

MULTIPLE AMBIGUITY AND AN IMPRESSION FORMATION FOCUS MAKE INAPPLICABLE PRIMES USEFUL

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Two studies demonstrated that accessible knowledge can affect judgments of ambiguous targets, even when this knowledge is descriptively inapplicable to these targets. Study 1 showed that when the target stimulus is ambiguous on multiple dimensions rather than on a single dimension, the priming of inapplicable trait concepts affected judgments of that target. This effect was explained in terms of a difference in impression formation focus, with single ambiguity instigating a specific behavior identification focus, and multiple ambiguity a global impression formation focus. Study 2 confirmed that only with the latter focus, priming of inapplicable trait concepts affected judgments of an ambiguous target.

People are meaning makers. They like to make sense of whatever happens in the world around them. One important indicator of the ubiquity of the human tendency to make sense is that people effortlessly and habitually draw inferences (“Shannon is lazy”) from observed behavior (“Shannon takes the elevator up one floor”). But what determines the valence of the inferences people

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draw? After all, the meaning of social behavior is often open to a multitude of interpretations (“Perhaps Shannon is injured and cannot walk the stairs”).

Knowledge accessibility research suggests that one important determinant of how people give meaning to events and behaviors is what is on the top of their minds during impression formation. When a stimulus can be perceived in a variety of ways, then the information that is cognitively most accessible is likely to “capture” the stimulus and steer subsequent interpretations and inferences (see Ford & Thompson, 2000; Higgins, 1996; Markman & McMullen, 2003). However, it is generally believed that mere accessibility is not enough. For accessible knowledge to affect impression formation, this knowledge needs to be applicable to the target stimulus (Higgins, 1996). The seminal study in which the importance of applicability was demonstrated was conducted by Higgins, Rholes, and Jones (1977). In this study, Higgins et al. demonstrated that primed trait information influenced participants of an evaluatively ambiguous (adventurous/reckless) target description only when there was descriptive prime–target overlap. That is, only when participants were subtly primed with applicable traits (e.g., adventurous vs. reckless), were target judgments affected. When primed traits were inapplicable (e.g., obedient vs. disrespectful), no effects occurred.

Recently, we showed that descriptive prime–stimulus overlap is not a necessary precondition for priming effects to occur (Stapel & Koomen, 2000, 2001, 2004; see also Croizet & Fiske, 2000; Martin, 1986). A lack of descriptive overlap may be compensated for when primed trait concepts are *broad* or *extreme*. Broad traits (e.g., good vs. bad) refer to a relatively larger number of behaviors than narrow traits (e.g., thrifty vs. stingy) and may therefore—through spreading activation—*indirectly* produce priming effects. Extreme traits (e.g., sweet vs. aggressive) activate stronger evaluative meaning than moderate traits (e.g., reasonable vs. mediocre). Because evaluative strength may compensate for a lack of descriptive prime–stimulus overlap, extreme (but descriptively inapplicable) traits can also produce priming effects (see Stapel & Koomen, 2000).

In the present study, we further challenge the view that descriptively inapplicable primes cannot affect judgments of evaluatively

ambiguous stimuli (Bargh, 1997; Higgins, 1996; Wyer & Srull, 1989). In the present study, however, we do not focus on features of the priming stimuli (i.e., their breadth or their extremity) that may make priming effects more or less likely. Rather, we focus on features of the target stimulus and the way in which these features affect the impression formation process. Specifically, we argue that whether or not accessible knowledge lacks descriptive overlap with a target stimulus is less of an issue when the target is ambiguous on a large number (instead of a few) of dimensions. Inapplicable priming is more likely to affect judgments of targets that are ambiguous on multiple dimensions than of targets that are ambiguous on a single dimension.

