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When Stereotype Activation Results in (Counter)Stereotypical Judgments: Priming Stereotype-Relevant Traits and Exemplars

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Accessible stereotyped information that is relevant to interpretation of a target stimulus (interpretation applicability) and matches the target's social category (social category applicability) is likely to be used as an interpretation frame and yield assimilation. However, when such information also possesses features making it likely that it is used as a comparison standard, contrast will ensue. Two experiments test these hypotheses and further specifications by manipulating the type of stereotype-relevant knowledge that is activated (trait, same-category exemplars, different-category exemplars) and the target's social category (matching the activated stereotype or not). Findings support the proposed model of stereotyping effects and thus demonstrate that accessible stereotype-relevant knowledge can yield stereotypical (assimilative) but also counterstereotypical (contrastive) judgments. Implications of the results for the relation between stereotypes, stereotyping, and knowledge accessibility effects are discussed. © 1998 Academic Press

Without doubt, one of social psychology's primary themes is the prevalence of the use of stereotypes in people's judgments of others. When people employ

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stereotypes, they use beliefs about a social group (stereotypes) in judgments of this group or its members. Because it simplifies (e.g., Brewer, 1988; Fiske & Neuberg, 1990), justifies (e.g., Jost & Banaji, 1994), and gives meaning to (e.g., Oakes & Turner, 1990) social reality, stereotyping is often described as one of the most fundamental psychological processes that determine the course of social relations (see e.g., Hamilton & Sherman, 1995; Hilton & von Hippel, 1996).

There is abundant evidence that stereotypes color the meaning of behavior. When a person known to belong to a particular social category performs an ambiguous behavior, the stereotype associated with that category will be used to disambiguate the behavior (see, e.g., Hamilton & Sherman, 1994; Kunda & Thagard, 1996). Thus, a shove is viewed as more violent when performed by a Black than by a White (Sagar & Schofield, 1980) and an ambiguous performance on an academic test is considered better when performed by a child coming from a high versus low socioeconomic background (Darley & Gross, 1983).

Stereotype-relevant knowledge is not the only kind of information that may color the interpretation and evaluation of behavior, however. Nonstereotypical information may also affect the impression formation process. Numerous studies of knowledge accessibility effects, that investigate the influence of incidentally activated knowledge on person judgments, suggest that important determinants of whether stereotype-irrelevant and stereotype-relevant knowledge is used during impression formation are its cognitive accessibility and its applicability to the interpretation of the target stimulus (Higgins, 1996; Kunda & Thagard, 1996).

In a pioneer experiment on *accessibility* and *interpretation applicability,* Higgins, Rholes, and Jones (1977) assigned participants to conditions that surreptitiously activated traits that were applicable to a target description (e.g., persistent vs. stubborn for the target description ‘‘Only rarely did he change his mind even when it might have been better if he had.’’) or traits that were nonapplicable (e.g., obedient vs. disrespectful). The results showed that only the activation of applicable traits influenced participants’ later characterizations of the target stimulus (see also Erdley & D’Agostino, 1988; Sedikides, 1990; Srull & Wyer, 1979; see for reviews Higgins, 1996; Wyer & Srull, 1989).

Although accessibility and interpretation applicability may be thought of as two of the basic principles that guide general impression formation processes, recent research by Banaji and her colleagues (Banaji & Greenwald, 1994; Banaji, Hardin, & Rothman, 1993) shows that when it comes to investigating the impact of *stereotype*-relevant (rather than stereotype-irrelevant) knowledge on person judgment, a third factor comes into play. Banaji et al. (1993) argue that because general theories of knowledge accessibility effects have not been concerned with the role of *social category information* in producing these effects, they have overlooked the ways in which such information may moderate the effects of stereotype activation. Banaji et al. (1993) show that for stereotype-relevant knowledge to exert an effect on person judgments, accessibility and interpretation applicability do not suffice. Stereotype-relevant knowledge will be used only if the social category of the target matches the activated stereotype. Thus, although the trait ‘‘dependent’’ is applicable to the interpretation of an ambiguously dependent target person, contextual activation of this trait is thought to affect only judgments of ambiguously dependent women, because dependence is stereotypical of women and not of men. Likewise, priming information about aggression will affect judgments of ambiguously aggressive men but not of ambiguously aggressive women because aggression is stereotypical of men (see Bem, 1974, on female and male stereotypes). Banaji et al. refer to this type of prime–target match as *social category applicability* (Banaji et al., 1993).

STEREOTYPICAL AND COUNTERSTEREOTYPICAL EFFECTS

Banaji and her colleagues thus demonstrated that *given* the importance of accessibility and interpretation applicability, social category applicability is another important determinant of whether stereotype-relevant knowledge will be used during impression formation of the target. A tacit assumption in the Banaji et al. (1993) studies seems to be, however, that *when* stereotype-relevant knowledge influences judgment (i.e., when such knowledge is accessible, applicable to interpretation of the target, and matches the social category of the target), this influence is likely to be *assimilative* rather than *contrastive*. This is not too surprising: The traditional view, implicit if not explicit, in stereotyping research is that stereotypes lead to assimilation. Stereotypes color the meaning of behavior such that the denotation and connotation of the stereotype is used as an interpretation or categorization frame. However, although most of the empirical results seem to be in accordance with such a view (e.g., Brewer, 1988; Fiske & Neuberg, 1990; see Hamilton & Sherman, 1994; Hilton & von Hippel, 1996), there is at least some evidence that target judgments may sometimes *diverge* from activated stereotype-relevant knowledge (e.g., Manis, Biernat, & Nelson, 1991; Manis, Nelson, & Shedler, 1988; Skowronski, Carlston, & Isham, 1993). Unfortunately, however, as Kunda and Thagard (1996, p. 294) recently noted, there ‘‘are too few demonstrations of contrast effects to permit an assessment of the question when stereotypes will provoke contrast effects.’’ It is thus somewhat equivocal when the relation between stereotypes and stereotyping is assimilative and when it is contrastive. When do stereotypes lead to stereotyping and when do they result in counterstereotyping?

INTERPRETATION AND COMPARISON EFFECTS

As an answer to this question, in the present research we test the hypothesis that whether the use of stereotype-relevant knowledge results in assimilation or contrast is a function of *how* this knowledge is used. We postulate that whether stereotyping or counterstereotyping occurs depends on whether accessible stereotype-relevant knowledge (that has interpretation and social applicability) is used primarily as an *interpretation frame* or as a *comparison standard* (see for similar distinctions Higgins, 1996; Gilbert, 1989; Philippot, Schwarz, Carrera, De Vries, & Van Yperen, 1991; Schwarz & Bless, 1992; Trope, 1986; Wyer & Srull, 1989).

When stereotype-relevant knowledge serves the role of interpretation frame, assimilation will result. When such knowledge is used as a comparison standard, however, contrast is more likely to occur.

This hypothesis is based on our previous research on the effects of (stereotype-irrelevant) trait versus exemplar priming, which suggests that—although most investigators treat the priming of traits and exemplars as interchangeable techniques to activate knowledge (see Higgins, 1996; Wyer & Srull, 1989)—these priming techniques differ in the *type* of information they activate, which has consequences for the role they play in impression formation (see Stapel & Koomen, 1997; Stapel, Koomen, & Van der Pligt, 1997). Specifically, activated trait concepts (e.g., ‘‘hostility’’) serve mainly to interpret ambiguous person descriptions (e.g., ‘‘hostile/friendly’’ Donald) and result in assimilation (see e.g., Devine, 1989; Srull & Wyer, 1979). In a similar vein, primed person exemplars may guide the categorization of an ambiguous target because they spontaneously activate the categorical dimension these exemplars exemplify (e.g., ‘‘hostility’’). However, when person exemplars are sufficiently extreme (e.g., ‘‘Hitler’’), they will predominantly be used as a comparison standard against which the evaluation of target persons is contrasted. Thus, after trait concept or person exemplar priming, assimilative interpretation processes may occur, but after person exemplar priming these processes may be ‘‘overruled’’ by contrastive comparison processes (see further Stapel et al., 1997).

The question thus arises *why* comparison processes are more likely to be instigated by exemplar priming than by trait priming. Why are (accessible and applicable) traits concepts less likely to be used as a comparison standard?

