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Awareness of the influence as a determinant of assimilation versus contrast

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Abstract

In the present study, subjects had to generate an evaluative judgment about a target person on the basis of his behaviour that had both positive and negative implications. In a previous phase of the study that was ostensibly unrelated to the judgment task, the relevant trait categories were primed. Subsequently, half of the subjects were reminded of the priming episode. Consistent with earlier research (e.g. Lombardi, Higgins and Bargh, 1987; Newman and Uleman, 1990) that used memory of the priming events as a correlational measure, a contrast effect was found under the 'reminding' condition and assimilation resulted when subjects were not reminded of the priming episode. This pattern of results is interpreted as the consequence of corrective influences.

INTRODUCTION

The accessibility of relevant information has an important function at different stages of social judgment (for a review, *cf.* Strack and Martin, 1987). First, it influences the interpretation of ambiguous information. Higgins, Rholes and Jones (1977) demonstrated that ambiguous behaviours were categorized on the basis of trait infor-

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mation whose accessibility had been experimentally increased in an unrelated context. Similar results were obtained by Srull and Wyer (1979, 1980). Second, the accessibility of information affects the formation of a judgment. Strack, Schwarz and Gschneidinger (1985), for instance, found that subjects' judgments of happiness and satisfaction were based on information about specific life events that had been made accessible. Similarly, Strack, Martin and Schwarz (1988, see also Schwarz, Strack and Mai, 1991) observed higher correlations between general and specific judgments of well-being when the accessibility of the specific information was increased.

The findings reported so far referred to assimilation effects such that the interpretation or judgment is influenced in the direction of the implications of the accessible information. However, there is also evidence for contrast effects, that is the activated information influences interpretations and judgments in the opposite direction. The first set of evidence refers to the relation between the accessible information and features of the judgmental object. Herr and his collaborators (Herr, Sherman and Fazio, 1983; Herr, 1986) found contrast effects on trait ratings if the accessible context information was extremely different from the target information. Similarly, Strack *et al.* (1985) found contrast effects on judgments of current subjective well-being when the accessible information was not representative for the judgment, that is when subjects had to think about positive or negative life events of the distant past instead of events that happened in the present.

A second set of evidence comes from studies that focus on the priming episode itself, that is, on the way the context information is activated. Martin (1985, 1986), for instance, argued that context information leads to contrast if it is perceived as distinct from the target and as a potential source of judgment bias. In those studies, the context information was presented in a non-disguised manner and the direction of the priming effect depended on whether the priming task was completed or uncompleted. He observed assimilation effects in the interpretation of ambiguous behavioural information if subjects were interrupted in the task that activated the relevant information. However, if they were led to feel that they had completed the priming task, a contrast effect was obtained. This was the case although both groups were presented with the same information.

Strack *et al.* (1988; replicated by Schwarz *et al.*, 1991) found that the assimilation effect that was produced by asking a domain-specific question prior to a general question about subjective well-being was reversed if the two questions were placed into a common conversational context, even though they were otherwise identical. Consistently, Ottati, Riggle, Wyer, Schwarz and Kuklinski (1989) found that answering specific attitude questions had a positive influence on subsequent general attitude questions if the two questions were separated by more than five unrelated items whereas a negative effect was observed if the two questions were asked in immediate succession.

Although there exists no general theory that allows to predict when one would expect assimilation and when contrast, some features that are associated with the priming episode have been identified as mediators. On the basis of these observations, Martin (1985, 1986) has pointed out that the use or disuse of information depends on whether the accessible information is associated with the episode of its activation. Lombardi *et al.* (1987) argued that the consciousness of the priming event determines

assimilation or contrast. More specifically, these authors assume that being unconscious of the priming event at the time of judgment leads inevitably to assimilation effects whereas consciousness of the priming episode may allow subjects to either assimilate or to contrast judgments to the most accessible information. Lombardi *et al* (1987) base their conclusion on experimental findings showing that subjects who recalled the priming sentences were more likely to show contrast whereas subjects who were not able to recall these sentences were more likely to show a contrast effect. Similar effects were obtained by Newman and Uleman (1990) who found that assimilation versus contrast effects were a function of the memory for the priming stimulus.

