

Communication effects on memory and judgment

ALEXANDER TODOROV*
New York University, USA

Abstract

The present research explored the mechanisms of judgmental and memory correction for communication influence. Participants described a target person to an addressee who either liked or disliked the target. Participants' descriptions were more positive when the addressee liked the target than when the addressee disliked the target. Mediation analyses showed that the effect of the addressee's attitude on judgment and memory was mediated by its effect on participants' descriptions. Participants' evaluative judgments of the target were influenced by the addressee's attitude only when the attitude was presented subtly. When the presentation of the attitude was blatant, participants used the attitude as a situational inducement of their communication behavior and corrected their judgments. Both participants' recall and false recognition of personality traits were evaluatively consistent with the addressee's attitude regardless of its presentation. However, mediational analyses suggested that participants in the blatant presentation condition engaged in an insufficient memory correction by discounting the evaluative implications of their descriptions. Copyright © 2002 John Wiley & Sons, Ltd.

How we describe a person to a listener depends not only on what we know about the person but also on what we know about the listener (Higgins, 1981; Todorov, Lalljee, & Hirst, 2000). Social psychologists had an early interest in the effects of communicative shifts triggered by the audience on the speaker's subsequent cognition. These studies (Manis, Cornell, & Moore, 1974; Schramm & Danielson, 1958; Zimmerman & Bauer, 1956) demonstrated that communicators remembered information congruent with the audience attitude better than incongruent information. However, changes in the communicators' judgments were not demonstrated.

A more recent paradigm has consistently produced effects on both judgments and memory (Higgins & McCann, 1984; Higgins & Rholes, 1978; Higgins, McCann, & Fondacaro, 1982; McCann & Hancock, 1983; McCann, Higgins, & Fondacaro, 1991; for reviews see Higgins, 1992; McCann & Higgins, 1992). In the 'communication game' paradigm, people are told 'off-hand' that their prospective addressee either likes or dislikes a target person they are going to read about and describe so that the addressee would be able to identify the person described. Their descriptions are more positive when told that the addressee likes the target person and more negative when told that

*Correspondence to: Alexander Todorov, Department of Psychology, New York University, 6 Washington Place, 7th floor, New York, NY 10003, USA. E-mail: att206@nyu.edu

she dislikes him. Moreover, both their liking judgments and memory about the target person are influenced in the direction of the description.

This paper explores the mechanisms of judgmental and memory correction for communication influence. The study was based on the 'communication game' paradigm. Although this paradigm has consistently produced effects on both memory and judgments, none of the previous 'communication game' studies manipulated the salience of the communication influence (i.e. the audience attitude). In a different explanation-giving paradigm, Todorov, Lalljee, and Hirst (2000) showed that the communicator's judgment of a described person was influenced when the audience attitude was presented subtly but not when this attitude was presented blatantly. Todorov et al. (2000) argued that when people suspect communication influence, they correct for it in their judgments. Whereas the mechanism of judgmental correction can be relatively simple (e.g. contrast the judgment away from the direction of the influence), the mechanism of memory correction can be complicated. For instance, communicating information is a type of rehearsal and rehearsed facts are more likely to be remembered (Pasupathi, Stallworth, & Murdoch, 1998). Although it is possible to retrieve facts that were not recalled initially given appropriate cues (Anderson & Pichert, 1978; Hasher & Griffin, 1978), it might not be possible to recover the original information if the information is encoded in a biased fashion. This is especially likely in cases such as in the 'communication game' paradigm where the information is ambiguous and the addressee's attitude can serve as a cue biasing the interpretation of the information.

Although the present study follows the logic of the studies conducted by Todorov et al. (2000), it differs in three respects from these studies. First, the latter studies did not include measures of memory. Second, the communication situations are different. In the Todorov et al. studies, the communicator had a different communication goal than the addressee. For example, the communicator had to take into account situational factors to explain the behavior of a target person to a disciplinarian addressee. In this case, the communication requires going *against* the attitude of the addressee. In contrast, in the present study and the 'communication game' paradigm in general, the communicator has to convey the information accurately and the communication requires going *with* the attitude of the addressee. These are clearly different communication situations. Conceptually replicating Todorov et al.'s findings would support an explanation of the communication effects on judgments in terms of general correction mechanisms rather than in terms of specific features of the communication situations. Finally, the communication material used by Todorov et al. consisted of a mixture of facts which could be differentially weighted in one's explanation. In the present study, the communication material consisted of evaluatively ambiguous statements. Using ambiguous information is important, because it allows to test for genuine biases in memory. For example, if the original statements are a mixture of positive and negative facts, one can selectively retrieve mainly positive facts. In the case of ambiguous statements, the positivity or negativity of the retrieved information is a result of the communicator's interpretation of the material.

JUDGMENTAL CORRECTION IN COMMUNICATION SITUATIONS

One possible reason for the lack of simple relationship between audience and communicators' judgments comes from an early study. Newson and Czerlinsky (1974, Experiment 4) argued that people have a correction theory for attitude shifts induced from communication demands. In their experiment, participants were provided with information about the attitudes of two persons and told that the person with a less extreme attitude communicated her attitude to the other person. Participants were also told that the communicator had known about the other person's attitude before the actual

communication took place. Their task was to infer the real attitude of the communicator. Participants corrected for the communication demands, displacing their estimate of the person's true attitude away from the audience attitude. Presumably, they assumed that the communicator shifted her attitude toward the audience and corrected for this shift.