An answer to this question may be found in studies in classical psychophysics and comparative judgment by Brown (1953) and Helson (1964). Helson (1964) noted that stimuli that do not provide judges with information that is perceived as ‘‘distinctive’’ will not be used as subjective standards for purposes of comparison. Brown (1953) suggested that in order to be used as a comparison standard, primed information needs to belong to the same category as the target stimulus. In other words, *distinctness* and *prime-target similarity* are two important factors that determine whether the effects of accessible information are driven primarily by interpretation or comparison processes (Stapel et al., 1996, 1997; Stapel & Winkielman, 1997).[1]

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[1] We do not argue that these are the only two factors that determine whether accessible and applicable information is used as an interpretation frame or a comparison standard. These are two variables, however, that have received less attention in the social cognition and judgment literatures (see Stapel & Winkielman, 1997). Previous social judgment research has demonstrated that whether accessible knowledge results in assimilation or contrast can be explained by the perceived *extremity* (see Herr, 1986), *awareness* (see Wegener & Petty, 1995), or *appropriateness* of the accessible knowledge (Strack, Martin, & Schwarz, 1988). In the present research, we hope to find assimilation and contrast effects while keeping the levels of these factors (extremity, awareness, appropriateness) constant.

Distinctness

Distinct information constitutes a separate entity with relatively clear object boundaries and is therefore more likely to be used as a comparison standard than indistinct, abstract information that does not provide judges with a clear and specific anchor point. Thus, when abstract trait concepts or categories such as ‘‘lust,’’ ‘‘hostility,’’ ‘‘intelligence,’’ or ‘‘beauty’’ are primed, these constructs will be perceived as relatively indistinct and assimilation is likely to follow. Conversely, when specific, distinct prototypes that exemplify these categories are activated (e.g., ‘‘Marilyn Monroe,’’ ‘‘Adolph Hitler,’’ ‘‘Susan Sontag,’’ ‘‘Cindy Crawford’’), contrast is more likely to ensue (see for empirical support for this claim Stapel & Koomen, 1997; Stapel et al., 1997; Stapel & Winkielman, 1997).

The logic of this line of reasoning is consistent with recent models of priming effects by Wyer and Srull (1989) and Schwarz and Bless (1992). Wyer and Srull (1989) argue that accessible information is more likely to serve as a comparison standard when a (distinct) attribute–object link (e.g., ‘‘aggressive–Nigel’’) is activated than when that information merely consists of an (indistinct) attribute concept (e.g., ‘‘aggressive’’). Similarly, Schwarz and Bless’ (1992) inclusion/exclusion model of assimilation and contrast effects predicts assimilation when a primed construct is included in the target, whereas when the primed information is excluded from the target, contrast may ensue. Broader and less distinct priming stimuli are likely to be ‘‘included’’ in and assimilated to the target stimulus. Likewise, narrow and distinct priming stimuli are likely to be ‘‘excluded’’ from and may be contrasted to the target stimulus (see for a similar perspective Hilton & von Hippel, 1990).

Distinctness and stereotype-relevant knowledge. Translated to the present concerns, the distinctness notion suggests that when stereotype-relevant information is activated through exposure to specific exemplars (e.g., ‘‘dependent and submissive Paula’’ or ‘‘Pierre, the arrogant Frenchman’’), this information is more likely to serve as a standard of comparison and result in contrast (in judgments of an ambiguously dependent woman or an ambiguously arrogant Frenchman). Conversely, when stereotype-relevant trait information (e.g., ‘‘dependent’’ or ‘‘arrogant’’) is activated, assimilative interpretation effects are more likely.

Prime–Target Similarity

More important perhaps than the distinctness construct is the notion that, to be used as a relevant comparison standard, accessible information needs to belong to the same category as the target stimulus. Objects that belong to the same category more readily invite comparison processes than objects that belong to dissimilar categories. As Brown stated: ‘‘The anchor, to be effective, must be perceived as a member of the same class’’ as the target (Brown, 1953, p. 210). Or, to put it in lay psychology terms: ‘‘One does not compare apples with oranges.’’ Thus, when the task is to judge a target person, primed trait concepts (‘‘aggressive’’) may be perceived as not similar to the target category and therefore they will not be used as relevant comparison standards. Primed person exemplars (‘‘aggressive Nigel''), on the other hand, do belong to the same category as the target and can therefore be used as relevant comparison anchors in person judgments.

The logic of this prime–target similarity argument is corroborated by a variety of recent empirical investigations. Work by Biernat, Manis, and Nelson (e.g., Biernat, Manis, & Nelson, 1991; Manis et al., 1991) shows that comparison relevance is an important determinant of whether accessible information is used as a comparison standard. For example, in a study by Biernat et al. (1991), respondents rated the height of different students who were shown in full-length photographs. Despite explicit instructions that stressed a constant judgmental framework, results suggested that the male targets were inadvertently rated in comparison with other men and female targets were compared with other women. This finding suggests that contrast effects predominantly occur if respondents judge targets relative to context information about the *same* category.

The importance of prime–target similarity for the emergence of comparison contrast is also evident in recent studies by Stapel and Koomen on the effects of exemplar priming on person judgments (Stapel & Koomen, 1996; Stapel et al., 1996, 1997). These authors found that hostile or friendly *animal* exemplar primes (e.g., ''Shark'' or ''Puppy'') were not likely to be used as a comparison standard when judging an ambiguous human target (friendly/hostile Donald), although they were used as an interpretation frame and resulted in assimilation. *Person* exemplar primes (e.g., ''Hitler'' or ''Gandhi''), however, were likely to be used as a comparison standard and led to a contrast effect (see also Kahneman and Miller, 1986, for a discussion of the use of ''local norms'' in comparative judgments processes and Kruglanski and Mayseless's, 1990, and Wood's, 1989, discussion of the importance of ''similarity'' and ''relevance'' in social comparison effects).

Prime–target similarity and stereotype-relevant knowledge. Translated to the present concerns, the importance of prime–target similarity for the occurrence of contrastive comparison effects suggests that the comparability between an activated exemplar and a target stimulus will depend on whether or not these two stimuli both belong to the *stereotyped* group. If they both belong to the stereotyped group, there is prime–target similarity and this is a important determinant for primed information to be used as a comparison standard. Previous exposure to a dependent woman may activate information that may be used as a comparison standard in judgments of an ambiguously dependent woman, whereas previous exposure to a dependent man cannot serve this role. Accordingly, when the primed exemplar is a member of the same category as the target, an important precondition for the occurrence of comparison contrast is satisfied (cf. Biernat et al., 1991; Manis et al., 1991; Smith & Zarate, 1992).

THE PRESENT RESEARCH AND HYPOTHESES

In the present research, we will apply the notion that whether knowledge accessibility results in assimilation or contrast may be determined by the *type* of knowledge that is activated to our present concern: finding some of the antecedents of stereotyping and counterstereotyping processes in person judgment.

Following Higgins (1996) and Banaji et al. (1993), we propose that whether stereotype-relevant information will *influence* target evaluations is dependent on the accessibility, interpretation applicability, and social category applicability of that information. However, whether the *direction* of this influence will be stereotypical or counterstereotypical, may be a function of the extent to which this knowledge is distinct and belongs to the same category as the target, such that it can constitute a comparison standard during judgment. Specifically, we predict that stereotype-congruent assimilation is more likely when activated stereotype-relevant knowledge lacks distinctness *or* prime–target similarity, whereas stereotype-incongruent contrast is more likely when such knowledge possesses *both* these features (see also Stapel et al., 1997; Stapel & Winkielman, 1997).

Thus, in contrast to Banaji et al. (1993), who suggested that if the social category of the target makes primed stereotyped information relevant to judgment, stereotype activation will yield assimilation, we expect that such assimilative processes will only occur if primed information is primarily used as an interpretation frame. If the interpretation processes instigated by knowledge accessibility are overridden by comparison processes, contrast is more likely. We will more specifically outline our hypotheses in turn.

Stereotype-Relevant Trait Priming

When judging the behavior of a target person, priming a stereotype-relevant trait (e.g., the female stereotype ‘‘dependent’’) activates information that is relatively indistinct and lacks prime–target similarity (see Stapel et al., 1997). As we argued above, such information is less likely to be used as a comparison standard. However, when the primed trait has both interpretation and social applicability, it may be used to interpret the target stimulus, which typically results in assimilation (see Banaji et al., 1993; Higgins, 1996). Thus, following Banaji et al. (1993), we predict higher ratings on the relevant trait dimensions for a target person whose social category is associated with this stereotype. Specifically, because dependence is stereotypically associated with women, when primed with the trait ‘‘dependent,’’ people will judge an ambiguously dependent female target as relatively dependent. However, judgments of an ambiguously dependent male target, for whom social applicability does not hold, are less likely to be affected by this information.