While they differ somewhat in the predicted consequences, Martin (1985, 1986), Lombardi *et al.* (1987), and Newman and Uleman (1990) seem to agree that awareness of the priming episode at the time of later use of the primed dimension in judgment is a necessary precondition for a contrast effect to occur. This reasoning is also supported by Jacoby and his collaborators (for a recent survey of his work, see Jacoby, 1991) who found that assessments of fame are often based on the subjective familiarity with a person's name which may be increased by its previous exposure. However, the more likely it is that judges are aware of this extraneous influence, the more the influence of previous exposures should be decreased. In one study, Jacoby, Kelley, Brown and Jasechko (1989) discovered that previous reading of non-famous names increased judgments of fame. In contrast, the frequency of such judgments was reduced, when subjects' attention was directed toward the prior exposure by being asked to recognize the names before they made the fame judgment.

Thus far, the empirical evidence for the contention that awareness of the priming episode is a condition for contrast is either indirect (Martin, 1985, 1986), correlational (Lombardi *et al.*, 1987; Newman and Uleman, 1990) or, derived from a different experimental paradigm (Jacoby *et al.*, 1989). Martin's 'completed/uncompleted task' procedure does not vary the memory for the priming episode but an aspect of the activation task. Thus, his results do not directly address these memorial processes. Lombardi *et al.* (1987) as well as Newman and Uleman found a relation between the memory for the prime and the direction of its influence on the judgment. However, they did not manipulate the memory in the experiment and it is possible that contrasting judgments require a more extensive processing of the relevant information and may subsequently increase the memorability of the context information. Finally, Jacoby *et al.*'s experiment is not about semantic priming in the sense that the activation of a conceptual category influences the interpretation of ambiguous information (e.g. Higgins *et al.*, 1977; Srull and Wyer, 1979, 1980). Rather, it deals with the generation of a subjective experience as a basis of subsequent judgments. Therefore, a direct experimental manipulation of the memory for the priming event seems desirable in the context of the present discussion. This was attempted in an experiment in which subjects were subtly reminded of the priming episode during which the relevant information had been activated before they had to interpret and evaluate the behaviour of a target person. This behaviour was a dishonest act to help a friend in need and could therefore be interpreted both as 'friendly' and 'helpful' or as 'dishonest'.

METHOD

Overview

Subjects were asked to participate in a study on perception and cognition in which they had to solve a series of different cognitive tasks. In the priming task, which was analogous to the procedure used by Higgins *et al.* (1977), tones were associated with the prime words and subjects had to classify the tones and to write down the associated words. After an interpolated distractor task, subjects heard an ambiguous story and rated the main character of the story. Half of the subjects, however, were asked questions that reminded them of the priming episode before the story was presented, whereas the remaining subjects were not.

Procedure

Subjects

Twenty-four female and 59 male students participated in the experiment. Subjects had been recruited for a 'study on perception and cognition' and they expected to solve a series of verbal and numerical tasks. Ostensibly, part of the experiment was a test of the effects of tape-administered experimental instructions. Subjects were paid DM5.00 (approximately $2.80 at the time) for their participation.

Priming procedure

Upon arrival, each subject was handed a small tape recorder (a Walkman) with a tape, earphones, and envelopes containing the answer sheets for the different tasks. All instructions were given on the tape without the experimenter intervening at any point. In the introduction it was explained that subjects were to participate in three different tasks that had to do with 'perception and thinking'. The first task purportedly examined the influence of information processing on auditory perception, the second consisted of numerical operations, and the third task was about the content of verbal information.