Although Newton and Czerlinsky (1974) did not explicitly test the correction theory notion, recent studies have provided evidence that people have specific theories of bias, which guide their judgmental correction (Wegener & Petty, 1999; Wilson & Brekke, 1994). But if people have a theory of communication 'bias' why don't they correct for effects on judgments in the 'communication game' paradigm? The findings from this paradigm illustrate an important point: people do not initiate a correction process when they do not perceive a bias (cf. Wegener & Petty, 1995; Wilson & Brekke, 1994). Two features of this paradigm reduce the probability of such perception. First, the information about the target person is ambiguous. Under conditions of ambiguity, people implicitly use situational cues, e.g. an addressee's attitude, to disambiguate a target's behavior (Trope, 1986; Trope & Alfieri, 1997; Trope, Cohen, & Alfieri, 1991) and may not recognize such cues as biasing. Second, the information about the addressee's attitude is subtly presented in an off-hand manner (see McCann et al., 1991 for a different experimental setup). As was noted, Todorov et al. (2000) have shown that communicators' judgments are influenced when the audience attitude is presented subtly but not blatantly.

As early as 1974, Newton and Czerlinsky suggested that communication shifts are 'automatic rather than premediated' (1974, p. 837). Moreover, they showed that there is no relationship between awareness of communication shift and amount of shift (Newton & Czerlinsky, 1974, Experiment 1; see also Gergen & Wishnov, 1965). Todorov et al. (2000, Experiment 2) also showed that the effect of the addressee's attitude on communication was the same for participants who were specifically instructed to take into account the addressee's attitude and participants who were not given any specific instructions.

These findings suggest that features of the situation can affect communication independently of the salience of these features. However, the salience of these features is critical for the process of judgmental correction. For example, subtly presented features are less likely to be perceived as biasing the communication and, consequently, communicators should be less likely to engage in correction processes. In the 'communication game' paradigm, the addressee's attitude should affect the description of the target person independent of the attitude presentation. Importantly, this description serves as a basis for subsequent judgments and recollections. This line of reasoning is supported by path analyses (Higgins, 1992; Higgins & McCann, 1984; McCann et al., 1991) which show that the effect of the addressee's attitude on the communicator's memory and judgments is mediated by the description of the target person. However, when the influence is blatant, participants could use the attitude as a situational inducement of their communication behavior and contrast their judgments away from the addressee's attitude. This process could result in a null effect of the attitude on judgment because the attitude's direct effect on judgment and its indirect effect via the description of the target person act in different directions and can cancel each other out. These assumptions are tested in mediational analyses.

MEMORY CORRECTION IN COMMUNICATION SITUATIONS

The communicated information serves as a basis for both judgments and reconstruction of the original information. However, in contrast to the process of judgmental correction where judgments can be simply adjusted by contrasting them away from contextual factors (e.g. the valence of the addressee's

attitude) affecting the communication behavior, in the case of memory correction such a process is insufficient. To correct for effects of communication on memory, one needs to discriminate between the statements in the original information and their interpretation in the communicated information. As was noted, this could be an especially difficult process when the original information is ambiguous. For example, when people are presented with an ambiguous figure and a label suggesting a specific interpretation of the figure, they are likely to remember a biased version of the figure consistent with the label (Carmichael, Hogan, & Walters, 1932). Introducing a substantial time delay between the act of communication and the act of recounting of the information can further decrease the probability of memory correction. There is also evidence that people seem to overestimate the reliability of their memory (Trope, 1978). Although all these factors suggest that memory correction would be less likely than judgmental correction in the 'communication game' paradigm, it is possible that participants who suspect a communication bias may attempt to correct their memories by discounting the evaluative implications of their descriptions of the target person.

THE PRESENT RESEARCH AND HYPOTHESES

The experiment was modeled after the 'communication game' studies with an additional condition, which was designed to make the communication influence explicit. The addressee's attitude was presented either subtly in an off-hand manner or blatantly. As in previous 'communication game' studies, participants should describe the target person more positively when told that the addressee likes him than when told that the addressee dislikes him. Replicating Todorov et al.'s (2000) findings, this effect should be independent of the presentation of the addressee's attitude.

Replicating the 'communication game' findings, participants who were told that the addressee liked the target person should like him more than participants who were told that the addressee disliked the target person. However, the communication effect on judgment should be qualified by the presentation of the addressee's attitude. In the subtle presentation condition, participants should not suspect a bias and, consequently, should not initiate a correction process. That is, the 'communication game' findings should be replicated only in the subtle presentation condition. In the blatant presentation condition, participants should suspect a bias and should correct their judgments for the communication influence. Specifically, they should adjust their judgments in a direction opposite to the addressee's attitude. This finding would conceptually replicate Todorov et al.'s (2000) findings.

In the case of memory, participants who were told that the addressee liked the target person should recall more positive information than participants who were told that the addressee disliked the target person. If participants are able to correct for communication effects on memory, this effect should be weaker in the blatant presentation condition. On the other hand, if participants do not engage in a memory correction but do engage in a judgmental correction, one consequence would be that the judgment and memory measures should be more weakly related in the blatant than in the subtle presentation condition. This novel prediction is tested with correlational analyses.

All previous 'communication game' studies used recall measures of memory. In addition to the recall measure, this study included a recognition test. Participants' recall is scored in terms of distortions of the original ambiguous information about the target person. Hence, the main interest is in the use of positive or negative trait-like interpretations of the ambiguous descriptions. An alternative to recall is a recognition test which includes the personality traits of interest. Finding false recognition of traits consistent with the valence of the addressee's attitude provides more focused evidence for the hypothesis of communication effects on memory.

In the 'communication game' paradigm, participants are presented with evaluatively ambiguous behavioral information (e.g. a behavior which can be interpreted either as adventurous or as reckless). If people engage in spontaneous trait inferences when presented with behavioral information (Newman & Uleman, 1989; Todorov & Uleman, 'Spontaneous trait inferences are bound to actors' faces: Evidence from a false recognition paradigm', submitted, 2001; Uleman, Newman, & Moskowitz, 1996), then their later exposure to the traits, which were already inferred, should be experienced as familiar (Jacoby, Kelley, & Dywan, 1989). In the context of a recognition test, participants may misattribute the source of traits familiarity to the original description of the target. Importantly, in the case of evaluatively ambiguous information, the valence of the addressee's attitude can affect the participants' trait inferences. If this is the case, participants who were told that the addressee liked the target person should falsely recognize more positive personality traits than participants who were told that the addressee disliked the target. The opposite pattern of false recognition should be revealed about negative personality traits. Participants who were told that the addressee disliked the target should falsely recognize more negative traits than participants who were told that the addressee liked the target. Finally, if participants engage in a memory correction, this pattern should be attenuated in the blatant presentation condition.

