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Linguistic Context and Social Perception : Does Stimulus Abstraction Moderate Processing Style?

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LINGUISTIC CONTEXT AND SOCIAL PERCEPTION
Does Stimulus Abstraction Moderate Processing Style?

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This article considers the role of linguistic context in social memory and social judgment. Two experiments compared perceivers' responses to person descriptions formulated at a high level of linguistic abstraction (adjectives/traits) versus a low level of linguistic abstraction (action verbs/behaviors). Based on the linguistic category model, together with prior empirical findings in psychology and linguistics, traits as compared with behavioral descriptions of a social target were hypothesized to elicit lower attention, poorer recall, and more expectancy-consistent impressions. Support for these hypotheses was obtained for a social target consisting of an individual as well as a nonentitative group. These results suggest a moderating role of linguistic context in inconsistency processing. Whereas concrete (behavioral) person descriptions elicited relatively deep, systematic processing, abstract (trait) person descriptions elicited more cursory, heuristic processing guided by the perceiver's expectancies regarding the target person. It is concluded that the methodological and substantive implications of linguistic context deserve greater attention in social psychological research.

How do we deal with events or situations that deviate from our expectations? How do we respond when we witness our introverted scientist painting the town red? Such situations constitute critical moments when we must either reaffirm or adjust our views about people. Not

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surprisingly, how we reconcile inconsistencies in social information poses an important topic in social psychology. Research to date has addressed the cognitive processes underlying our responses to such inconsistencies. Although substantial headway has been made, a full understanding will require greater insight into the role played by contextual factors (e.g., Stangor & McMillan, 1992; Wyer, Lambert, Budesheim, & Gruenfeld, 1992).

A key contextual factor in social cognition is language. As Semin and Fiedler (1991) have noted, "Language enters social psychological phenomena at all imaginable levels, not only as they are manifested in everyday life but also in the construction of most if not all experimental settings and instructions, and most independent and dependent measures" (p. 2). Although prior research attests to the important role of language in social cognition (cf. Semin, 1995), no attention has been given to its potential impact on inconsistency processing and social judgment.

The theoretical point of departure for the present investigation of the role of language in inconsistency processing was Semin and Fiedler's (1988, 1991) linguistic category model. This model offers a taxonomy of predicate types used in interpersonal communication. The present research focused on two of these predicate types, namely, action verbs (e.g., "The professor *danced*") and adjectives (e.g., "The professor is *lively*"). According to Semin and Fiedler's model, these two linguistic categories lie at opposite ends of a continuum of abstractness-concreteness in verbal representations of social phenomena. Although prior research has documented systematic effects of linguistic abstraction on social cognition (e.g., Semin & De Poot, 1997; Semin & Greenslade, 1985; Semin & Smith, 1999), its role in inconsistency processing and social judgment has not yet been considered.

The two linguistic categories selected for the present research, action verbs and adjectives, correspond to two of the most frequently encountered forms of person information, respectively: behavioral descriptions and trait descriptions. On one hand, these two types of person descriptions often arise naturally, as evidenced by their inclusion as central categories in empirically derived taxonomies of person information (e.g., Beach & Wertheimer, 1961; Carlston, 1994; Fiske & Cox, 1979; Livesley & Bromley, 1973; Semin & Fiedler, 1988). On the other hand, trait and behavioral person descriptions have figured prominently in social psychological research since the inception of the field.

The prominent role of trait and behavioral person descriptions in social psychological research can be attributed partly to their substantive relevance to key research issues. In numerous content domains, trait and behavioral characterizations constitute distinct constructs of essential importance to the research question under investigation. For example, research and theory on processes of attribution (e.g., Jones &

Davis, 1965; Jones, Davis, & Gergen, 1961; Kelley, 1967) and spontaneous trait inference (e.g., Uleman, Newman, & Moskowitz, 1996; Winter & Uleman, 1984) have directly considered how social perceivers infer traits or other enduring dispositions from behavioral information.