Stereotype-Relevant Exemplar Priming

When stereotype-relevant exemplars (e.g., ‘‘dependent Paul’’ or ‘‘dependent Paula’’) are primed, information is activated that is more distinct and specific than traits. However, whether this information will be used as a comparison standard depends on the categorical similarity between the activated information and the stimulus that needs to be judged (prime–target similarity).

Different-category exemplars. Exemplars who belong to a different social category than the target (e.g., priming a man, Paul, judging a woman, Donna) cannot be used as a comparison standard because they do not belong to the relevant target category, and thus lack prime–target similarity. In judging ‘‘Donna’’ on the gender-stereotyped trait ‘‘dependent,’’ for example, we are most likely to compare her with other women because they provide a relevant comparison standard, rather than compare her with other men. Thus, ‘‘dependent Paul’’ is not very likely to be used as a comparison standard when judging Donna.

This does not mean, however, that priming different-category exemplars necessarily results in null-effects. As Higgins (1996, p. 147) states in his review of the knowledge accessibility literature, ‘‘all accounts of accessibility effects’’ are in terms of ‘‘associations,’’ ‘‘linkages,’’ or ‘‘connections’’ that permit the activation of one knowledge unit to influence the activation potential of another.’’ In other words, exemplar priming may increase the excitation level of trait concepts that are linked to this exemplar. Thus, ‘‘beautiful Cindy’’ is likely to increase the accessibility of ‘‘beautiful’’ and ‘‘dependent Paul’’ is likely to make the trait concept ‘‘dependent’’ relatively more accessible. When these trait concepts possess both interpretation and social applicability, they may be used to interpret the target stimulus. When this is the case, the impact of priming different-category exemplars may be similar to that of priming relevant traits (see above): The primed information may be used to interpret the target stimulus and result in assimilative interpretation effects.

Thus, when different-category exemplars are primed (e.g., priming ‘‘dependent Paul,’’ judging dependent Donna) and the trait these exemplars exemplify (e.g., ‘‘dependent’’) is both applicable to interpretation of the target and matches the social category of the target, we predict higher ratings on the relevant trait dimensions. Conversely, when the trait that is activated by the primed exemplars does not match the social category of the target, subsequent target ratings are less likely to be affected. Specifically, when primed with information about a ‘‘dependent person’’ who belongs to a different category than the target, people will judge an ambiguously dependent female target in a stereotype-congruent way (an assimilation effect). However, judgments of an ambiguously dependent male target are less likely to be affected by this information.

Same-category exemplars. What will be the impact of exemplars who belong to the same social category as the target (priming Paul, judging Donald; priming Paula, judging Donna)? When such exemplars are primed, information is activated that both is relatively distinct and possesses prime–target similarity. Following our general model of assimilation and contrast effects (see Stapel et al., 1997), we would thus expect that same-category exemplar priming will result in contrastive comparison effects. However, in the present research we are concerned with the effects of stereotype-relevant priming and thus an extra factor comes into play, i.e., the social applicability of the primed information.

Same-category exemplars that possess social applicability. As we have noted above, the Stapel et al. (1997) model of assimilation and contrast effects suggests that one important precondition for the occurrence of contrastive comparison effects is prime–target similarity, such that prime and target stimuli belong to the same stereotyped group. We think that it is especially likely that same-category exemplars will spark contrastive comparison processes when the trait to which these exemplars are linked has social applicability with regard to the target (e.g., priming ‘‘dependent Paula,’’ judging a stimulus person from the social category of dependent women, i.e., ‘‘ambiguously dependent Donna’’). A stereotypical, same-category exemplar (e.g., ‘‘dependent Paula’’) is easily and naturally included in the target’s reference class when a judgment is constructed. When evaluating ambiguously dependent Donna on dimensions that are gender-stereotyped (i.e., dependent), one will compare Donna’s behavior to a relevant standard, i.e., other women. When priming activates stereotypical, same-category exemplars (e.g., dependent women), these exemplars clearly fit this standard and thus may color the representation of this standard.

Thus, we predict that priming stereotype-relevant same-category exemplars will result in contrastive comparison effects when the information activated by these exemplars matches the social category of the target. When same-category exemplars are primed, we therefore predict lower ratings on the relevant trait dimensions for a target person whose social category is associated with the primed stereotype-relevant information. More specifically, priming ‘‘dependent Paula’’ will lead to contrast in judgments of ambiguously dependent Donna.

Same-category exemplars that lack social applicability. But what will be the impact of same-category exemplars that exemplify a trait that does *not* match the social category of the target? More specifically, what will be the effect of priming ‘‘dependent Paul’’ on judgments of ‘‘ambiguously dependent Donald’’? Following Stapel et al. (1997), one may argue that same-category exemplar priming activates information that is relatively distinct and has prime–target similarity and is thus more likely to be used as a comparison standard. We think, however, that it is less likely that priming same-category exemplars that lack social applicability will be used to construct a relevant comparison standard and result in contrast. A counterstereotypical exemplar (e.g., ‘‘dependent Paul’’) may belong to the same category as the target, but because the trait this exemplar exemplifies lacks social applicability, this exemplar is less likely to be included in the target’s reference class when a judgment is constructed. When evaluating ambiguously dependent Donald on dimensions that are gender-stereotyped (e.g., dependent), one will compare Donald’s behavior to the *normal* behavior of the relevant reference class, that is, one will compare Donald to other, not-dependent, men (see Biernat et al., 1991; Kahneman & Miller, 1986; Manis et al., 1988, 1991). Thus, although ‘‘dependent Paul’’ may be accessible at the time a judgment of Donald is constructed, this exemplar is less likely to be used as a judgmental anchor because his behavior is counterstereotypical (i.e., ‘‘men are not dependent’’). In other words, when *same*-category exemplar information is counterstereotypical of the target’s social category, it will actually be perceived as *different*-category information (a dependent man is not a ‘‘normal’’ man, an aggressive woman is not a ‘‘normal’’ woman; see Rothbart & John, 1985) and thus is unlikely to yield contrastive comparison effects.

But when it is unlikely to result in contrastive comparison effects, what *is* the likely effect of this type of accessible stereotype-relevant information on person judgments? Following Banaji et al. (1993), we should not predict assimilation because information that lacks social applicability is unlikely to be used during the encoding of an ambiguous stimulus. However, Banaji et al.'s model only describes the effects of stereotyped *trait* priming. Here we discuss the effects of same-category *exemplar* priming.

There are several reasons, we think, why the priming of counterstereotypical same-category *exemplars* may result in assimilation rather than in null-effects. When one is exposed to one or more exemplars who behave in counterstereotypical ways, this provides evidence against the stereotype (see Hewstone, 1994; Kunda & Oleson, 1995; Kunda & Thagard, 1996). When one's belief is that women but not men are dependent, exposure to a dependent male person (''dependent Paul'') clearly suggests that at least *some* men may behave in a counterstereotypical way. Priming the dependent-Paul link makes the possibility of counterstereotypical behavior relatively accessible. This may (temporarily) ''dilute'' (see Nisbett, Zukier, & Lemley, 1981) the existing stereotype (e.g., ''not only women but also some men are dependent'') and/or activate a specific subtype (e.g., ''most men are not dependent, but some men are''; see Hewstone, 1994). Consequently, counterstereotypical exemplars (''dependent Paul'') may make a trait (''dependent'') that is *in*applicable to a certain social category (''men'') relatively *applicable* to a relevant target stimulus (e.g., ambiguously dependent Donald). Furthermore, counterstereotypical exemplars may activate a certain subtype in which an ambiguously counterstereotypical target stimulus may be included (see Hewstone, 1994; Kunda & Thagard, 1996). In other words, when right after exposure to counterstereotypical exemplars, one has to judge the behavior of a same-category ambiguous target, this target may (i) be *interpreted* in terms of the trait the exemplars activate and/or (ii) be *included* in the subtype the exemplars make accessible. Both these processes will result in assimilation. When same-category exemplars are primed, we predict higher ratings on the relevant trait dimensions for a target person whose social category does not match the primed stereotype. More specifically, priming ''dependent Paul'' will lead to assimilation in judgments of ambiguously dependent Donald.[2]

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[2] It may be argued that when exemplar priming results in the creation of a subcategory (''dependent men'') in which the target may be included, within the activated subcategory, primed exemplars (''dependent Paul'') may be used as a scale anchor to which the ambiguous target stimulus (''ambiguously dependent Donald'') may be compared. This would result in contrast effects. However, previous research has demonstrated that in judging a target on a particular, (counter)stereotypical dimension, the selection of a comparison standard is driven primarily by the reference class that is suggested by the rating dimension. When asked to judge a person on gender-stereotyped dimensions (such as height, income), a same-sex comparison standard will be constructed (see Biernat et al., 1991). Furthermore, judgments of subtyped targets are typically based on comparisons with the general category: An aggressive and competitive businesswoman is not seen as such because she is more aggressive and competitive than other *businesswomen,* but because she is compared to other women in general. This suggests that when asked to rate Donald's ambiguously dependent behavior on the dimension ''dependent,'' respondents are unlikely to compare Donald's behavior to other dependent men. Rather they will compare his behavior to the behavior of ''normal'' men (see further Biernat et al., 1991; Kahneman & Miller, 1986; Manis et al., 1991).