SINGLE VERSUS MULTIPLE AMBIGUITY

BEHAVIOR IDENTIFICATION VERSUS IMPRESSION FORMATION

Suppose you are asked to give your impression of your new colleague, John. You do not know much about John. In fact, all you know is that he never speaks to you. What does this mean? Is John shy or rude? Now suppose you are asked to give your impression of John, but you know a lot about John. You know he never speaks to you (shy or rude?). You know John likes skydiving, has shot the Colorado rapids in a kayak, and driven in a demolition derby (adventurous or reckless?). You know John is well aware of his ability to do many things well (confident or arrogant?). You know that John rarely changes his mind even when it might be better if he does (persistent or stubborn?). How may the accessibility of descriptively inapplicable knowledge affect your judgment of John in these two situations? Thus, suppose, for example, that you are primed with *thrifty* or *stingy*, trait concepts that have a clear connotative meaning but that lack descriptive overlap with what you know about John. It is our hypothesis that these primes are less likely to affect your impression of John in the first, *single ambiguity* scenario (John is shy–rude). However, they will affect your impression of John in the second, *multiple ambiguity* scenario (John is shy–rude, adventurous–reckless, confident–arrogant, persistent–stubborn).

The reasoning behind this hypothesis is as follows: When asked to give one's impression of an individual about whom one knows (or recalls) one particular (type of) behavior, the focus is more likely on characterizing this specific behavior (Is John shy or rude?). Conversely, when asked to form an impression of an individual about whom one knows (or recalls) more, one will focus not so much on identifying all these specific behaviors, but more on forming a general, evaluative impression (Is John a friendly person or not?). In other words, single ambiguity is likely to instigate a focus that is concerned with making sense of the specifics of the given information, whereas multiple ambiguity is likely to instigate a focus that is concerned more with forming an overall, evaluative impression. Put differently, single ambiguity is likely to elicit a *specific* behavior identification focus, whereas multiple ambiguity is more likely to instigate a *global* impression formation focus.

In the classic Higgins et al. (1977) study, the impression formation task (that followed the priming task) was introduced as a "reading comprehension" study and participants were asked to "to take into account all the information contained in the paragraph" when they decide how to best characterize the target's behavior (Higgins et al., 1977, p. 146). We argue that this behavior identification (versus global impression) focus maybe one important determinant why in the Higgins et al. study inapplicable primes did not exert any effects. We hypothesize that when the focus is on the characterization of a specific behavior, descriptive prime-target overlap is likely to be an issue such that descriptively inapplicable primes will not produce effects: Priming thrifty versus stingy will not help one to decide whether John is shy or rude. However, when the focus is on global impression formation, descriptive prime-target overlap may be less of an issue. When the question is whether John, in general, is a likeable guy, the general evaluative (positive vs. negative) tone rather than the specific descriptive (thrifty vs. stingy) meaning of accessible knowledge may be used to guide the impression formation process.

We test this line of reasoning in two steps, in two experiments. In the first experiment, we test the hypothesis that when there is multiple ambiguity, both applicable and inapplicable primes may

yield an effect, whereas when there is single ambiguity, only applicable primes produce effects. In the second experiment, we explicitly test the hypothesis that when the focus is on specific behavior identification, inapplicable primes will not produce effects, whereas when the goal is global impression formation, they will.

EXPERIMENT 1: SINGLE VERSUS MULTIPLE AMBIGUITY

METHOD

Participants, Design, Priming Stimuli, and Measures. Participants ($n = 120$) were undergraduates who participated in exchange for partial course credit. The participants were randomly assigned to the conditions of a 2 (prime valence: positive, negative) \times 2 (prime type: applicable, inapplicable) \times 2 (target: single ambiguity, multiple ambiguity) factorial design.

The experiment was part of a general testing session in which participants received a number of questionnaires. Filler tasks preceded the priming and judgment tasks. This made it unlikely that participants would be able to guess the true purpose of the experiment. When participants were finished, the questionnaires were collected, and participants were probed carefully for awareness of the relation between the priming and judgment tasks. No participant showed suspicion of a relation between the experimental tasks or stated that the way they constructed judgments was influenced by the priming task.