The recognition test also included positive and negative traits which were not applicable to the target description, and non-trait words which were matched with previously presented non-trait words on frequency, length and part of speech. If people infer traits from the ambiguous behavioral information, their rate of false recognition of traits applicable to the ambiguous descriptions should be higher than their rate of false recognition of traits inapplicable to the behavioral descriptions.

METHOD

Participants

Forty-eight students, 18 males and 30 females,¹ from the New School for Social Research, New York, volunteered for the study and were paid for their participation. Two participants did not believe the cover story of the experiment and one participant did not return for the second experimental session. These participants were excluded from the analyses and replaced with new participants. Participants were assigned to the experimental conditions on a random basis.

Stimulus Material

The construction of the stimulus material was based on the previous 'communication game' studies (Higgins & Rholes, 1978; Higgins, Rholes, & Jones, 1977; Sedikides, 1990). All participants read an essay describing a student, Donald, that consisted of seven ambiguous descriptions constructed to elicit positive or negative trait labels with equal likelihood. Because the previous studies showed that the experimental effects are stronger for ambiguous material than for positive or negative material, only ambiguous descriptions were used. All of them were well pretested in previous studies (Higgins & Rholes, 1978; Higgins et al., 1977; Sedikides, 1990).

Eleven pretest participants read the stimulus information and rated the target, Donald, on eight 7-point scales anchored to the positive and negative trait interpretations of the ambiguous descriptions.

¹In both studies, male and female participants were distributed in the same proportion for each experimental cell. Because gender did not interact with any of the factors in the subsequent analyses, the gender data are not discussed in the paper.

For instance, one of the descriptions was: 'A lot of people enjoy Donald's humor. He is in the habit of making jokes out of the blue. Often times at parties his humor is quick to address the faults that people have or the mistakes that they have made.' The two alternative interpretations of Donald's behavior were 'witty' and 'sarcastic.' The rest of the descriptions were related to the following dimensions: persistent/stubborn, cultivated/artificial, self-confident/conceited, thrifty/stingy, independent/alooof, adventurous/reckless. The range of the means for the descriptions was from -0.36 to 1.0 on a 7-point scale, from -3 to $+3$, with a range of standard deviations from 1.34 to 2.21 . The participants' ratings were consistent with the previous pretesting of the descriptions as ambiguous.

Recognition

The recognition test included 28 words presented in the stimulus description of Donald. Seven positive and seven negative traits, which were applicable to the ambiguous descriptions but were not presented in the original stimulus material, were included in the recognition test. The seven pairs of positive and negative traits included in the recognition test were the following: daring/reckless, self-confident/self-important, cultivated/snobbish, thrifty/tightfisted, amusing/sarcastic, persistent/stubborn, independent/alooof. In addition to these traits, seven positive and seven negative traits, which were not applicable to the ambiguous descriptions, were included in the test. These traits were selected from the Anderson norms (Anderson, 1968) and were matched with the applicable positive and negative traits on frequency (Francis & Kucera, 1982). The positive traits were tolerant, trustworthy, easygoing, relaxed, inventive, cooperative, and warm. The negative traits were ungrateful, disagreeable, irresponsible, envious, abusive, unadjusted, dishonest. Fourteen words matched with half of the hits on frequency, length, and part of speech were included. The final version of the yes/no recognition test consisted of 70 words: 28 actually presented non-trait words, 14 control non-trait words of the actually presented words, 14 personality traits applicable to the ambiguous descriptions, and 14 personality traits non-applicable to the ambiguous descriptions. The order of the words was randomized. The only constraint was that personality terms denoting the same trait but with different valence connotations never appeared on the same page of the recognition questionnaire.

Procedure

The study was ostensibly about interpersonal perception and communication. Upon arrival, each participant was introduced to a confederate and told that the confederate is a member of a group of students whose personalities and interpersonal relations were studied during the last year. They were told that they are going to read about another student, a member of the same group, and later describe that student to the confederate. Then, each participant was taken to a cubicle and presented with a detailed instruction of the task. Participants were told that their task is to describe Donald so that the student they were introduced to, the confederate, would be able to identify him. They were also told that the performance of the confederate will be compared to a situation in which he had direct access to the behavioral information they are going to read. Then, participants were presented with the stimulus essay describing Donald.

In the beginning of the reading of the stimulus material, half of the participants were told in an off-hand manner that the confederate either likes or dislikes Donald (positive and negative attitude conditions). Specifically, the experimenter told the participant: 'By the way, we know from previous observations that X [the name of the confederate] seems to like/dislike Donald.' This was the replication condition of the original 'communication game' studies—subtle presentation of addressee attitude. The other half were told that previous research shows that describing a target person to an

addressee who either likes or dislikes him—depending on the attitude condition—in a positive or negative way facilitates the addressee's identification of the target—blatant presentation of addressee attitude. Because the experimenter is interested in this effect, participants were asked to use the information about the addressee's attitude in their descriptions of Donald. Specifically, in the positive attitude condition they were told to describe Donald positively, whereas in the negative attitude condition they were told to describe Donald negatively. Thus, the experiment was a 2 (addressee attitude: positive versus negative) \times 2 (presentation of addressee attitude: subtle versus blatant) between-subjects design.

After participants read the essay, they were asked to describe Donald in writing without mentioning his name. All participants were told that their descriptions would be read only by the confederate. After they finished with the writing, the descriptions were brought to the confederate. Then, participants were told that the first study was over and were presented with two reasoning problems. Initially, participants were recruited for participation in several different studies with one payment for all studies at the end. After participants worked on the reasoning problems, they were scheduled for a second experimental session two days after the first.