OVERVIEW

In two experiments, we test the above hypotheses and conjectures concerning the differential impact of stereotype-related trait and exemplar priming on judgments of targets whose social category does or does not match the stereotype.

The general research paradigm we employed was inspired by the Banaji et al. (1993) studies. Respondents participated in two ostensibly unrelated studies. During the first study, we asked participants under the disguise of a language comprehension task to unscramble sentences that were neutral or that described behaviors stereotypical of dependence. In the *trait* priming conditions, all sentences were said to describe a particular behavior (‘‘R. alone cannot manage a’’). In the *male exemplar* priming conditions, the sentences described one (Experiment 2) or four (Experiment 1) male actors (‘‘Robert alone cannot manage a’’) and were said to describe particular persons. In the *female exemplar* priming conditions, the sentences pertained to one or four female actors (‘‘Roberta alone cannot manage a’’) and were said to describe particular persons. Then, during the ‘‘unrelated’’ second study, participants completed an impression formation task in which they read a story about the target. The story referred to either a male target (Donald) or a female target (Donna) who performed a series of behaviors weakly related to the target trait ‘‘dependent.’’ Subsequently, participants were asked to give several trait judgments.

Because our experiments do not solely investigate whether or not stereotype-relevant knowledge will exert an effect on judgment, but also whether this effect is likely to be assimilative or contrastive, we hope to shed some new light on the question of what determines whether stereotypes result in stereotyping or counter-stereotyping. Furthermore, because our experiments investigate the impact of different kinds of stereotype-relevant priming (i.e., trait priming, same-category exemplar priming, different-category exemplar priming) on targets that match or mismatch the stereotype-relevant information, they can provide an important extension and amendment of existing models of stereotyping effects in person judgment, which are mostly based on only one kind of knowledge activation (see Banaji et al., 1993; Biernat et al., 1991; Brewer, 1988; Fiske & Neuberg, 1990).

EXPERIMENT 1

Method

Participants and Design

One hundred twenty-four (71 female and 53 male) University of Amsterdam students (mean age 23 years) participated. Participants were randomly assigned to the conditions of a 4 (Prime type: trait concept, female exemplars, male exemplars, neutral) × 2 (Target gender: male or female) between subjects design. The experiment was conducted in groups of 4 to 16 persons.

Priming Task

The experiment was part of a general testing session in which participants received several questionnaires. The priming task was entitled ‘‘Language Comprehension.’’ Specifically, participants unscrambled sentences. This priming task consisted of a page of 44 scrambled four- or five-word groups. In the experimental conditions, 28 of these sentences described dependent behaviors and 16 described neutral behaviors. In the neutral condition, all 44 sentences were neutral. Participants’ task was to reorganize the word groups into meaningful sentences. The priming stimuli were Dutch translations of the material that was developed and pretested by Banaji et al. (1993, p. 274).

In the *trait priming conditions*, participants were told that the word-groups ‘‘all describe a particular behavior’’ and that they ‘‘should try to form a good impression of this behavior.’’ The 44 word-groups were presented on four pages. Each page was titled ‘‘Description of behavior.’’ Participants had to unscramble word-groups, such as ‘‘A. does disagree not so’’ and ‘‘K. conforms inward others to.’’ The initial was understood by participants to represent the name of the actor of each behavior. In the *female exemplars* priming conditions, participants were told that the word-groups ‘‘describe four particular persons’’ (Linda, Esther, Marjolijn, Annette, common Dutch names for females) and that they ‘‘should try to form a good impression of these persons.’’ Each of the four pages described the behavior of a female exemplar person and was titled as such (e.g., one page read ‘‘Description of Linda’’). Participants had to unscramble word-groups, such as ‘‘Linda does disagree not so’’ and ‘‘Linda conforms inward others to.’’ In the *male exemplars* priming conditions, a similar procedure was followed. Here, the four person exemplars were Robert, Jan, Bas, and Willem, common Dutch names for males. In the *neutral* priming conditions, participants were told that the word-groups ‘‘describe objects’’ and that they ‘‘should try to form a good impression of these objects.’’ Each page was titled ‘‘Description of objects.’’ Participants had to unscramble word-groups, such as ‘‘lovely from the cake is’’ and ‘‘the test after easy was.’’

Target Description and Measures

Target description. After participants had finished the priming task and a filler task (identifying 16 neutral words (e.g., street, room, new) out of a word puzzle, consisting of a matrix of 5 × 28 letters) they were instructed to put the ‘‘language comprehension’’ booklet in a folder on their desks. Next, they were given the impression formation booklets, entitled ‘‘Impression Formation.’’ They were instructed to read the target paragraph and to try to form an impression of the target. The target paragraph described a series of activities involving the target to be judged and included behaviors only weakly related to the relevant trait (dependent) embedded among neutral behaviors (see for details, Banaji et al., 1993). In the *female target* conditions the target was named Petra. In the *male target* conditions, the target was named Peter.

Trait ratings. Participants indicated their impressions of Peter or Petra on seventeen 10-point rating scales, ranging from 1 (not at all) to 10 (extremely). The traits were dependent (the target trait), cooperative, polite, sympathetic, thoughtful (positive and semantically related to the target trait), inhibited, insecure, passive, weak (negative and semantically related), cultured, educated, neat, talented (positive and semantically unrelated), absent-minded, impractical, superstitious, unhealthy (negative and semantically unrelated).

Manipulation check. After they had given their ratings of the target person, participants in the male and female exemplar priming conditions were asked the following question ‘‘Were the persons described in the Language Comprehension Task primarily men or women?’’ Participants could indicate their answers on a 10-point scale, ranging from 1 (only men) to 10 (only women). In this manner, we could check whether respondents had encoded the primed exemplars in a gender-marked way.

Stereotype ratings. Finally, respondents were exposed to three statements related to the stereotype that the trait ‘‘dependent’’ is more strongly associated with women than with men. Participants were asked to indicate to what extent they agreed (1 = not all, 10 = completely) with the following statements: ‘‘Women are more dependent than men,’’ ‘‘Women feel insecure sooner than men,’’ ‘‘Men are more passive than women.’’[3]

After the general testing session, which included additional tasks, was completed, participants were debriefed and thanked for their participation.

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[3] Note that this ‘‘explicit stereotyping’’ measure was not included in the Banaji et al. studies.

TABLE 1

MEAN RATINGS (SD) AS A FUNCTION OF PRIME TYPE AND TARGET GENDER

	Prime type			
Target gender	Dependent trait	Dependent females	Dependent males	Neutral information
Female	8.67	6.59	8.80	7.81
	(1.36)	(1.93)	(1.32)	(1.41)
Male	7.75	7.70	8.72	7.93
	(1.49)	(1.46)	(1.37)	(1.32)

Note. Scale range is from 1 to 10. Higher scores indicate greater dependence.

Results and Discussion

Manipulation Check

First, it was checked whether the manipulation of exemplar prime type (male or female) was effective. It was. An analysis of variance (ANOVA) revealed a significant main effect of exemplar prime type on the question whether the persons described in the Language Comprehension Task were primarily men or women (1 = only men; 10 = only women), $F(1, 60) = 1224.64$, $p < .0001$. The ANOVA revealed no other main or interaction effects ($Fs < 1$). Participants in the male exemplar priming conditions thought the priming task mainly described men ($M = 1.36$), whereas participants in the female exemplar priming conditions indicated mainly women were described ($M = 9.65$).