In other social judgment domains, however, trait language and behavioral language have been used in research paradigms not for substantive reasons but primarily as a matter of methodological tradition. For example, a popular question for social psychologists in the 1950s and 1960s concerned information integration, that is, how multiple stimuli describing a person are combined to form a single integrated impression. In the dominant paradigm used to investigate this issue (Asch, 1946), the multiple stimuli took the form of trait lists; only very few information integration studies used nontrait stimuli (e.g., Dreben, Fiske, & Hastie, 1979). Person memory offers a second example. Research in this domain was inspired by fundamental questions concerning the influence of social expectations on memory: Are we better able to recall information that confirms or disconfirms our expectations of other people? In the dominant methodological paradigm for person memory research (Hastie & Kumar, 1979), social expectations are elicited by means of traits ascribed to a target person and the (expectancy-relevant) information that participants must later recall takes the form of behavioral descriptions.

An important issue raised by the latter type of research paradigm, in which trait or behavioral language has provided a basis for exploring more general processes of social judgment, is whether findings can be expected to generalize to other types of language. For instance, can we assume that the detailed insights gained from years of research on person memory apply to all forms of person information (as suggested by countless reviewers of this literature)? Or alternatively, are these insights limited to memory for the type of verbal stimuli that research participants actually recalled in the vast majority of these studies, namely, behavioral information? The present research investigated the possibility that there may be important differences in how social perceivers process and encode behavioral versus trait language in memory, systematically influencing outcomes in the domains of inconsistency processing and social judgment.

LANGUAGE ABSTRACTION, PERSON MEMORY, AND SOCIAL JUDGMENT

To date, inconsistency processing has been investigated primarily in studies of the memorability of expectancy-consistent versus expectancy-inconsistent person descriptions. The literature on person memory documents a clear attentional and memory bias favoring inconsistent over consistent information (e.g., Hastie & Kumar, 1979; Higgins & Bargh, 1987, Macrae, Bodenhausen, Schloerscheidt, & Milne, 1999;

J. W. Sherman, Lee, Bessenoff, & Frost, 1998; Srull, 1981; Srull, Lichtenstein, & Rothbart, 1985; Stangor & Duan, 1991; Wyer & Gordon, 1982). In line with the notion of levels of processing (Baddeley, Lewis, Eldridge, & Thomson, 1984; Craik & Lockhart, 1972), this attentional and recall advantage is assumed to be a manifestation of deeper processing, and hence deeper encoding, of inconsistent as compared with consistent information. Based on these findings, researchers have concluded that perceivers confronted with expectancy-inconsistent information engage in effortful cognitive processing aimed at resolving inconsistencies and making sense of unexpected information (Hastie & Kumar, 1979; Srull, 1981; Srull & Wyer, 1989; Stangor & McMillan, 1992; see the review by Smith, 1998).

What might be the implications of trait versus behavioral language for this consistently observed memory bias favoring unexpected over expected information? One indication of this variable's potential impact on the encoding of expectancy-relevant information can be found in Stangor and McMillan's (1992) secondary analysis of the person memory literature. This meta-analysis showed a strong association between the linguistic abstraction of social stimuli (i.e., use of trait versus behavioral person descriptions) and relative recall for expectancy-inconsistent compared to expectancy-consistent information: On one hand, studies of recall for behavioral information ($n = 33$), as in the traditional Hastie and Kumar (1979) paradigm, tended to show better recall for expectancy-inconsistent information; on the other hand, studies of recall for trait information ($n = 4$) tended to show better recall for expectancy-consistent information.

Although these meta-analytic findings suggest a fundamental difference in inconsistency processing engaged by behavioral versus trait person descriptions, we regard them with some caution. This is not only because of the specific limitations[1] of the data on which they are based but also for theoretical reasons. Are there theoretical grounds for predicting differences in the processing and recall of expectancy-relevant person descriptions, depending on their level of linguistic abstraction? Before turning to this question, we will consider additional empirical evidence suggesting that behavioral and trait person descriptions differ not only in how they are encoded and recalled but also in the social judgments to which they give rise.

