for future research would be to investigate to what extent the present results will be replicated when more classic priming techniques (e.g., Higgins et al., 1977; Martin, 1986; Sedikides, 1990) are used to study the effects of trait versus antonym priming.

Implications of Results

Several models of priming and knowledge accessibility effects suggest that semantic overlap between prime and target stimulus is one of the preconditions for priming effects to occur (see Higgins, 1996; Wyer & Srull, 1989). For

example, in a review of the relevant literature, Wyer and Srull (1989, p. 372) write that cognitively activated "concepts affect the interpretation of information only if their features are descriptively applicable to this information." The present findings show that target judgments may be affected not only by the priming of descriptively relevant traits, but also by primes that are antonymous to these traits—and thus descriptively *irrelevant*—as well as by traits that are descriptively irrelevant but evaluatively extreme (see Higgins, 1996; Stapel & Koomen, 2000). These findings may be interpreted as demonstrating that semantic prime–target overlap is not a precondition for the occurrence of priming effects. However, although our data suggest that descriptive applicability is unnecessary for the occurrence of priming effects, they also show that evaluative applicability is not sufficient. After all, priming descriptively irrelevant trait inferences that were evaluatively moderate yielded no effect. Only if the evaluative strength of the activated information was extreme did priming descriptively irrelevant trait inferences result in interpretation and judgment effects. In other words, lack of denotative applicability can only be compensated by strong, not by weak, connotation. Future research may want to further explore the consequences of the extent to which priming and target stimuli are descriptively versus evaluatively related for the instigation of knowledge accessibility effects.

One important by-product of our finding that descriptive applicability does not seem to be a precondition for the occurrence of priming effects is that it increases the ecological validity of priming research. The ecological validity of priming research depends on the assumption that constructs are activated as part of everyday psychological functioning. The present series of studies shows that impressions of a target person may be affected by incidental exposure to trait constructs that are relevant to interpretation of this person, but also by antonyms of these constructs, as well as by constructs that show no descriptive overlap with the target but are evaluatively extreme. This implies that the range of *unambiguous* behaviors that may assist in the interpretation of *ambiguous* behaviors is relatively large.

Together, the five experiments reported here clearly suggest that the impact of priming "traits" versus "antonyms" is determined by multiple variables. The interaction of these variables produces a pattern of results that not only is grounded in existing models of priming effects (e.g., Higgins, 1996; Martin, 1986; Schwarz et al., 1990; Stapel et al., 1996; Upshaw & Ostrom, 1984), but also suggests an important extension of these models.

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