In the second experimental session, participants were reminded of the communication task from the first session and presented with the judgment, recall, and recognition tasks. In the judgment task, participants were asked to rate how much they liked Donald on an eleven-point scale ranging from -5 (*dislike very much*) to $+5$ (*like very much*). The recall and judgment tasks were counter balanced across conditions. No order effects were found for recall, but order interacted with addressee attitude marginally significantly for judgments, $F(1, 44) = 3.87$, $p < 0.056$, indicating that communicators' judgments were more extreme when the judgment task preceded the recall task. Because this interaction did not affect the overall pattern of the judgment results ($F < 1$ for the triple interaction of order, addressee attitude, and presentation of addressee attitude), it is not discussed further. The recognition task followed the judgment and recall tasks. At the end of the experiment, participants were asked to rate to what degree the addressee's attitude influenced their descriptions of the target person on a seven point scale, ranging from 0 (*not at all*) to 6 (*determined the style of the description*). Then, they were debriefed and paid.

Measures and Scoring

Two judges blind to the experimental condition scored the participants' descriptions of Donald on an eleven-point scale ranging from -5 (*extremely negative description*) to $+5$ (*extremely positive description*). The correlation between their scoring was sufficiently high, $r = 0.91$, $p < 0.001$. The average score of the two ratings was used in the subsequent analyses. Blind to their scoring of the participants' descriptions, they also scored the recall of the original information on an 11-point scale ranging from -5 (*extremely negative recall*) to $+5$ (*extremely positive recall*), $r = 0.81$, $p < 0.001$. The average score of the two ratings was used in the subsequent analyses.

Two other judges blind to the experimental conditions coded 10 randomly selected messages and recall protocols for their reproduction of the ambiguous descriptions from the original stimulus essay. Each of the eight ambiguous stimulus descriptions was scored as one of the following mutually exclusive categories: positively interpreted, negatively interpreted, neutrally reproduced, deleted. The range of inter-rater agreement for the participants' messages was above 0.84 and for the recall above 0.79. The rest of the descriptions were scored by one of the judges. A measure of the participants' evaluative interpretations of the ambiguous descriptions in their messages and recall was calculated by subtracting the negatively from the positively interpreted ambiguous descriptions and dividing this score by the total number of ambiguous descriptions reproduced.

Because the two different measures of the participants' messages and recall were highly correlated, $r(48) = 0.92$, $p < 0.001$ for messages and $r(48) = 0.89$, $p < 0.001$ for recall, and preliminary analyses on each measure showed that they yielded the same results, a composite score was created. The measure of the interpretations of the ambiguous descriptions was transformed into the metric of the extremity measure, the scale from -5 to $+5$, and then their average score was calculated. This score was used in all subsequent analyses.

RESULTS

Manipulation Check

Participants in the subtle presentation condition believed that their descriptions were influenced to a lesser extent ($M = 1.04$) than participants in the blatant presentation condition ($M = 2.58$), $F(1, 44) = 11.15$, $p < 0.002$, other F s < 1 . Fifteen participants (31.3%) believed that their descriptions were not influenced by the addressee's attitude at all (the zero response on the scale). Thirteen out of these fifteen participants were in the subtle presentation condition (54.2% for this group). An analysis of the response frequencies for both presentation conditions revealed the same pattern as the analysis of variance, $\chi^2(6) = 18.16$, $p < 0.006$. Participants in the subtle presentation condition responded in the lower end of the scale, indicating that they believed that their descriptions were either not influenced at all by the addressee's attitude or influenced to a lesser extent than the descriptions of participants who were told that the addressee's attitude was important for their task.

Descriptions, Judgments, and Recall²

Participants who were told that the addressee liked the target person described him more positively ($M = 1.76$) than participants who were told that the addressee disliked him ($M = -3.02$), $F(1, 44) = 94.99$, $p < 0.001$. No other effects were significant, $F < 1$ for presentation and $F = 1.56$, $p > 0.22$, for interaction of presentation and addressee attitude (see Table 1).

In the subtle presentation condition, participants who were told that the addressee liked the target person liked him more than participants who were told that the addressee disliked him (Table 1). The analysis revealed a significant main effect of addressee attitude, $F(1, 44) = 4.33$, $p < 0.043$. However, as predicted, this effect was qualified by a significant interaction of addressee attitude and presentation of addressee attitude, $F(1, 44) = 6.86$, $p < 0.012$. Analysis of simple main effects revealed that the difference between participants who were told that the addressee liked the target and participants who

²A study with the same procedures but a delay of 15 minutes between the communication and recall/judgment tasks was conducted. In this study, participants who were told that the addressee liked the target person provided more positive descriptions ($M = 0.81$) than participants told that the addressee disliked the target ($M = -0.94$), $F(1, 40) = 5.64$, $p < 0.022$. Participants who were told that the addressee liked the target person expressed more positive liking judgments than participants told that the addressee disliked him only in the subtle presentation condition. This was reflected in a significant interaction effect of addressee attitude and presentation of addressee attitude, $F(1, 40) = 6.67$, $p < 0.014$. Analysis of simple main effects revealed that the judgments of participants who were told that the addressee liked the target person significantly differed from the judgments of participants who were told that the addressee disliked the target in the subtle presentation condition, $F(1, 40) = 7.77$, $p < 0.008$, but not in the blatant presentation condition, $F < 1$. Participants who were told that the addressee liked the target person recalled more positive information ($M = 0.29$) than participants who were told that the addressee disliked him ($M = -0.18$), but this effect was not significant, $F = 1.04$, $p > 0.31$; other F s < 1 . The correlation between messages and recall was 0.70 , $p < 0.001$.