Analyses of Target Judgments

An ANOVA revealed no reliable main or interaction effects of participant sex on any of the dependent variables ($Fs < 1$). Furthermore, no reliable effects were found on the semantically unrelated rating scales ($Fs < 1$). Similar to the studies by Banaji et al. (1993), effects were found, however, on the target rating scale (‘‘dependent’’) and one of the semantically related rating scales (‘‘passive’’). This is evidence against the possibility that participants were responding to the evaluative aspects of the concepts activated by the context information and were merely forming evaluatively consistent judgments (see Higgins et al., 1977). For presentation purposes, we formed a composite scale of these two ratings (Cronbach’s $\alpha = .72$). Participants’ mean scores on this index, rating from 1 (not at all dependent) to 10 (extremely dependent) were used as a dependent variable in the main analyses.

An ANOVA with Prime type and Target gender as independent factors revealed for this index a main effect of Prime type, $F(3, 116) = 6.49$, $p < .01$. As is obvious from Table 1, however, both the gender of the target and the type of priming stimuli determined the influence of stereotype-relevant information. Thus the main effect of Prime type was qualified by the predicted Prime Type × Target Gender interaction, $F(3, 116) = 2.47$, $p = .066$. Yet, this interaction was only marginally significant.

Because we had specific expectations for the pattern of cell means, we conducted some more fine-grained comparisons. Specifically, we performed separate analyses for the female target and the male target conditions of the design. For the four means in the *female target* conditions, an ANOVA revealed a significant effect, $F(3, 58) = 6.87, p < .01$.[4] As expected, *assimilation* was found when participants rated a female target after they were primed with either the trait dependent or dependent male exemplars, whereas *contrast* occurred when they were primed with dependent female exemplars. In particular, participants rated the female target more dependent when primed with the trait dependent ($M = 8.67$) than when primed with dependent female exemplars ($M = 6.59$), $F(3, 58) = 3.48, p < .01$. Similarly, participants rated the female target more dependent when primed with dependent male exemplars ($M = 8.80$) than when primed with dependent female exemplars ($M = 6.59$), $F(3, 58) = F(3, 58) = 3.74, p < .01$. As expected, ratings of the female target given by participants who were primed with neutral information were halfway ($M = 7.81$) between these assimilation and contrast effects ratings. For the *male target* conditions of the design, we expected assimilation when participants were primed with dependent male exemplars. No priming effects were predicted in the three other conditions. An ANOVA over the four male target means did not reveal an ordinary level of significance, $F(3, 58) = 1.77, p = .16$. However, as Table 1 clearly shows, participants' ratings were in line with our predictions: Ratings of the male target were almost one scale point higher in the condition in which participants were primed with dependent male exemplars ($M = 8.72$) than in each of the other three male target conditions ($M = 7.79$). Furthermore, an a priori contrast analysis that tested our prediction for the male target ratings (higher, assimilative, ratings in the condition in which dependent males were primed compared to those in the other conditions) showed a significant effect, $F(1, 58) = 5.01, p < .05$.

Analyses of Stereotype Judgments

Finally, we analyzed respondents' endorsement of the explicitly gender-stereotyped statements. We computed a composite score of the three relevant ratings (rescoring the third, counterstereotypical statement; see Method section). An ANOVA on this index with prime type and target gender as independent factors only revealed a main effect of target gender, $F(1, 116) = 3.79, p = .05$, indicating that participants who had formed an impression of a vaguely dependent woman agreed more with statements endorsing the female stereotype ($M = 5.66$) than participants who had evaluated a vaguely dependent male target ($M = 5.19$).

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[4] In the two experiments described in this paper, we report several tests of simple effects. In computing these simple effects, we chose not to use the pooled error term and the corresponding degrees of freedom from the relevant ANOVA. Winer (1971) writes that our strategy—estimation of experimental error from the specific cells that are compared in the simple tests (see Experiment 1) or the part of the design within which the simple comparisons are made (see Experiment 2)—is preferable when the number of degrees of freedom for the error term in the simple analyses is not small (see for further details Winer, 1971, pp. 385–386).

In summary, the present experiment examined the impact of stereotype-relevant information on evaluations of a target whose social category matches or mismatches the stereotype. Although not all relevant comparisons reached ordinary levels of significance, as a whole, the findings of this study indicate that the effect of priming information relevant to the gender stereotype that women are more dependent than men depended on (a) the *type of knowledge structure* that is rendered accessible (abstract trait concept versus specific male exemplar versus female exemplar information) and (b) the *type of target* that was to be evaluated (man versus woman). Specifically, *stereotyping* or *assimilation* occurred when (i) a trait was primed and the social category of target matched the stereotype (priming ‘‘dependent,’’ judge female target), (ii) exemplar information was primed, the exemplars belonged to a different category than the target, and the social category of the target matched the stereotype (priming ‘‘dependent male exemplars,’’ judge female target), (iii) exemplar information was primed, the exemplars belonged to the same category as the target, and the social category of the target did not match the stereotype (priming ‘‘dependent male exemplars,’’ judge male target). As predicted, *counterstereotyping* or *contrast* occurred only when the accessible information could easily serve as a relevant standard of comparison: The priming stimuli were exemplars, these exemplars belonged to the same category as the target, and the traits activated by these exemplars matched the social category of the target (priming ‘‘dependent female exemplars,’’ judge female target).

The impact of our stereotype-relevant priming stimuli on participants’ judgments of the ambiguous behavior of a target person may be described as ‘‘implicit stereotyping’’ effects. Banaji et al (1993, p. 272) define implicit stereotyping as the situation in which ‘‘incidental exposure to stereotyped knowledge unconsciously, yet selectively, influences judgment.’’ It may be informative to contrast the effects of our priming stimuli on participants’ judgments of particular target persons to the results of our self-report measure of participants’ belief in female dependence. This ‘‘explicit’’ measure of participants’ endorsement of the female stereotype did not reveal any influence of the type of the incidentally activated priming stimuli. Moreover, participants’ mean scores on the explicit stereotype measure were around the middle of the scale (cf. Gaertner & Dovidio, 1986; Greenwald & Banaji, 1995).

Although participants’ scores on the explicit stereotyping measure were around the middle of the rating scale and were unaffected by the prime type and prime valence manipulations, they *were* affected by the gender of the target stimulus: Participants who first evaluated the behavior of a vaguely dependent female then judged women to be more dependent than men, compared to those who first evaluated a male target. This suggests that exposure to a stereotypically behaving target stimulus (an ambiguously dependent woman) may affect general evaluations of the stereotyped group (women) (Smith & Zarate, 1992), whereas such evaluations are not affected by subtle accessibility-driven changes in the actual evaluation of the target’s behavior.

EXPERIMENT 2

Experiment 1 represented a first attempt to demonstrate the importance of differentiating between trait, same category exemplar, and different category exemplar priming when studying the impact of stereotype activation on person judgment. Although the results of that experiment were in line with our predictions, not all relevant comparisons reached ordinary levels of significance. Therefore, in the present experiment, we set out to strengthen our case for the importance of such prime type × target type interactions and attempted to corroborate the pattern of results found in Experiment 1. Also, to enlarge the scope of generalization of the current investigation, we executed the present experiment in a different culture. Instead of Dutch respondents, North-American respondents took part in the experiment.

The general research paradigm employed was largely similar to that of the previous experiment. However, compared to Experiment 1, we improved the experimental design by completely crossing the prime valence (dependent, neutral) with the prime type (trait, male exemplar, female exemplar) manipulation. Furthermore, to make sure that "distinct and specific" information was activated, in the exemplar priming conditions of the present experiment, participants were exposed to one rather than four exemplars. Finally, because previous research suggests that assimilation and contrast effects may be explained in terms of people's awareness that the priming event is related to the judgment of the target (Lombardi, Higgins, & Bargh, 1987; Strack, Schwarz, Bless, Kübler, & Wänke, 1993; Wegener & Petty, 1995), we added a test of recall of the primes (see Banaji et al., 1993) and a measure of suspicion that the priming task and the judgment task were related (see Thompson, Roman, Moskowitz, Chaiken, & Bargh, 1994).