The first task consisted of 10 sets. Each tone was preceded and followed by a word. Subjects were told to indicate on their answer sheet whether the tone was high or low by marking the respective category and to write down the word that preceded the tone. For the third, fifth, seventh and eighth set the preceding word was an adjective. In the positive prime condition, the words were synonyms of 'friendly/helpful' ('kameradschaftlich'); in the negative prime conditions, the words were synonyms of 'dishonourable'. The words that followed the tones were sound- and music-related adjectives and nouns (e.g. loud, symphony). Unrelated nouns (e.g. street, house, etc.) served as filler words.

Distractor task

In the subsequent distractor task, subjects were given a list with 104 two-digit numbers on which they had to circle those that were divisible by 7. Then subjects had to put the answer sheet back into the envelope.

Reminding manipulation

For the subjects assigned to the reminding condition, the second envelope contained four questions that referred to the first (priming) task. They were asked to remember the acoustical task and to answer the following questions:

1. 'Were you able to discriminate the two types of tones?'
2. 'The first word of each set was either an adjective or a noun. Do you remember how many adjectives and how many nouns there were?' Subjects were to write down the number of adjectives and the number of nouns.
3. 'Are you able to remember which adjectives were associated with a high tone?' (9-point rating scale from 1 ('not at all') to 9 ('very well').
4. 'Are you able to remember which nouns were associated with a high tone?' (9-point rating scale from 1 ('not at all') to 9 ('very well').

Subjects were given 40 seconds to complete this task. Subjects assigned to the no-reminding condition did not answer these questions.

Impression formation task[1]

The final task was described as being about person perception. Subjects were asked to listen carefully and to abstain from taking notes. They were then presented a story that described a student named Thomas who worked as a research assistant. He had admission to all faculty offices and desks, worked closely with all the staff and was on good terms with all of them. Thomas' friend and roommate, who had failed an exam he was now to repeat, was afraid of another failure. This would upset his parents and leave him with only one more chance before he would have to quit. Therefore, he asked Thomas to provide him with some exam questions. Thomas agreed and gave in to his friend's request. Thus, Thomas' behaviour can be interpreted to be both 'helpful' and 'dishonest'.

Dependent measures

After listening to the story, subjects were asked to answer the questions in the remaining envelope. First, subjects had to provide their global evaluation of the target by indicating their liking for Thomas on a 9-point rating scale on which '1' was labelled 'very likeable' and '9' 'very dislikeable'. Then, subjects described Thomas in an open answer format (one sentence or less). After this, they rated him on a scale whose endpoints corresponded to the information that was activated in the priming task (1: 'friendly/helpful'; 9: 'dishonest'). Finally, the valence of the 'open' person descriptions was later rated by two independent judges.

Concluding the experiment, subjects were questioned about possible suspicions. No spontaneous suspicions were mentioned. Two subjects who referred to the hypothesized influence after specific probing were excluded from the analysis. Inclusion of these data, however, did not decrease the statistical significance of the results.

[1] The stimulus material is a modified adaption of the material used by Carlston (1980).

RESULTS

The hypothesis that the direction of the priming effect is mediated by the awareness of the priming events should manifest itself in a statistical interaction between the valence of the priming stimulus and the reminding manipulation. Thus, the evaluation of the target person should be assimilated toward the implication of the context stimulus when subjects were not reminded, and the evaluation of the target person should go in the opposite direction when subjects were reminded of the priming episode.

The data were recoded such that a higher score represents a more positive evaluation and subjected to a 2 (positive versus negative valence of the priming stimuli) $\times 2$ (reminding versus no reminding on the priming episode) MANOVA with all three dependent variables (i.e. likeability, friendliness/helpfulness versus dishonesty, rated valence of open descriptions). The relevant interaction was significant, $F(3,75) = 4.06$, $p < 0.01$, whereas the two main effects were not reliable (valence: $F(3,75) = 1.50, p > 0.20$; reminding: $F(3,75) = 1.30, p > 0.25$).