Table 1. Target descriptions, liking judgment, and recall as a function of addressee attitude and presentation of addressee attitude

Presentation of addressee attitude	Addressee attitude	
	Positive	Negative
Subtle		
Descriptions	1.67	-2.50
Liking judgments	1.83	-1.08
Recall	0.85	-1.14
Blatant		
Descriptions	1.85	-3.54
Liking judgments	0.00	0.33
Recall	0.89	-0.41

Note: All dependent variables were measured on an eleven-point scale ranging from -5, *dislike very much*, to +5, *like very much*.

were told that the addressee disliked the target was significant in the subtle condition, $F(1, 44) = 11.05$, $p < 0.002$, but that this difference was not significant in the blatant presentation condition, $F < 1$.

Participants who were told that the addressee liked the target person recalled more positive information ($M = 0.87$) than participants who were told that the addressee disliked him ($M = -0.77$), $F(1, 44) = 8.99$, $p < 0.004$, other $F_s < 1$. The participants' descriptions correlated significantly with their recall, $r(48) = 0.52$, $p < 0.001$. This effect was stronger for participants in the subtle presentation condition, $r(24) = 0.72$, $p < 0.001$. The correlation for participants in the blatant presentation condition was 0.38, $p < 0.068$. The difference between these two correlations was not significant.

Recognition

Of main interest was the question whether the valence of the addressee's attitude influences the participant's false recognition of traits. To check this hypothesis, the data were submitted to a 2 (addressee attitude) \times 2 (presentation of addressee attitude) \times 2 (positive versus negative traits) \times 2 (applicable versus non-applicable traits) mixed-subjects ANOVA with the latter two within-subjects factors. Participants falsely recognized more applicable than non-applicable traits, $F(1, 44) = 114.20$, $p < 0.001$, and more positive than negative traits, $F(1, 44) = 26.46$, $p < 0.001$. The analysis also revealed a significant interaction of valence and applicability of traits, $F(1, 44) = 10.99$, $p < 0.002$, indicating that the effect of higher false recognition of positive traits was stronger when the traits were applicable.

Most importantly, the analysis revealed a reliable interaction of addressee attitude and valence of traits, $F(1, 44) = 7.71$, $p < 0.008$. As shown in Table 2, participants who were told that the addressee liked the target person falsely recognized more positive traits (mean proportion = 0.40) than participants who were told that the addressee disliked the target (0.33). In contrast, participants who were told that the addressee disliked the target person falsely recognized more negative traits (0.24) than participants who were told that the addressee liked him (0.17).

The average hit rate or the probability of correct recognition of words from the original description was 0.56, whereas the probability of false recognition of non-trait words, which were matched with the words from the original description on length, part of speech, and frequency, was 0.10, $t(47) = 19.83$, $p < 0.0001$. The probability of false recognition of traits applicable to the target person was 0.44.

Table 2. Proportions of falsely recognized positive and negative personality traits as a function of addressee attitude, presentation of addressee attitude, and type of trait

Presentation of addressee attitude	Addressee attitude			
	Positive		Negative	
	Positive	Negative	Positive	Negative
Subtle				
Applicable	0.51	0.26	0.49	0.33
Non-applicable	0.24	0.01	0.11	0.08
All traits	0.38	0.14	0.32	0.18
Blatant				
Applicable	0.65	0.35	0.57	0.39
Non-applicable	0.19	0.06	0.11	0.19
All traits	0.42	0.20	0.34	0.29

In fact, the probability of false recognition of positive applicable traits was as high as the probability of correct recognition of previously presented words 0.56.³

One possible explanation of the participants' high rate of false recognition of applicable traits is that participants used these traits in their recall, which resulted in their false recognition of the traits. To rule out this explanation, the participants' recollections were checked for mentioning of the traits used in the recognition test. There were only eleven traits mentioned in these recollections by ten participants. In general, the number of falsely recalled traits accounted for only 3.6% of the falsely recognized traits. The same analysis for the descriptions showed that the number of traits used in the participants' descriptions of the target accounted for 13.2% of the falsely recognized traits.

Correlational Analyses of Relations between Memory Measures and Judgment

On both memory measures, evaluative extremity of recall and false recognition of traits, participants were influenced in the direction of the addressee's attitude. To check the relation between the participants' recall and false recognition of traits, a recognition score was calculated as the difference between the falsely recognized positive and negative traits divided by their sum. The same measure was separately calculated for applicable and non-applicable traits. The recognition score for all traits significantly correlated with the measure of the participants' recall, $r(48) = 0.36$, $p < 0.011$. Participants' recall was consistent with their false recognition of personality traits. Although the probability of false recognition of non-applicable traits was very low (0.12), the recognition score for these traits significantly correlated with the participants' descriptions of the target person ($r = 0.47$, $p < 0.001$), their liking judgments ($r = 0.31$, $p < 0.03$), and their recall ($r = 0.48$, $p < 0.001$), whereas the recognition score for the applicable traits did not correlate significantly with any of those measures.

As shown in Table 3, the correlations between judgment and memory measures in the blatant presentation condition were lower than these correlations in the subtle presentation condition. That was the case for both memory measures of recall and false recognition of non-applicable traits. The correlation between judgment and memory were significant in the subtle presentation condition but

³Such high rates of false recognition have been demonstrated in the list learning paradigm (Roediger & McDermott, 1995), in which participants study strong associates of target words and are later presented with the target words in a recognition test. For instance, participants study words such as 'bed', 'rest', 'awake', 'tired', etc. and then later are presented with a recognition test in which the target word 'sleep' is included. The high rate of false recognition of traits in this study strongly suggests that participants inferred personality traits from the behavioral descriptions of the target.

Table 3. Correlation of liking judgment with recall and recognition measures of memory as a function of presentation of addressee attitude

	Presentation of addressee attitude	
	Subtle	Blatant
Recall	0.68*	0.12
False recognition of traits	0.59*	0.24

* $p < 0.01$.