Prior social psychological research is suggestive of a broad tendency for judgments based on abstract language to be more strongly influenced by preexisting knowledge structures than judgments based on concrete language (e.g., Semin, 1989; Semin & Fiedler, 1988, Experiment 2; Semin & Greenslade, 1985; see also S. J. Sherman, Beike, & Ryalls, 1999). In a similar vein, research conducted within the framework of action identification theory (Wegner & Vallacher, 1986) suggests that participants are more resistant to new conceptualizations of an event when they are led to think about the event at a high level of abstraction (e.g., in terms of the event's effects or implications) compared to a low level of abstraction (e.g., in terms of the event's specific details; Vallacher & Selz, 1991; Wegner, Vallacher, Kiersted, & Dizadji, 1986). These findings suggest that perceivers forming judgments based on concrete language may give relatively high weight to the information given and relatively low weight to prior expectancies. On the other hand, perceivers forming judgments based on abstract language appear to give relatively low weight to the information given and relatively high weight to prior expectancies. To borrow Bruner's (1973) words, our tendency to "go beyond the information given" seems to hold most strongly when stimuli are represented at a high level of language abstraction; in the case of concrete information, this tendency is less pronounced.

LANGUAGE ABSTRACTION AND DEPTH OF PROCESSING

Additional empirical evidence from outside social psychology suggests a basis for predicting and accounting for differences in how behavioral language and trait language are processed, encoded, and used to form social judgments. Research in the fields of cognitive psychology and linguistics has yielded a substantial body of evidence that concrete verbal stimuli attract more attention, and are better and more easily remembered, than abstract verbal stimuli (e.g., Campos, 1992; Day & Bellezza, 1983; Leung, Suzuki, & Foster, 1983; Marschark & Surian, 1992; Mishra, 1984; Nisbett & Ross, 1980; Paivio, 1971; Ransdell & Fischler, 1989; Sadoski, Goetz, & Fritz, 1993; Zhang & Peng, 1990; for a review, see Marschark & Cornoldi, 1991). If it can be assumed that patterns in attention and recall reflect differences in level of processing (e.g., Craik & Lockhart, 1972), these findings would suggest that concrete language elicits generally deeper levels of processing and encoding than abstract language. In other words, if one were to represent a fight as "John punched David," it should be more deeply processed, and better recalled, than if the very same event was represented as "John is aggressive." These empirically derived predictions formed the first two hypotheses for the present research.

What implications might such an overall difference in levels of processing elicited by concrete and abstract language have for memory and judgments based on behavioral versus trait stimuli? First, this tendency could explain the moderating effect of stimulus abstraction observed in Stangor and McMillan's (1992) meta-analysis of person memory studies. As discussed above, the recall (and attentional) bias favoring inconsistent over consistent information observed in person memory studies is widely regarded as a reflection of inconsistency resolution, that is, the perceiver's active, effortful attempt to resolve inconsistencies between prior expectancies and newly received person information. Based on their findings, Stangor and McMillan argued that more effortful processing (and hence better recall) of inconsistent stimuli will arise only when processing circumstances (e.g., task and environmental characteristics) enable perceivers to carry out the cognitive work of inconsistency resolution. However, it could be that one such processing circumstance is stimulus abstraction: If abstract as compared with concrete stimuli do elicit substantially lower levels of cognitive engagement and effort, then (abstract) trait person descriptions may fail to provide the essential conditions for inconsistency resolution.

In line with empirical findings reviewed in the previous section, we predicted moderating effects of stimulus abstraction in patterns of both attention and recall: On one hand, (concrete) behavioral person descriptions were expected to give rise to inconsistency resolution (evidenced by greater attention to and recall of inconsistent behavioral stimuli); on the other hand, (abstract) trait descriptions were not expected to give rise to such inconsistency resolution. Moreover, in line with the arguments given above, depth of processing was predicted to mediate this relationship between stimulus abstraction and inconsistency resolution.