Table 1. Ratings of the target person

Reminding of the priming episode	Valence of the activated information (i.e. 'friendly/helpful' versus 'dishonest') Positive	Negative
(a) Ratings of likeability		
No reminding	6.10 ($n = 20$)	4.95 ($n = 20$)
Reminding	5.60 ($n = 20$)	6.95 ($n = 21$)
(b) Specific trait ratings ('dishonest' versus 'friendly/helpful')		
No reminding	6.15 ($n = 20$)	4.60 ($n = 20$)
Reminding	5.65 ($n = 20$)	6.91 ($n = 21$)
(c) Rated valence of 'open' characterizations		
No reminding	2.87 ($n = 20$)	1.85 ($n = 20$)
Reminding	2.55 ($n = 20$)	2.57 ($n = 21$)

Scores were reversed such that higher numbers represent more positive evaluations.

Subjects' ratings

Univariate analyses revealed consistent effects for all relevant dependent variables. From Table 1a it can be seen that subjects who were not reminded of the priming episode rated the target person as more likeable when the primes had a positive valence ($M = 6.10$) than when the primes were negative ($M = 4.95$), $t(78) = 2.12$, $p < 0.04$. Conversely, when the subjects were reminded of the event, a positive prime resulted in more negative likeability ratings ($M = 5.60$) than a negative prime ($M = 6.95$), $t(78) = 2.50$, $p < 0.02$. There was a borderline significant main effect for 'reminding' in this univariate analysis, $F(1,77) = 3.78$, $p < 0.055$, which was qualified by the predicted interaction, $F(1,77) = 10.50$, $p < 0.002$.

For the specific 'dishonest' versus 'friendly/helpful' ratings, the results reflect the pattern of the likeability pattern. As Table 1b shows, there was an assimilation effect when subjects were not reminded of the priming episode and a contrast effect

when they were reminded. The ANOVA yielded no main effects, F's < 1, but only the predicted interaction $F(1,77) = 4.08, p < 0.05$.

Open responses

Subjects' open characterizations of the target person were rated by two independent judges who were blind to the experimental conditions. The ratings were given on a 5-point scale on which the endpoints were labelled 'description was negative' (1) versus 'description was positive' (5). The inter-rater reliability was sufficiently high, $r = 0.93$. Table 1c shows the average ratings of the two judges. From the means, it is apparent that the priming manipulation affected the valence of the open judgments only when subjects were not reminded of the priming episode. That is, the assimilation effect seems to replicate under the predicted condition, whereas the contrast effect does not. The statistical analysis revealed a marginally significant main effect for 'valence', $F(1,77) = 3.08, p < 0.08$, which is again qualified by a marginally significant interaction, $F(1,77) = 3.34, p < 0.071$. Individual contrasts between all cell means only approached significance for comparisons with the 'no reminding/ negative prime' cell, while conventional significance levels were only obtained when the two priming conditions without reminding were compared, $t(77) = 2.52$, $p < 0.014$.

DISCUSSION

The present results demonstrate that directing subjects' attention to the source of influence led to a correction of their judgment. Like most previous priming studies in social cognition (e.g. Higgins *et al.*, 1977; Srull and Wyer, 1979, 1980), we found that trait judgments based on ambiguous behaviour were assimilated toward the relevant trait categories if they were presented in a preceding experiment that was ostensibly unrelated to the subsequent judgment task. This, however, was only the case if subjects' attention was not directed toward the source of this influence. If subjects were reminded of the priming event, no assimilation effect was obtained. Under such conditions, a contrast effect in the judgment task resulted. This reversal of influence was not predicted but is consistent with studies using a categorical priming paradigm in which subjects remembered the priming stimuli (Lombardi *et al.* 1987, Newman and Uleman, 1990), studies in which 'subtle' and 'blatant' priming procedures were pitted against each other (Martin, 1986), and Jacoby *et al.*'s (1989) findings on recognition and judgment.