Priming. For the priming task we used The Scrambled Sentence Test. This test consisted of one page of 12 scrambled four- or five-word groups (e.g., "is table he careless"). Participants' task was to reorganize the word groups into meaningful sentences, using only three or four words from each group (see Stapel & Koomen, 2000). Eight word groups were fillers and contained neutral information ("her vacation she knew"). In the *positive applicable* priming conditions, the other four word groups contained a synonym of adventurous (bold, brave, daring, courageous). In the *negative applicable* priming conditions, these four word groups contained a synonym of reckless (careless, foolhardy, rash, incautious). In the *positive inapplicable* priming conditions, the other four word groups contained a synonym of persistent (strong-willed, determined, resolute, persevering). In the *nega-*

tive inapplicable priming conditions, these four word groups contained a synonym of stubborn (obstinate, bull-headed, headstrong, inflexible)

Target Description and Judgment. After participants had finished the priming task, they were given a booklet titled "Peter" and were instructed to try to form an impression of the individual (Peter) described. The target description was adopted from pretested material used by Stapel and Koomen (2000, 2001). In the *multiple ambiguity* conditions, Peter's behavior was ambiguous on the following dimensions: adventurous/reckless, confident/conceited, witty/sarcastic, thrifty/stingy, cultivated/artificial, rude/shy. In the *single ambiguity* conditions, Peter's behavior was ambiguous on one dimension: adventurous/reckless. To ensure that the length of the multiple ambiguity target and the single ambiguity target were similar (one full page), in the single ambiguity conditions, neutral information (e.g., place of birth, hair color, age) was added to the description of Peter. Participants were asked to indicate their impression of Peter on a single seven-point rating dimension, anchored by *not at all likeable* (1) and *very likeable* (7).

RESULTS AND DISCUSSION

A Prime Valence \times Prime Type \times Target analysis of variance (ANOVA) revealed the predicted three-way interaction, $F(1, 112) = 4.48, p < .05, \eta^2 = .04$, and a main effect of prime valence, $F(1, 112) = 17.14, p < .01, \eta^2 = .13$ (Other effects, $ps > .17$). As can be seen in Table 1, this interaction effect reflects the predicted pattern of results. As expected, in the applicable conditions, positive trait primes led to more positive target judgments ($M = 4.20, SD = 1.05$) than negative trait primes ($M = 3.20, SD = 0.93$), $F(1, 112) = 14.68, p < .01, \eta^2 = .11$, independent of target type. In the inapplicable priming conditions, positive trait primes led to more positive target judgments ($M = 4.07, SD = 1.16$) than negative trait primes ($M = 3.00, SD = 0.66$), $F(1, 112) = 7.92, p < .05, \eta^2 = .13$, when the target was ambiguous on multiple dimensions, whereas no effect ($F < 1$) occurred when the target was ambiguous on a single dimension.

These findings nicely support our hypothesis that descriptive inapplicable trait concepts may affect judgments of an

TABLE 1. Mean (*SD*) Likeability Ratings of an Ambiguous Target as a Function of Target (Single Ambiguity, Multiple Ambiguity), Prime Type (Applicable, Inapplicable), and Prime Valence (Positive, Negative)

Target	Prime Type			
	Applicable		Inapplicable	
	Single Ambiguity	Multiple Ambiguity	Single Ambiguity	Multiple Ambiguity
Prime Valence				
Positive	4.40 (1.18)	4.00 (1.00)	3.60 (0.99)	4.07 (1.16)
Negative	3.20 (1.15)	3.20 (0.68)	3.67 (0.98)	3.00 (0.66)

Note. Scale range is from 1 to 7. Higher scores indicate more positive ratings.

evaluatively ambiguous target stimulus when this target is ambiguous on multiple dimensions, whereas such effects are less likely when the target is ambiguous on one specific dimension. Thus, an important determinant of whether cognitively accessible but descriptively inapplicable information is used during impression formation is whether there is multiple or single ambiguity. An interesting and important avenue for future research seems to be the question of how much ambiguity must be inherent in a stimulus for there to be a “push” from a behavior identification focus into a global impression formation focus. In the present study we focused on and showed that a multiply ambiguous target is more likely to be affected by inapplicable primes than a singly ambiguous target. How much ambiguity exactly is needed for such effects to occur is an—albeit interesting—other matter.