Overall differences in the depth of processing elicited by concrete versus abstract language were predicted to have implications not only for memory but also for social judgment. Dual processing modes characterized by differential depth of processing form a core assumption in judgment models in a variety of social psychological domains (e.g., Brewer, 1988; Chaiken, 1987; Eagly & Chaiken, 1993; Fiske & Neuberg, 1990; Petty & Cacioppo, 1986; for a review, see Smith & DeCoster, 1999). One mode, which we refer to as heuristic processing (following Chaiken, 1987), involves superficial, cursory attention to and processing of the information given, leading to judgments heavily influenced by preexisting knowledge (e.g., expectations, heuristic cues). The second mode, systematic processing, is characterized by more effortful attention to and deeper processing of the information given, leading to judgments that are less influenced by expectations or heuristics. If (abstract) trait stimuli do elicit less effortful processing than (concrete) behavioral stimuli, one might expect judgments based on trait stimuli to be more strongly influenced by preexisting knowledge.

This line of reasoning yielded additional hypotheses about the nature of social judgments based on concrete versus abstract person descriptions. In line with empirical findings reviewed in the previous section, we predicted that perceivers would form more expectancy-consistent impressions of social targets described in (abstract) trait language as compared with (concrete) behavioral language. Moreover, depth of processing was predicted to mediate this relationship between stimulus abstraction and the expectancy-consistency of impressions. Finally, we predicted that the relative judgmental weight given to expectancies versus the stimulus information would be higher in person impressions formed on the basis of (abstract) trait stimuli as compared with (concrete) behavioral stimuli.

EXPERIMENT 1

Experiment 1 was modeled as closely as possible on the standard paradigm used in person memory research (Hastie & Kumar, 1979). In this paradigm, participants are first given introductory information about a target person, serving to establish expectations. Then participants are shown a number of stimulus items, some consistent and some inconsistent with their expectations of the target person. After some delay, memory for the stimulus information is assessed.

The standard person memory paradigm was adopted with three modifications. First, a between-subjects variable was added: stimulus abstraction. For participants in the (abstract) trait condition, the stimulus items consisted only of trait information; for participants in the (concrete) behavior condition, the stimulus items consisted only of behavioral information. The second important departure from the person memory paradigm lay in the materials used to elicit expectations about the target person. Instead of trait descriptions, as in the standard paradigm, biographical sketches were used to elicit expectancies in the present research; these biographical sketches did not include any trait characterizations or behavioral instances. Third, after assessment of memory for the stimulus information, participants also provided judgments of the target person and of isolated components of the stimulus information.

METHOD

Procedure

Participants took part in the experiment in groups of 5 to 15. Each participant occupied a separate cubicle containing a personal computer. Instructions displayed on the computer screen informed participants that their task was to form a general impression of a target person. They were told to expect a biographical sketch describing the target, followed by additional statements from interviews with persons who knew the target; they were told that each statement had been made by a different member of the target's social network (a procedure introduced by Asch, 1946). Then the biographical sketch was displayed on the computer screen for 60 seconds, together with instructions that the sketch should be read carefully several times. The sketch served to establish target expectancies. Next, 18 statements about the target were presented in random order, each on a separate screen. These 18 statements included 6 expectancy-consistent stimulus items, 6 expectancy-inconsistent stimulus items, and 6 filler items that were irrelevant to target expectancies. Participants themselves determined how long each stimulus item appeared on the screen, indicating their readiness to view each subsequent item with a mouse click. Observation times for each item were recorded on the computer.

Following presentation of the stimulus information, participants were given a 5-minute filler task. Then participants spent another 5 minutes completing a (surprise) free recall task; they were instructed to write down everything they could remember about the target information. Next, participants filled out a written questionnaire in which they provided various judgments of the target and of the separate components of the stimulus materials.

After completing the written questionnaire, participants were given a final task on the computer: a test of their reading speed. The results of this test were used, together with actual observation times, to derive an estimate of attention to the stimulus items. Actual observation times did not by themselves provide a basis for comparing attention to the trait and behavioral stimulus items because the trait items contained fewer words than the behavioral items. For this comparison, attention to the stimulus items was estimated as the difference between actual observation times and the time participants spent reading sentences of the same length in the test of reading speed. The stimuli for the test of reading speed consisted of 18 sentences matched in length (i.e., number of syllables) to the 18 stimulus items used in the actual experiment. Each sentence was presented on a separate screen. Participants were told that their reading speed was being tested and that their task was to read each sentence as quickly as possible and then respond immediately with a mouse click. Several measures were taken to encourage participants simply to read the sentences without spending any extra time thinking about sentence content: Uninteresting sentences were selected, and participants were assured that they would not be asked to recall or answer any questions about the sentences. After the test of reading speed, participants were debriefed, thanked, and paid.