Because they were obtained in a semantic priming task in which the memory of the priming episode was experimentally manipulated, the present results go beyond the previous observations and provide strong support for a causal relation between awareness of the priming episode and contrast effects in social judgment. Although different models have been proposed to account for the phenomenon, intentional correction seems to be a plausible possibility. To be aware of a contextual influence allows cognitive operations that modify its impact on the judgment. Thus, if an information becomes accessible through a situational factor unrelated to the judgment, the person may not use this information and 'exclude' (*cf.* Schwarz and Bless, 1992) from judgment formation. The observation that remembering the priming sti-

mulus leads to contrast effects in categorical priming studies whereas mere reduction of the influence was observed in studies on fame judgments raises the issue that different mechanisms of correction may operate in different judgment situations (see Jacoby and Kelley, 1987; Strack, 1992).

One possibility is that subjects recompute the judgment (*cf.* Strack, 1992; Wyer and Srull, 1989) by 'disregarding' the inappropriate information. Such a *correction by recomputation*, however, is only feasible if the corrected judgment can be based on other information that is not contaminated. Otherwise, judges may engage in an alternative way of correction and adjust their overt response by compensating for the influence. That is, they may change their answer in the opposite direction of the presumed effect. Such a *correction by adjustment*, however, presupposes not only that judges are aware of the influence. Moreover, they must have a conception of its direction and its strength (*cf.* also Jacoby and Kelley, 1987).

In categorical priming studies, it is likely that judges utilize intuitive theories about the influence of the valence of the prime and adjust their response in the evaluatively opposite direction. In doing that, an overcompensation may manifest itself in a contrast effect. In this context, it should be recognized that in the reported study, the correction was more pronounced under the negative than under the positive prime condition. The same asymmetry was also found in a series of studies conducted by Wyer and his associates (Wyer and Budesheim, 1987; Wyer and Unverzagt, 1985). In these studies, subjects were explicitly instructed to disregard certain behavioural information in judging relevant traits of the target person. The correction effect was always greater when the critical information was negative than when it was positive. The authors suspect (*cf.* also Wyer and Srull, 1989) that this consistent asymmetry is the result of subjects' assumption that on *a priori* grounds, people are located on the positive side of an evaluative response scale. Thus, subjects may presume to be less influenced by the positive information than by the negative information. As a consequence, a stronger adjustment seems warranted if the impact of a negative information needs to be corrected.

This asymmetry has also been supported by findings from more applied research settings. Hatvany and Strack (1980) found that juror subjects in a simulated court trial who had been informed that an initially presented piece of evidence was actually invalid corrected their verdict ratings more if the discredited evidence implied the defendant's guilt than when it implied her innocence. In fact, jurors who had originally seen the incriminating evidence found the defendant less guilty after the discrediting than jurors who had not been presented with this evidence at all. Similar findings come from a courtroom study by Shaffer and Case (1982), in which part of the subject jurors received information subtly implying that the defendant was homosexual. This information had no effect on verdict ratings by highly dogmatic jurors. However, for subjects who were low in dogmatism, a rebound effect was observed. That is, subjects judged the defendant in a more lenient fashion if the defendant was a homosexual than if he was a heterosexual. This suggests that judges who were concerned about being biased by a negative stereotype (*cf.* also Devine, 1989) overadjusted their response.

Although it may not be possible to recognize directly which correctional strategy was employed, there exists a diagnostic consequence. Corrections by recomputation change the internal representation of the judgmental target. That is, if the judgment is recomputed on the basis of different information, the resulting representation

should affect all judgments that are based on that representation. If, however, the correction is accomplished by adjustment, the internal representation of the target will not be changed. Although the original influence will be compensated on the focal dimension of judgment, it will continue to manifest itself in other dimensions. That is, while related judgments will be affected by the original influence, they will survive a correction by adjustment. First evidence suggests that this may be the case (*cf.* Kübler, 1991).

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