EXPERIMENT 2: BEHAVIOR IDENTIFICATION VERSUS IMPRESSION FORMATION

METHOD

Participants, Design, Priming Stimuli, and Measures. Participants ($n = 120$) were undergraduates who participated in exchange for partial course credit. The participants were randomly assigned to

the conditions of a 2 (prime valence: positive, negative) \times 2 (prime type: applicable, inapplicable) \times 2 (focus: behavior identification, impression formation) factorial design.

The procedure was identical to that used in Experiment 1. The suspicion check revealed that one of the participants was aware of the purpose of the experiment; her data were not analyzed. Applicable and inapplicable priming stimuli were identical to those used in Experiment 1. The target paragraph described the activities of an individual named Ralph. Ralph's behavior was ambiguous on two dimensions: adventurous/reckless, thrifty/stingy (see Stapel & Koomen, 2000). In the *behavior identification* conditions, participants were asked to "interpret Ralph's behavior, to try and characterize this behavior in specific terms." In the *impression formation* conditions, participants were asked to "form a general impression of Ralph's personality, to try and evaluate his personality in general, evaluative terms." Participants were asked to indicate their impression of Ralph on a single seven-point rating dimension, anchored by *not at all likeable* (1) and *very likeable* (7).

Results and Discussion. A Prime Valence \times Prime Type \times Focus ANOVA revealed the predicted three-way interaction, $F(1, 111) = 4.41, p < .05, \eta^2 = .04$, a Prime Valence \times Prime Type interaction, $F(1, 111) = 5.38, p < .05, \eta^2 = .05$, a Prime Valence \times Focus interaction, $F(1, 111) = 3.56, p = .06, \eta^2 = .03$, and a main effect of Prime Valence, $F(1, 111) = 12.21, p < .01, \eta^2 = .10$ (Other effects, $F_s < 1$). As can be seen in Table 2, these effects reflect the predicted pattern of results. As expected, in the applicable conditions, positive trait primes led to more positive target judgments ($M = 4.03, SD = 0.94$) than negative trait primes ($M = 3.07, SD = 0.83$), $F(1, 111) = 16.19, p < .01, \eta^2 = .12$, independent of focus. In the inapplicable priming conditions, positive trait primes led to more positive target judgments ($M = 3.99, SD = 1.10$) than negative trait primes ($M = 3.07, SD = 0.66$), $F(1, 111) = 7.92, p < .05, \eta^2 = .13$, when the focus was on general impression formation, whereas no effect ($F < 1$) occurred when the focus was on behavior identification.

These findings nicely support our hypothesis that descriptively inapplicable trait concepts may affect judgments of an evaluatively ambiguous target stimulus when during impression formation people's focus is on global impression formation,

TABLE 2. Mean (*SD*) Likeability Ratings of an Ambiguous Target as a Function of Focus (Behavior Identification, Impression Formation), Prime Type (Applicable, Inapplicable), and Prime Valence (Positive, Negative)

Focus	Prime Type			
	Applicable		Inapplicable	
	Behavior Identification	Impression Formation	Behavior Identification	Impression Formation
Prime Valence				
Positive	4.07 (1.14)	4.00 (0.76)	3.33 (0.90)	3.99 (1.10)
Negative	3.07 (0.88)	3.07 (0.80)	3.80 (0.94)	3.07 (0.66)

Note. Scale range is from 1 to 7. Higher scores indicate more positive ratings.

whereas such effects are less likely when the focus is on behavior identification. Thus, an important determinant of whether cognitively accessible but descriptively inapplicable information is used during impression formation is the mindset with which one approaches the impression formation task.

GENERAL DISCUSSION

Together, the present studies show that under certain circumstances, accessible knowledge can affect judgments of ambiguous targets, even when this knowledge is descriptively inapplicable to these targets. Specifically, the present studies show when the target stimulus is ambiguous on multiple dimensions rather than on a single dimension (Study 1) or when during the impression formation the focus is on global impression formation rather than specific behavior identification (Study 2), the priming of inapplicable trait concepts may in fact influence judgments of ambiguous target descriptions.