Participants. Participants were 106 paid volunteers (45 male, 61 female) at the Free University Amsterdam with an average age of 21.7 years (range: 18 to 35 years). They were recruited via a university newspaper and received 8 Dutch guilders (about $5) for taking part in the experiment, which lasted approximately 30 minutes and was conducted in the Dutch language.

Design. The main independent variables concerned features of the stimulus items. The 12 expectancy-relevant stimulus items varied between participants in their abstractness: They were either all traits (high stimulus abstraction) or all behaviors (low stimulus abstraction). Both stimulus sets also varied on two within-subjects dimensions: consistency with expectancies about the target person (consistent, inconsistent), and evaluative valence (positive, negative). Evaluative valence was included as a control variable in view of its demonstrated effects on cognitive processing (e.g., Pratto & John, 1991; Skowronski & Carlston, 1989; Taylor, 1991). One additional between-subjects variable, gender of target, was included for purposes of counterbalancing.

Stimulus materials. Biographical sketches of two targets, one male and one female, were developed as a basis for eliciting expectancies. These two sketches needed to be complementary; that is, they needed to enable counterbalancing of the stimulus items such that the expected items for one target could serve as unexpected items for the other. The person categories businessman and housewife were selected as the basis for the biographical sketches because reanalyses of data reported by Vonk and Olde Monnikhof (1998) indicated that the two gender subtypes elicit consistent, complementary expectations in Dutch respondents.[2]

Biographical sketches of the businessman and housewife were developed in successive pilot studies. These sketches consisted partly of information that varied over the two target persons (e.g., educational attainment, occupation). This information, which was included to enhance the strength and complementarity of expectancies, served to reinforce gender-stereotypic expectancies elicited by the subtypes businessman and housewife. The sketches also included information that was held constant over the two target gender conditions (e.g., age, marital status, and number of children). This information was included to make the sketches more realistic and to decrease the salience of the gender-stereotypic information. The male and female targets were referred to in the sketches, and throughout the experiment, as Michael Brown and Marion Brown, respectively. (English translations of the two biographical sketches are displayed in Appendix A.)

Stimulus items. Two sets of stimulus items were developed: one set of 12 traits (e.g., "Michael [Marion] Brown is empathic") and one set of 12 behaviors (e.g., "Michael [Marion] Brown cried while watching a documentary on famine in Africa"). All stimulus items were generated by respondents in pilot studies and then rated by other respondents both on consistency with expectations elicited by the biographical sketches and on evaluative valence. The pilot data were used to select one trait stimulus set and one behavioral stimulus set with the following characteristics: (a) There was a rough one-to-one semantic correspondence between items in the two stimulus sets, such that each item in the behavior set implied one of the traits in the trait set; (b) within each set of stimulus items, the two within-subjects factors (expectancy-consistency and valence) were orthogonally crossed; and (c) all expectancy-consistent stimulus items for the male target were expectancy-inconsistent for the female target, and vice versa.[3] (English translations of all stimulus items are displayed in Appendix B.)

Six expectancy-irrelevant items were included to make the stimulus sets more varied and realistic. These items consisted of neither traits nor behaviors (e.g., "Michael [Marion] Brown has five cousins"). One expectancy-irrelevant item was always presented as the first stimulus item, and one was always presented last, to attenuate primacy and recency effects involving the expectancy-relevant stimulus items. The other 4 irrelevant items were presented in random order together with the 12 expectancy-relevant items.

Dependent Measures

Unless otherwise indicated, all responses were given on 7-point scales.

Free recall. Participants were given 5 minutes (or longer, if they needed more time) to write down everything they could recall about the target person on a blank sheet of paper.

Descriptive target impressions. The biographical sketches served to establish expectancies in line with traditional gender stereotypes, with high (low) activity and potency expected of the male (female) target. The degree to which impressions of the target were consistent with these expectancies was assessed with two types of measures.