Notes: The false recognition score was calculated as the difference between the falsely recognized positive and negative non-applicable traits divided by their sum.

non-significant in the blatant condition. The difference between the recall/judgment correlations in the two presentation conditions was significant, $z = 2.40$, $p < 0.02$. The difference between the recognition/judgment correlations did not reach significance, $z = 1.47$, $p = 0.14$. In both conditions, the false recognition score for applicable traits did not correlate with the liking judgment, $r = -0.03$ for the subtle condition and $r = -0.11$ for the blatant condition.

Mediational Analyses

As can be seen from Figures 1 and 2, in both presentation conditions the addressee’s attitude had a strong and practically identical effect on the communicator’s description of the target person. Moreover, in the subtle presentation condition (Figure 1), the effect of the addressee’s attitude on the communicator’s judgment and recall was completely mediated by the effect on the description of the target person.

As shown in the upper parts of the figures, the description had practically the same effect on judgment in both presentation conditions. The partial correlations controlling for the effect of the

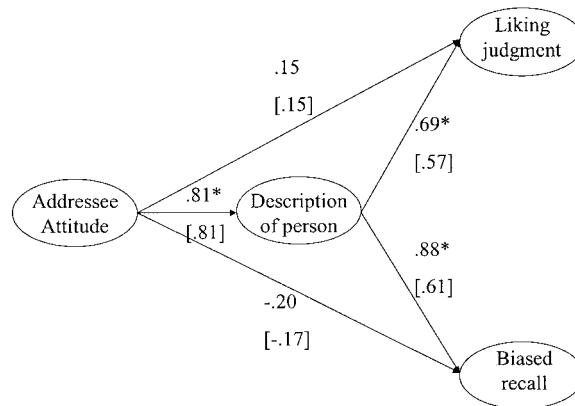


Figure 1. Path analysis of the effect of the addressee’s attitude on the communicator’s description of the target person, the evaluative judgment of the target person, and the evaluative bias in the recall of the information in the condition of subtle presentation of the addressee’s attitude. Coefficients are standardized betas. Partial correlations [...] are shown below the standardized betas. * $p < 0.01$

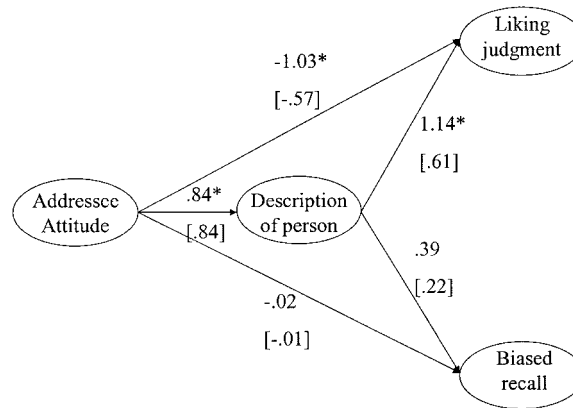


Figure 2. Path analysis of the effect of the addressee's attitude on the communicator's description of the target person, the evaluative judgment of the target person, and the evaluative bias in the recall of the information in the condition of blatant presentation of the addressee's attitude. Coefficients are standardized betas. Partial correlations [...] are shown below the standardized betas. * $p < 0.01$

addressee's attitude were 0.57 and 0.61 in the subtle and blatant conditions respectively. However, although the description seemed to be used in the same way in the presentation conditions, the addressee's attitude played a qualitatively different role in these conditions. Whereas in the subtle presentation condition the addressee's attitude had a direct positive effect, albeit non-significant, on judgment, in the blatant condition the attitude had a strong direct negative effect on judgment. This suggests that in the latter condition, participants used the attitude as a situational inducement of the valence of their communication and, consequently, corrected their judgments by contrasting them away from the addressee's attitude.

In contrast to the analyses of the judgmental processes, where the path analyses clearly differed in both conditions, the paths in the case of memory did not differ qualitatively. As can be seen from Figure 2, the path from the description to the recall was not significant in the blatant condition, but had the same positive effect on the participant's recall as in the case of the subtle presentation condition. At the same time, this weaker path suggests that participants engaged in some sort of memory correction.

DISCUSSION

Participants who were told that the addressee liked the target person described him more positively than participants who were told that the addressee disliked the target. This effect was obtained for both participants who were presented in an off-hand fashion with the addressee's attitude and participants who were specifically instructed to use this attitude in the description of the target person.

Replicating previous 'communication game' findings (Higgins, 1992; McCann & Higgins, 1992), participants' judgments were influenced when the presentation of the addressee's attitude was subtle. Participants who were told that the addressee liked the target person expressed more positive liking judgments than participants who were told that the addressee disliked him. However, when participants were asked to use the addressee's attitude in their descriptions of the target person, their judgments were not affected by this attitude. This finding conceptually replicates the findings of Todorov et al. (2000, Experiment 2). The extension of the correction findings to a different

communication situation suggests that communication effects on judgments depend on general correction mechanisms rather than on specific features of the communication situations.

Although participants' judgments were not affected in the blatant presentation condition, mediational analysis showed that in both presentation conditions the description of the target person served as a basis for the judgments. However, participants in the blatant condition used the addressee's attitude as a situational inducement of the valence of their descriptions and, accordingly, adjusted their judgments. Because the indirect effect of the addressee's attitude on participants' judgments via their descriptions of the target person was positive and its direct effect on participants' judgments was negative, the final effect of the addressee's attitude on liking judgment was null.

Participants who were told that the addressee liked the target person recalled more positive information than participants who were told that the addressee disliked him. This effect was independent of the presentation of the addressee's attitude, though there was some correlational evidence that the effect was weaker in the blatant presentation condition. Consistent with previous findings in the 'communication game' paradigm (Higgins, 1992; Higgins & McCann, 1984; McCann et al., 1991), the effect of the addressee's attitude on participants' recall was mediated by the descriptions of the target person. Consistent with the recall findings, participants who were told that the addressee liked the target falsely recognized more positive traits than participants who were told that the addressee disliked the target. The reverse was true for the rates of false recognition of negative traits. This effect was also independent of the presentation of the addressee's attitude.