Method

Participants and Design

One hundred seventy-one (105 female and 66 male) University of Michigan undergraduates (mean age 19 years) participated. Participants were randomly assigned to the conditions of a 3 (Prime type: trait concept, female exemplars, male exemplars) × 2 (Target gender: male or female) × 2 (Prime valence: dependent, neutral) between subjects design. The experiment was conducted in groups of 2 to 9 persons.

Materials and Procedure

All materials, including prime stimuli, target paragraphs, and trait scales, were very similar to those in Experiment 1. Below we will describe where in the present experiment the procedure differed from the previous experiment.

Priming task. In the *trait priming conditions,* participants were told that the word-groups "all describe a particular personality trait" and the 44 word-groups were presented on two pages. In the *female exemplar* priming conditions, participants were told that the word-groups "describe a particular person, namely Paula" and in the *male exemplar* priming conditions, participants were told that the word-groups "describe a particular person, namely Paul" and participants had to unscramble sentences that *all* referred to Paula or Paul, respectively. In the *neutral* priming conditions (of each level of the prime type factor), all scrambled word-groups were neutral (e.g., M. an saw a figure, Paul an saw a figure, Paula an saw a figure). In the *dependent* priming conditions, 28 of the 44 word groups referred to dependent behaviors (M. alone cannot manage a, Paul alone cannot manage a, Paula alone cannot manage a).

Trait ratings. After participants had finished the priming task, they were immediately given the Impression Formation questionnaire. In the *female target* conditions, the target was named Donna. In the *male target* conditions, the target was named Donald. Participants indicated their target impressions on five 9-point rating scales, ranging from 1 (not at all) to 9 (extremely). The traits were dependent (the target trait), cooperative (positive and semantically related to the target trait), insecure (negative and semantically related), cultured (positive and semantically unrelated), and aggressive (negative and semantically unrelated).

Stereotype ratings. To explicitly assess participants' endorsement of the stereotype that women are more dependent than men, after they had given their target judgments, participants were asked to give their impression of women on the same five rating scales.

Recall. When participants had given their target and stereotype ratings, a prime recall task was administered. Participants were given a blank sheet of paper and were asked to remember as many of the words from the scrambled-sentence word groups as they could. Participants were given 3 min to complete this task (see Banaji et al., 1993).

Suspicion. Following Thompson et al. (1994: p. 477), on the final page of the booklet, participants completed several items tapping their suspicions regarding the purpose of the experiment and the possible relation between the priming task and the subsequent person-judgment task. Participants first indicated whether they felt any event occurring before the experiment could have affected their performance on the person-judgment task. Next, participants were asked whether they thought the language-comprehension task could have been related in any way to the person-judgment task. They were specifically asked whether their participation in the sentence-forming task could have influenced their judgments of the target stimulus. If participants responded yes, they were asked to indicate what the influence was. To qualify as suspicious, respondents had to indicate that they thought the language comprehension task was related to the person-judgment task and had to explain that the constructs in the first task affected the way in which they filled in the rating dimensions in the second task.

After the general testing session had finished, participants were debriefed and thanked for their participation.

Results and Discussion

Analyses of Target Judgments

The results of Experiment 2 strongly replicated the results of Experiment 1. Similar to Experiment 1, an ANOVA revealed no reliable main or interaction effects of participant sex on any of the dependent variables. Furthermore, no reliable effects were found on the semantically unrelated rating scales. Similar to Experiment 1, however, effects were found on the target rating scale ("dependent") (see also Banaji et al., 1993). Furthermore, effects were found on one of the two semantically related rating scales ("cooperative"). A composite scale of these two ratings was formed. Participants' mean scores on this index, rating from 1 (not at all dependent) to 9 (extremely dependent) were used as a dependent variable in the main analyses.

Scores on the index indicated the predicted three-way Prime Type × Target Gender × Prime Valence interaction, $F(2, 159) = 3.43$, $p < .05$, a Prime Type × Target Gender interaction, $F(2, 159) = 3.25$, $p < .05$, and a Prime Type × Prime Valence interaction, $F(2, 159) = 6.55$, $p < .01$. As shown in Table 2, both the gender of the target and the type of priming stimuli determined the influence of stereotype-relevant information.

TABLE 2

MEAN RATINGS (SD) AS A FUNCTION OF PRIME VALENCE, PRIME TYPE, AND TARGET GENDER

	Prime type					
Prime valence	Trait		Female		Male	
Target gender	Dependent	Neutral	Dependent	Neutral	Dependent	Neutral
Female	7.75 (.94)	6.61 (1.33)	5.81 (1.32)	6.96 (1.03)	7.56 (1.08)	6.39 (1.69)
Male	5.97 (1.64)	6.64 (1.72)	6.43 (1.79)	6.93 (1.02)	7.43 (1.24)	6.50 (1.36)

Note. Scale range is from 1 to 9. Higher scores indicate greater dependence.

To test our hypotheses more specifically, we conducted separate analyses for the trait priming, female exemplar priming, and male exemplar priming conditions (see also Experiment 1).

Trait priming conditions. For these conditions, an ANOVA revealed a Prime Type × Target Gender effect, $F(1, 53) = 6.98$, $p < .05$ and a main effect of Target gender, $F(1, 53) = 6.50$, $p < .05$. No other effects were found ($Fs < 1$). A further inspection of the relevant cells shows that we again replicated Banaji et al. (1993) and found *assimilation* when the primed trait matched the social category of the target. Participants rated the female target more dependent when primed with the trait dependent ($M = 7.75$) rather than primed with neutral trait concepts ($M = 6.61$), $F(1, 53) = 4.40$, $p < .05$ whereas differences between ratings of the male target after “dependent” ($M = 5.97$) and neutral trait ($M = 6.64$) priming were only marginally significant, $F(1, 53) = 2.88$, $p < .10$. This result points to a contrast effect. The reliability of this effect is questionable. The effect is inconsistent with the results of Experiment 1 and with the findings of two of the three experiments reported by Banaji et al. (1993). However, in the other experiment, Banaji et al. (1993) *did* find a similar trend. We hope that future research may provide us with less ambiguous data concerning the status of this effect.

Female exemplar priming conditions. For these conditions, an ANOVA revealed a main effect of Target gender, $F(1, 51) = 5.27$, $p < .05$. No other effects were found ($Fs < 1$). Table 2 shows that this main effect is driven by differences in the female target (rather than the male target) conditions: Participants rated the female target less dependent when primed with a dependent female exemplar ($M = 5.81$) than primed with neutral exemplar information ($M = 6.96$), $F(1, 51) = 4.80$, $p < .05$, whereas ratings of the male target were statistically equivalent after “dependent” and neutral female exemplar priming ($M = 6.43$ and $M = 6.93$, respectively, $F < 1$). We thus found the predicted comparison *contrast* effect when both the primed exemplar belonged to the same category as the target and the primed stereotype matched the social category of the target.

Male exemplar priming conditions. For these conditions, an ANOVA revealed a main effect of Prime valence, $F(1, 55) = 8.86$, $p < .01$. No other effects were found ($Fs < 1$). As Table 2 shows, *assimilation* occurred when the primed male exemplar information belonged to a different category than the target. Participants rated the female target more dependent when primed with a dependent male exemplar ($M = 7.56$) rather than primed with neutral male exemplar information ($M = 6.39$), $F(1, 55) = 5.62$, $p < .05$. Similarly, *assimilation* occurred when the primed male exemplar belonged to the same category as the target, but the primed stereotype did not match the social category of the target. Participants rated the male target more dependent when primed with a dependent male exemplar ($M = 7.43$) rather than primed with a neutral male exemplar ($M = 6.50$), $F(1, 55) = 3.43$, $p < .07$, although this latter assimilation effect was somewhat weaker.

Analyses of Stereotype Judgments

To assess participants' endorsement of gender-stereotypes, we analyzed participants' trait ratings of the social category ''women.'' An ANOVA with prime valence, prime type, and target gender as independent factors revealed a main effect of target gender on ratings of ''dependent'' and ''cooperative.'' No effects were found on the other rating scales. This is consistent with the effects we found in analyses of participants' target judgments. We computed a composite score of the ''dependent'' and ''cooperative'' ratings. An ANOVA on this index only revealed a main effect of target gender, $F(1, 159) = 57.05$, $p < .01$, indicating that participants who had formed an impression of a vaguely dependent woman agreed more with statements endorsing the female stereotype ($M = 5.44$) than participants who had evaluated a vaguely dependent male target ($M = 4.39$), replicating the pattern of results of Experiment 1.