1. Global measure. Two pairs of items measured the expectancy-consistency of impressions in terms of global assessments of the degree to which the target fit traditional male and female stereotypes, respectively (viz., "To what extent does Michael [Marion] Brown show traditionally feminine [masculine] characteristics [behaviors]?"; scale anchors: *scarcely*, *a great deal*). The two items concerning the target's own-gender consistency, together with reverse codings of the two items concerning other-gender consistency, formed a 4-item scale.
2. Semantic-Differential measure. Target impressions were also assessed with a validated Dutch version of the Semantic Differential (Kouwer, 1958; Osgood, Suci, & Tannenbaum, 1957). Scale anchors consisted of pairs of trait antonyms (e.g., *weak*, *strong*), none of which showed substantial semantic overlap with any trait stimulus item. Two of the three Semantic Differential subscales (viz., Activity and Potency; reverse coded for the female target) provided a second basis for measuring the expectancy-consistency of target impressions.

Evaluative target impressions. Target impressions were also assessed in terms of their evaluative valence. Evaluative target impressions, together with participants' evaluative ratings of the biographical sketch and the stimulus items (see the next section), were used to estimate the relative judgmental weight participants gave to expectancies (i.e., evaluative ratings of the biographical sketch) and to the information given (i.e., evaluative ratings of the stimulus items) in arriving at their actual evaluative impressions of the target. Evaluative target impressions were assessed with two scales comparable to those used to measure descriptive target impressions.

1. Global measure. A two-item scale assessed global evaluative impression of the target (e.g., "What is your general impression of Michael [Marion] Brown?"; scale anchors: *negative*, *positive*).
2. Semantic-Differential measure. The Evaluation subscale of the Semantic Differential provided a second measure of evaluative impressions of the target.

Evaluative ratings of biographical sketch and stimulus items. At the end of the written questionnaire, participants provided evaluative ratings of the two main components of the stimulus information (viz., the biographical sketch and the stimulus items) considered in isolation. First, they rated a prototypical person with the characteristics listed in the biographical sketch on a 2-item scale identical to that used to assess global evaluative impressions of the target. Then they provided evaluative ratings of each of the 12 expectancy-relevant stimulus items (scale anchors: *negative*, *positive*). These 12 ratings were averaged to form a single measure of evaluative response to the stimulus items.

Estimated attention. As mentioned above, participants themselves determined how long they viewed each stimulus item, and observation times for each item were recorded on the computer. These observation times did not directly provide a useful basis for comparing attention to trait and behavioral stimuli because the trait items contained considerably fewer words than the behavioral items. For the purposes of this comparison, attention to each stimulus item was estimated (for each participant) as the difference between time spent observing the stimulus item and time spent reading an item of the same length in the postexperimental test of reading speed (see the above description of procedure).

RESULTS[4]

Unless otherwise stated, the distributional and other assumptions of parametric statistics were tested and found to be fulfilled in all analyses reported in this article, as were the additional assumptions of analysis of variance (ANOVA) (e.g., homogeneity of variance), analysis of covariance (ANCOVA) (e.g., homogeneity of regression), and multiple regression (e.g., linearity).

Depth of Processing

Attention. Scores representing estimated attention to the stimulus items were analyzed in an ANOVA (following square-root transformation to meet distributional assumptions), with one between-subjects variable (stimulus abstraction: trait stimuli vs. behavioral stimuli) and two within-subjects variables (consistency of stimulus item with expectancy: consistent, inconsistent; and valence of stimulus item: positive, negative).[5] The main hypothesis was that expectancy-inconsistent stimuli would receive greater attention than expectancy-consistent stimuli in the behavior condition but not in the trait condition. The predicted Stimulus Abstraction × Consistency interaction showed a nonsignificant trend, $F(1, 104) = 2.93$, $p = .09$. Visual inspection of the associated means suggested that attention to inconsistent stimuli exceeded attention to consistent stimuli by a greater margin in the behavior condition (nontransformed means: $M_I = 3.5$ s, $M_C = 2.9$ s) than in the trait condition (nontransformed means: $M_I = 2.3$ s, $M_C = 2.1$ s). Although this interaction was nonsignificant, the predicted simple main effects were examined in view of their theoretical relevance (and because the ANOVA interaction term may provide an overly conservative test in view of the large associated main effects; e.g., Rosenthal & Rosnow, 1985; Rosnow & Rosenthal, 1995). The greater attention given to inconsistent compared to consistent items was found to be a significant difference in the behavior condition, $F(1, 104) = 12.18$, $p < .01$, but not in the trait condition, $F(1, 104) = 1.05$, $p = .31$.