The rate of false recognition of applicable traits was much higher than the rate of false recognition of non-applicable traits: the approximate ratio was 3.66 to 1. This finding strongly suggests that participants inferred personality traits from the behavioral description of the target person. Interestingly, the false recognition of such traits was not predictive either of judgment or of recall. In contrast, the false recognition of non-applicable traits was correlated with both judgment and recall. Apparently, this false recognition measure captured participants' evaluative biases better than the false recognition of applicable traits.

The present findings suggest that when communication bias was not perceived, participants relied on their descriptions of the target person to make a judgment and to retrieve the original information. Correspondingly, participants' judgments were highly correlated with measures of biases in memory. When a bias was perceived, participants relied on their descriptions too but they also used the addressee's attitude as a situational inducement and contrasted their judgments away from this attitude in order to avoid influences on judgment. The lower correlation between descriptions and recall in the blatant condition suggests that participants attempted to engage in memory correction by discounting the evaluative implications of their descriptions when recalling the original information. However, this correction was not sufficient to overcome evaluative biases in memory. Further, the recognition findings clearly showed communication effects on memory independent of the presentation of the addressee's attitude. Finally, consistent with the interpretation that participants engaged in a judgmental correction but did not sufficiently engage in a memory correction, participants' judgments in the blatant presentation condition did not correlate significantly with measures of biases in memory.

JUDGMENTAL AND MEMORY CORRECTION

As demonstrated in previous studies (for a review see Higgins, 1992), features of the communication situation, e.g. an addressee's attitude, trigger specific communication shifts. More importantly, this experiment demonstrates that the same communication shifts are triggered independently of the way of presentation or the salience of the communication feature in the situation (see also Todorov et al., 2000).

However, this presentation is critical for the process of bias correction. When the feature is presented subtly or indirectly, a bias is not perceived and people do not engage in a process of bias correction. The outcome is that both people's memory and judgments are influenced in the act of communication. When the feature is salient and a communication bias is perceived, people can correct for the influence on their judgments even when the judgment is made two days after the act of communication.

However, similar correction for effects on memory is less likely. The experiment demonstrated such dissociation effects of communication on memory and judgment. When participants perceived a bias, they corrected their judgments but did not correct their memory sufficiently. This was demonstrated on both recall and recognition measures of memory. It is important to stress out that the communicated information served as a basis for both the reconstruction of the original information and participants' judgments. That is, the input for the recollections and judgments can be biased by the initial contextual effects on communication. Whereas in the case of judgmental correction one can contrast one's judgment away from the contextual influence (e.g. the valence of the addressee's attitude; see Strack & Hannover, 1996; Wilson & Brekke, 1994), in the case of memory correction one needs to engage in a thorough discrimination between original and interpreted information. This could be impossible when the original information is ambiguous. Future studies should address the possibility that the ambiguity of the stimulus information contributed to the communication effects on memory. Another possibility worth addressing is that the perception of bias is not a sufficient condition for memory correction. The use of more effective retrieval cues (e.g. Anderson & Pichert, 1978) may be a more successful strategy to achieve memory correction.

Although memory was reliably affected by the act of communication, the findings do suggest some form of memory correction. For one thing, participants' recollections of the information about the target person were less extreme than their descriptions of the target, suggesting that they were aware that the descriptions were not literal repetitions of the information and that some communication change took place. Moreover, the relation between descriptions and recollections was weaker for participants who suspected communication influence, suggesting that they discounted, albeit insufficiently so, the evaluative implications of the descriptions. The nature of this process should be better specified in future studies.

CONCLUSIONS

What people will say or how they will describe a person is influenced by a variety of features characteristic for the specific communication situation (Higgins, 1981; Schwarz, 1994). Such situationally induced shifts in communication can later translate into effects on one's cognition. People can correct for undesirable communication influences on judgments when they perceive a bias, but may not be able to correct for effects on memory. Although the role of meta-cognition for the process of judgmental correction has been extensively studied in social cognition (Wilson & Brekke, 1994; Wegener & Petty, 1999), relatively little attention has been paid to these processes as applied to memory (but see Bless & Strack, 1998; Strack & Förster, 1998). Both communication and meta-cognition effects on judgment and memory are inherently social phenomena worth studying.

ACKNOWLEDGMENTS

I thank John Bargh, Gerald Echterhoff, Jens Förster, Tory Higgins, Bill Hirst, Mansur Lalljee, Michael Schober, Norbert Schwarz, Fritz Strack, Alexandra Todorova, Yaacov Trope, Barbara Tversky, and

Jim Uleman for their comments on earlier drafts of this paper. I also thank Alexandru Cuc, Patrick Ehlen, and Christian Huygen for their help in the process of data collection.