Recall and Suspicion

Each participant's recall of the priming sentences was coded blind to experimental conditions. For each of the sentences participants could recall the following 4-point scoring system was used (cf. Banaji et al., 1993): 3 (perfect recall), 2 (conceptually identical recall), 1 (incorrect recall of sentence), 0 (no recall). An ANOVA of this measure revealed no significant main or interaction effects, $Fs < 1$ ($M = 17.32$). Within-cell correlations between these two variables also did not reach ordinary levels of significance (see also Banaji et al., 1993, p. 278). These results suggest that, at least in the current experiment, memory for the priming event cannot predict relative contrast effects, as some researchers have proposed (e.g., Bargh, 1994; Lombardi et al., 1987; Newman & Uleman, 1990; but see Banaji et al., 1993; Ford, Stangor, & Duan, 1994; Herr, 1986; Martin, 1986; Martin, Seta, & Crelia, 1990; Schwarz & Bless, 1992; Stapel & Koomen, 1997; Stapel et al., 1996, 1977; Stapel & Winkielman, 1997). Furthermore, none of the participants qualified as ''suspicious'' concerning the contaminating influences of the priming stimuli, irrespective of whether they were in conditions in which null, assimilation, or contrast effects were found (see also Strack et al., 1993; Thompson et al., 1994).

Together, these recall and suspicion data clearly suggest that trait, female exemplar, and male exemplar priming do not differentially induce perceptions of ‘‘contamination’’ and subsequent correction attempts. Furthermore, the pattern of effects in the present (and the previous) experiment—in which the occurrence of assimilation and contrast effects is dependent on the type of information that is primed (trait versus exemplar), the categorical similarity between prime and target stimuli, and the match in stereotypicality of the primed information and the target’s social category—seems too complex to be explained in terms of people’s naive theories about how to correct for perceived bias (see Martin & Stapel, in press; Strack, 1992; Wegener & Petty, 1995; Wilson & Brekke, 1994).

In sum, in the present experiment both the implicit stereotyping (ratings of an ambiguously dependent female or male target stimulus) and explicit stereotyping (endorsement with the stereotype that women are more dependent than men) effects were nicely consistent with the results of Experiment 1. As predicted, the effect of priming information relevant to the gender stereotype was a function of the *type of knowledge structure* that was activated and the *type of target* that was to be evaluated (see Discussion section, Experiment 1). Furthermore, inclusion of ‘‘memory for primes’’ and ‘‘suspicion of bias’’ measures allowed us to investigate whether the pattern of results could be explained in terms of ‘‘correction for unwanted influences.’’ The results clearly indicate that differential memory for the primes or suspicion of bias cannot account for the effects on judgment obtained in the present research. Thus, our distinction between the ‘‘interpretative’’ and ‘‘comparative’’ effects of different types of accessible information (traits, same-category exemplars, different-category exemplars) seems to provide a more parsimonious explanation of the results.

GENERAL DISCUSSION

Summary of Empirical Results

The two experiments reported here provide strong support for the hypotheses we set out to test. We found that incidental exposure to stereotype-relevant information differentially influenced evaluations of targets that varied in no way except for their social category. It was demonstrated that stereotype activation may not only yield *stereotypical,* but also *counterstereotypical* target judgments. Or, to put it differently, both *assimilation* and *contrast* effects may ensue when people use stereotype-relevant knowledge during the impression formation process.

Our conclusions are based on data relevant to the impact of information about a trait that is thought to be stereotypical of women, i.e., ‘‘dependence,’’ on implicit and explicit (gender-)stereotyping measures. It is therefore important to note that the results of the present studies should be interpreted with some caution. Future research may want to investigate whether a similar pattern of results will be found when (trait and exemplar) information about a trait stereotypical of men, for example ‘‘aggression,’’ is primed and judgments of ambiguously aggressive men or women need to be given.

Together, the two studies reported here suggest that one important determinant of whether stereotype activation results in assimilation or contrast is the kind of process that instigates the interplay between the type of stereotype-relevant knowledge and the type of target stimulus. Whether primed stereotype-relevant knowledge represents trait, same-category exemplar, or different-category information and whether the target's social category matches or mismatches the activated stereotype determines whether assimilation or contrast is likely to ensue.

These findings support the notion that it is important to distinguish ‘‘interpretative’’ and ‘‘comparative’’ knowledge accessibility effects (Higgins, 1996; Philippot et al., 1991; Schwarz & Bless, 1992; Wyer & Srull, 1989) and that this distinction is related to the judgmental consequences of different *types* of knowledge accessibility (Stapel et al., 1996, 1997; Stapel & Winkielman, 1997).

Relation to Previous Findings

Replicating previous findings, stereotype-relevant trait priming resulted in *assimilation* effects, but only when the activated trait matched the stereotypicality of the target. This reflects that accessible trait concepts may guide the interpretation of ambiguous targets (see Higgins et al., 1977; Srull & Wyer, 1979), but adds that for stereotype-relevant traits this is only the case when the trait and the target's social category match (see Banaji et al., 1993).

Providing a novel contribution over previous research (Banaji et al., 1993; Stapel et al., 1997) is the finding that *assimilation* also occurred when same-category exemplar information was primed that did not match the target's social category (e.g., priming dependent men before ambiguously dependent Donald is to be judged). Thus, in contrast to the notion that stereotype-relevant information may only exert an effect on subsequent target judgments when it is socially applicable, our findings indicate that—under specific circumstances—also socially inapplicable information may exert an effect on target judgments. We argued that such assimilation effects occur because when one is exposed to counterstereotypical exemplar information, the possibility of counterstereotypical behavior (apparently, some men are dependent) is made relatively accessible. This may (temporarily) ‘‘dilute’’ the stereotype or a specific subtype may be activated. In this way, socially inapplicable information may become applicable and accordingly, subsequent target stimuli may be interpreted in terms of the trait the exemplars activate or these targets may be included in the subtype the exemplars make accessible. Both these processes result in assimilation. A future avenue for research is perhaps to more specifically find out which of these processes (e.g., dilution, subtyping) is actually driving the *assimilation* effects that follow the priming of same-category exemplar information that does not match the target's social category.

Also extending and amending previous results is the finding that same-category exemplar priming yields *contrast* effects when the activated stereotype matches the target's social category. This suggests that contrastive comparison processes may follow stereotype activation when the so activated information matches the social category of the target stimulus and possesses features (e.g., ‘‘distinctness’’ and ‘‘prime–target similarity’’) that instigate its use as a comparison standard during the judgment stage of impression formation (see Higgins, 1996; Stapel et al., 1996, 1997; Wyer & Srull, 1989). A corollary of this logic is that priming socially applicable different-category exemplars results in *assimilation.* Although such information lacks prime–target similarity and thus cannot be used as a comparison standard, when the traits the exemplars exemplify have interpretation applicability, the impact of different-category exemplar information may be similar to trait priming, assimilative.

In sum then, the present findings both amend and extend Banaji et al.’s model of stereotype effects. Banaji et al. (1993) argued that the activation of stereotype-relevant knowledge may lead to *assimilation* when the social category of the target stimulus matches the activated stereotype. We, however, found *contrast* when the activated information represented specific, same-category exemplars linked to a trait that matches the target’s social category. Banaji et al. (1993) also suggested that when the activated information has no social applicability, it will exert no effect on judgment. We, however, found *assimilation* when the activated information represented specific, same-category exemplar information that does not match the target’s social category.

The present results do not only suggest a revision of the Banaji et al. model of stereotyping effects. Whereas our distinction between trait, same-category exemplar, and different-category exemplar priming results in a extension of the Banaji et al. (1993) model, the inclusion of Banaji et al.’s social applicability concept results in an extension of the Stapel et al. (1997) model of assimilation and contrast effects: Whereas distinctness and prime–target similarity may be important determinants of the effect of stereotype-*ir*relevant information, when it concerns the impact of stereotype-relevant information, an extra variable starts to play its role: the social category applicability of the activated information.