As we argued in the Introduction, we feel the most parsimonious manner to interpret the results of Study 1 is in terms of the independent variable of Study 2: behavior identification versus impression formation. That is, when there is *single ambiguity*, the focus is

on characterizing this *specific* behavior and descriptive applicability does matter. However, when there is *multiple ambiguity*, the focus is *global* impression formation and descriptive inapplicability is less of an issue. Then, the general evaluative tone rather than the specific descriptive meaning of accessible knowledge may be used to guide the impression formation process. In a sense then, one way to describe this line of reasoning is that we argue that a global impression formation goal (or multiple ambiguity) will instigate a more heuristic, evaluation-based type of processing, whereas a behavior identification goal (or single ambiguity) will instigate a more systematic, evaluation-*and*-description-based type of processing. Of course, this interpretation of our results is somewhat speculative. We have no direct evidence single ambiguity instigates “deep” processing and a behavior identification focus, whereas multiple ambiguity instigates “shallow” processing and a more global impression formation focus.

The notion that the *focus* or *mindset* (behavior identification or impression formation) with which one approaches an impression formation task may determine the impact of (inapplicable) priming stimuli is in correspondence with other recent priming studies showing that the impact of priming effects may be moderated by people’s *goals*. For example, Croizet and Fiske (2000) showed that people do use descriptively inapplicable traits when forming impressions of evaluatively ambiguous behavior when they feel extra motivated to come up with a clear evaluation, when they feel “entitled to judge.” Similarly, we showed that inapplicable trait primes may more strongly affect the encoding of an evaluatively ambiguous target when people had a so-called “comprehension goal” and were thus extra motivated to make sense of target stimuli than when they were not so motivated (Stapel & Koomen, 2001).

All in all, the present studies show that even descriptively inapplicable primes may sometimes affect judgments. An important by-product of this is that it increases the ecological validity of priming research. After all, it implies that any “valenced” stimulus may function as a successful priming stimulus, and thus extends the realm of possible stimuli that may yield priming effects enormously. That is, even non-trait concepts (such as fire, puppy, cancer, sun, coffin, love) may yield priming effects, simply be-

cause of their valence. To get priming effects, valence is often all you need. Having said this, it is important to note that valenced priming stimuli will not always lead to assimilation effects (see Footnote 1).

As we argued elsewhere, in our studies on the Interpretation Comparison Model of priming effects, primes are likely to lead to assimilation when they are easily used to interpret, to disambiguate vague stimulus material, whereas primes are likely to lead to contrast when they are more readily used as a comparison standard. In our ICM studies we have shown that priming distinct, valenced person exemplars (Albert Einstein versus a clown) is more likely to lead to contrast than when indistinct, abstract, valenced traits (smart versus stupid) have been primed (see Stapel et al., 2002). In other words, to obtain priming effects, valence is often sufficient, but this should not be taken to mean that all priming effects are assimilative.

In conclusion then, the present results clearly demonstrate that models suggesting that descriptive prime–stimulus overlap is necessary for priming effects to occur (e.g., Bargh, 1997, p. 35; Wyer & Srull, 1989, p. 372) are overly conservative. When a trait concept is primed, both descriptive information (the specific meaning of the trait) and the general evaluation associated with that trait (positive or negative) are activated. The present studies suggest that whether the descriptive meaning or the evaluative meaning of primed information is attended to and used (or not) during impression formation depends on whether one is focused more on a specific behavior characterization or on global impression formation.

1. In previous studies we have argued and shown that the distinctness of accessible knowledge information is an important determinant of whether such knowledge produces assimilation or contrast effects on subsequent judgments (e.g., Stapel et al., 2002). In these studies, we found that when priming stimuli activate distinct actor–trait links (“William–is–honest”), contrast is more likely than when primes activate diffuse trait information that is not linked to a specific individual (“honest”). It is important to note that in the present studies, we focus—within the domain of “diffuse” trait priming—on the impact of primes that activate mainly evaluative “trait-like” information versus the impact of primes that activate evaluative as well as descriptive trait-like information.

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