REFERENCES

- Anderson, N. H. (1968). Likableness ratings of 555 personality-trait words. *Journal of Personality and Social Psychology, 9*, 272–279.
- Anderson, R. C., & Pichert, J. (1978). Recall of previously unrecalled information following a shift in perspective. *Journal of Verbal Learning and Verbal Behavior, 17*, 1–12.
- Bless, H., & Strack, F. (1998). Social influence on memory. In V. Yzerbyt, G. Lories, & B. Dardenne (Eds.), *Metacognition: cognitive and social dimensions*. New York: Sage.
- Carmichael, L. C., Hogan, H. P., & Walters, A. A. (1932). An experimental study of the effect of language on the reproduction of visually perceived form. *Journal of Experimental Psychology, 15*, 3–86.
- Francis, W. N., & Kucera, H. (1982). *Frequency analysis of English usage: lexicon and grammar*. Boston: Houghton Mifflin Company.
- Gergen, K. J., & Wishnov, B. (1965). Others' self-evaluations and interaction anticipation as determinants of self-presentation. *Journal of Personality and Social Psychology, 2*, 348–358.
- Hasher, L., & Griffin, M. (1978). Reconstructive and reproductive processes in memory. *Journal of Experimental Psychology: Human Learning and Memory, 4*, 318–330.
- Higgins, E. T. (1981). The 'communication game': Implications for social cognition and persuasion. In E. T. Higgins, C. P. Herman, & M. P. Zanna (Eds.), *Social cognition: the Ontario symposium* (Vol. 1, pp. 39–88). Hillsdale, NJ: Erlbaum.
- Higgins, E. T. (1992). Achieving 'shared reality' in the communication game: A social action that creates meaning. *Journal of Language and Social Psychology, 11*, 107–131.
- Higgins, E. T., & McCann, C. D. (1984). Social encoding and subsequent attitudes, impressions, and memory: 'Context-driven' and motivational aspects of processing. *Journal of Personality and Social Psychology, 47*, 26–39.
- Higgins, E. T., McCann, C. D., & Fondacaro, R. (1982). The 'communication game': Goal-directed encoding and cognitive consequences. *Social Cognition, 1*, 21–37.
- Higgins, E. T., & Rholes, W. S. (1978). 'Saying is believing': Effects of message modification on memory and liking for the person described. *Journal of Experimental Social Psychology, 14*, 363–378.
- Higgins, E. T., Rholes, W. S., & Jones, C. R. (1977). Category accessibility and impression formation. *Journal of Experimental Social Psychology, 13*, 141–154.
- Jacoby, L. L., Kelley, C., & Dywan, J. (1989). Memory attributions. In H. L. Roediger III, & F. I. M. Craik (Eds.), *Varieties of memory and consciousness: essays in honor of Endel Tulving* (pp. 391–422). Hillsdale, NJ: Erlbaum.
- Manis, M., Cornell, S. D., & Moore, J. C. (1974). Transmission of attitude-relevant information through a communication chain. *Journal of Personality and Social Psychology, 30*, 81–94.
- McCann, D., & Hancock, R. D. (1983). Self-monitoring in communicative interactions: Social cognitive consequences of goal-directed message modification. *Journal of Experimental Social Psychology, 19*, 109–121.
- McCann, C. D., & Higgins, E. T. (1992). Personal and contextual factors in communication: A review of the 'communication game'. In G. R. Semin, & K. Fiedler (Eds.), *Language, interaction and social cognition* (pp. 144–171). London: Sage.
- McCann, C. D., Higgins, E. T., & Fondacaro, R. A. (1991). Primacy and recency in communication and self-persuasion: How successive audiences and multiple encodings influence subsequent evaluative judgments. *Social Cognition, 9*, 47–66.
- Newman, L. S., & Uleman, J. S. (1989). Spontaneous trait inferences. In J. S. Uleman, & J. A. Bargh (Eds.), *Unintended thought* (pp. 155–188). New York: Guilford.
- Newton, D., & Czerlinsky, T. (1974). Adjustment of attitude communications for contrasts by extreme audiences. *Journal of Personality and Social Psychology, 30*, 829–837.
- Pasupathi, M., Stallworth, L. M., & Murdoch, K. (1998). How what we tell becomes what we know: Addressee effects on speakers' long-term memory for events. *Discourse Processes, 26*, 1–25.
- Roediger, H. L., III, & McDermott, K. B. (1995). Creating false memories: Remembering words not presented in lists. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 21*, 803–814.

- Schramm, W., & Danielson, W. (1958). Anticipated audiences as determinants of recall. *Journal of Abnormal and Social Psychology*, *56*, 282–283.
- Schwarz, N. (1994). Judgment in a social context: Biases, shortcomings, and the logic of conversation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 26, pp. 123–162). New York: Academic Press.
- Sedikides, C. (1990). Effects of fortuitously activated constructs versus activated communication goals on person impressions. *Journal of Personality and Social Psychology*, *58*, 397–408.
- Strack, F., & Förster, J. (1998). Self-reflection and recognition: The role of metacognitive knowledge in the attribution of recollective experience. *Personality and Social Psychology Review*, *2*, 111–123.
- Strack, F., & Hannover, B. (1996). Awareness of influence as a precondition for implementing correctional goals. In P. M. Gollwitzer, & J. A. Bargh (Eds.), *The psychology of action: linking cognition and motivation to behavior* (pp. 579–596). New York: Guilford.
- Todorov, A., Lalljee, M., & Hirst, W. (2000). Communication context, explanation, and social judgment. *European Journal of Social Psychology*, *30*, 199–209.
- Trope, Y. (1978). Inferences of personal characteristics on the basis of information retrieved from one's memory. *Journal of Personality and Social Psychology*, *36*, 93–106.
- Trope, Y. (1986). Identification and inferential processes in dispositional attribution. *Psychological Review*, *93*, 239–257.
- Trope, Y., & Alfieri, T. (1997). Effortfulness and flexibility of dispositional judgment processes. *Journal of Personality and Social Psychology*, *73*, 662–674.
- Trope, Y., Cohen, O., & Alfieri, T. (1991). Behavior identification as a mediator of dispositional inference. *Journal of Personality and Social Psychology*, *61*, 873–883.
- Uleman, J. S., Newman, L. S., & Moskowitz, G. B. (1996). People as flexible interpreters: Evidence and issues from spontaneous trait inferences. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 28, 211–279). New York: Academic Press.
- Wegener, D. T., & Petty, R. E. (1995). Flexible correction processes in social judgment: The role of naive theories in corrections for perceived bias. *Journal of Personality and Social Psychology*, *68*, 36–51.
- Wegener, D. T., & Petty, R. E. (Eds.). (1999). Special issue: Naïve theories and social judgment. *Social Cognition*, *16*(1).
- Wilson, T. D., & Brekke, N. (1994). Mental contamination and mental correction: Unwanted influences on judgments and evaluations. *Psychological Bulletin*, *116*, 117–142.
- Zimmerman, C., & Bauer, R. A. (1956). The effect of an audience on what is remembered. *Public Opinion Quarterly*, *20*, 238–248.