Alternative Explanations

Our explanation of the stereotyping and counterstereotyping effects obtained in the present research centers around the notion that stimuli which do not provide judges with *comparison relevant* information are unlikely to be used as a comparison standard in the judgment process. When these stimuli possess features that make them *interpretation relevant,* however, judges may use them as an interpretation frame during encoding. Alternative explanations of assimilation and contrast effects seem to fit the current findings less parsimoniously. The ‘‘recall’’ and ‘‘suspicion of bias’’ findings of Experiment 2 show that, correction-for-bias processes (see Wegener & Petty, 1995; Wilson & Brekke, 1994) are unlikely to be the driving force behind the present pattern of results. Furthermore, the fact that in our studies both assimilation and contrast resulted from exposure to the same priming stimuli seems to rule out explanations in terms of the *extremity* (see Herr, 1986; Manis et al., 1988) or *appropriateness* (see Martin et al., 1990; Schwarz & Bless, 1992; Strack, 1992) of the priming stimuli (see footnote 1).

It is important to note that we do not want to argue that our perspective on stereotype-relevant knowledge accessibility effects is an *alternative* to previous explanations of assimilation and contrast effects. Rather, we suggest that *over and above* the effects of extremity and appropriateness, variables such as the social category applicability, prime–target similarity, and distinctness of accessible information may determine whether assimilation or contrast will occur.

Natural versus Corrected Knowledge Accessibility Effects

The results of the present research clearly show that knowledge accessibility effects are determined by multiple variables. This speaks to the current debate regarding the distinction between ‘‘natural’’ or ‘‘spontaneous’’ versus ‘‘corrected’’ or ‘‘controlled’’ effects (see Martin, 1986; Martin et al., 1990; Schwarz & Bless, 1992; Wegener & Petty, 1995). Some researchers seem to assert that *contrast* is the most common knowledge accessibility effect. For example, Herr, Sherman, and Fazio (1983, p. 325) write that the ‘‘predominant context effect in the social judgment literature is the contrast effect.’’

Other researchers argue, however, that *assimilation,* not contrast, is the more ‘‘natural’’ effect. To give an illustration from an often-cited article, Martin, Seta, and Crelia (1990, p. 29) remark when discussing their set/reset model of assimilation and contrast effects, ‘‘one implication of the set/reset view of contrast is that contrast involves more cognitive steps that does assimilation.’’

Previous research has convincingly demonstrated that assimilation effects seem to be more easily obtained than contrast effects when subjects are distracted, low in need for cognition, or unaware of the impact of the activated information (see e.g., Ford & Kruglanski, 1995; Lombardi, Higgins, & Bargh, 1987; Martin, 1986; Martin et al., 1990; Thompson et al., 1994). Because these previous studies mostly used a trait concept priming methodology to study knowledge accessibility effects, they are less informative when it concerns the issue whether assimilation or contrast is a more ‘‘natural’’ effect. As we have argued throughout this article, the *comparison* processes instigated by comparison relevant exemplar priming are of a completely different nature than the *interpretation* processes that follow trait concept priming. It is quite equivocal whether or not comparison processes should be viewed as more ‘‘natural’’ than interpretation processes. Both processes are essential ingredients for the construction of evaluations and judgments (see Eiser, 1990; Higgins, 1996; Kahneman & Miller, 1986). Both interpretation and comparison processes may be guided by subliminally primed information (see Bargh, 1997; Bevan & Pritchard, 1963; Winkielman & Schwarz, 1996). This suggests that *both* assimilative interpretation and contrastive comparison effects may be affected by preconscious, automatic processes (cf. Bargh, 1997). Awaiting the final verdict on the ‘‘default’’ issue (see Martin, 1996), we would like to argue that the present studies seem to provide evidence that *both* assimilation and contrast can occur, irrespective of whether or not participants are engaging in correction processes. In other words, to date there is no evidence that there is anything like a truly ‘‘natural’’ context effect (see also Wegener & Petty, 1995).

Three Types of Applicability

We prefer to explain the present stereotyping and counterstereotyping effects in terms of the consequences of interpretation versus comparison processes. From the earliest research, priming effects in impression formation were predicted not to occur indiscriminately. Accessible information was thought to influence judgment only if it was applicable, that is, when there was a semantic overlap between the priming and target information (Higgins et al., 1977; Srull & Wyer, 1979). Banaji et al. (1993) provided a very important contribution in showing that in considering the effects of stereotypical rather than nonstereotypical knowledge on judgment, *social category* applicability ought to be considered alongside *interpretation* applicability. In the present experiments, we extended and contrasted these notions of the importance of interpretation and social category applicability with our (Stapel & Koomen, 1997; Stapel et al., 1997) perspective on determinants of *comparison* applicability. Thus, we were able not only to predict whether or not stereotype-relevant knowledge will influence judgment, but also what the direction of this effect was likely to be.

As we noted in the introduction, most investigations of the impact of stereotypes on person judgment have found assimilation or null effects and some have found contrast effects (Hamilton & Sherman, 1994; Hilton & von Hippel, 1996; Kunda & Thagard, 1996). The present research may contribute to explaining these previous findings and seems to be able to delineate some of the preconditions for assimilative and contrastive stereotyping effects. Of course, the effects of stereotypes on judgments are overdetermined, but our findings suggest that one determinant of whether stereotype-relevant knowledge results in stereotyping, counterstereotyping or null effects is whether that knowledge possesses or lacks interpretation, social category, and comparison applicability. Stereotypes may not only provide us with colored glasses through which we perceive social reality, but also with strong anchors against which we compare that reality.

(Other) Implications for Research on Stereotyping Processes

It is important to note that, similar to the Banaji et al. (1993) findings, the present results showed no difference in judgment of female and male targets in the neutral priming conditions. These findings are consistent with other studies indicating that social category markers do not always spontaneously trigger the associated stereotype and influence judgments accordingly (e.g., Beckett & Park, 1995; Gaertner & Dovidio, 1986). Sometimes the social category of a target person is not immediately salient or relevant to the judgment at hand, sometimes the association between a social marker (gender, race, class, occupation) and the relevant stereotype is not very strong. Women will not always be rated as more dependent than men, men will not always be rated as more aggressive than women, New Yorkers will not always be rated as more talkative and chaotic than

Bostonians, and psychology will not always be rated as less scientific than physics (see further Banaji et al., 1993, p. 279).

As in most social psychology experiments, in the present research participants were presented with a rather simple target stimulus. The stereotype-relevant category (gender) could be observed without great interference from other possible social categorizations. The stereotype-relevant traits and exemplars presented during the priming stage were chosen to be gender-specific; they included a gender code. The subsequent stories participants read also included a gender code through the name of the protagonist (Paul or Paula, Donald or Donna). In their daily lives, however, social perceivers are exposed to individuals and groups that can be categorized in a multitude of ways (Macrae, Bodenhausen, & Milne, 1995; Smith & Zarate, 1992). A given person may be a woman, middle-aged, white, European, a lawyer, a mother, a Chicago Bulls fan, and the list may go on. Some of these possible categorizations are physically marked (e.g., race, gender, age), some of these are visually less obvious (e.g., occupation, nationality, sports preference). Kunda and Thagard (1996) recently noted that there is hardly any research on how one chooses among these categorizations. An implication of our research seems to be, however, that whether the social category ‘‘mother’’ or ‘‘lawyer’’ or ‘‘white’’ will guide interpretation and judgment of a particular female target will be a function of the fit between, on the one hand, each of these categories and, on the other hand, the knowledge that is accessible at the time of impression formation (cf. Oakes, 1987). Thus, when trait information like ‘‘caring,’’ ‘‘warm,’’ and ‘‘attentive’’ is accessible, the category ‘‘mother’’ (rather than ‘‘lawyer’’ or ‘‘white’’) may best fit the accessible information and, therefore, this category is more likely to influence the impression formation process.

Although the stimulus material used in the present research was less complex and multifaceted than most of the persons we encounter in The Real World, the message of our research is simple and straightforward. In everyday life, there are countless ways in which stereotype-relevant information is continuously made available. Previous research has assumed that such information is most likely to have an impact on one’s thoughts and actions when it is salient, accessible, and applicable to the judgment task at hand. Furthermore, this research often tacitly assumed that stereotyping effects are both main effects (i.e., social category markers spontaneously activate the associated stereotype) and unidirectional effects (i.e., stereotyping yields assimilation). The discoveries of the present research demonstrate that different kinds or representations of stereotyped knowledge may, in fact, determine the extent to which, the direction in which, as well as the mechanism by which, such everyday exposures can influence our judgments of both specific persons and social groups.

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