Furthermore, the prediction of an overall attentional difference between traits and behaviors received support. Attention to the stimulus items was substantially lower in the trait condition than in the behavior condition, $F(1, 104) = 14.05$, $p < .001$. There was also a main effect for expectancy-consistency, suggesting an overall tendency toward greater attention to inconsistent items than to consistent items, $F(1, 104) = 10.09$, $p < .01$.

Free recall. Correct recall for the stimulus information was coded using a gist criterion. Recall responses that did not show substantial semantic overlap with any component of the original stimulus information were coded as intrusions into memory. One coder rated all of the recall data; a second coder, blind to the experimental hypotheses, rated a randomly selected subset (viz., 33%; as in prior person memory research, e.g., Srull, 1981). Correspondence between the two coders' ratings was high (Cronbach's $\alpha = .99$).

The prediction of greater recall for expectancy-inconsistent than for expectancy-consistent information in the behavior condition, but no such difference in the trait condition, was examined in an ANOVA, with one between-subjects variable (stimulus abstraction: trait, behavior) and two within-subjects variables (consistency of recalled item with target expectancies: consistent, inconsistent; and valence of recalled item: positive, negative).[6] The predicted interaction between stimulus abstraction and consistency was significant, $F(1, 104) = 6.25$, $p < .05$. Visual inspection of the means associated with this interaction, which are displayed in Table 1, suggested that whereas recall for consistent items exceeded recall for inconsistent items in the trait condition, inconsistent items were recalled better than consistent items in the behavior condition. However, the simple main effects associated with this crossover interaction indicated that the difference in levels of recall for consistent and inconsistent information was significant in the behavior condition, $F(1, 104) = 4.38$, $p < .05$, but not in the trait condition, $p = .15$.

The ANOVA also revealed significant main effects for stimulus abstraction and valence. As predicted, the proportion of correctly recalled stimulus items was lower in the trait condition ($M = .46$) than in the behavior condition ($M = .57$), $F(1, 104) = 11.99$, $p < .01$. Also, recall was poorer for positive stimulus items ($M = .49$) than for negative stimulus items ($M = .55$), $F(1, 104) = 5.12$, $p < .05$.[7]

Using the procedures outlined by Baron, Kenny, and colleagues (Baron & Kenny, 1986; Kenny, Kashy, & Bolger, 1998), two mediational analyses were conducted to gain further insight into these patterns in the recall data. First, an ANCOVA tested whether the significantly greater overall recall for behavioral as compared with trait stimuli could indeed be attributed to deeper processing of behavioral versus trait stimuli, the latter operationalized as estimated attention. This ANCOVA included overall recall for the stimulus items as the dependent variable, stimulus abstraction as the independent variable, and overall estimated attention (transformed) as a covariate. The results suggested partial mediation by overall attention of the superior recall observed for behaviors versus traits, Sobel's $Z = 2.40$, $p < .01$. The initially strong main effect of stimulus abstraction, $F(1, 104) = 11.52$, $p < .01$, decreased substantially but did not disappear following entry of the covariate, $F(1, 103) = 6.11$, $p < .05$. The covariate also showed a significant regression effect, $F(1, 103) = 4.68$, $p < .05$.

A second ANCOVA was carried out to test whether the overall difference in depth of processing could account for the observed relationship between stimulus abstraction and inconsistency resolution. The dependent variable in this analysis consisted of a single proportion representing the number of expectancy-consistent stimulus items recalled as a proportion of the total number of stimulus items recalled. The independent variable and covariate were, respectively, stimulus

Table 1
Proportion of Correctly Recalled Stimulus Items by Stimulus Abstraction and Expectancy-Consistency of Stimulus Item (Experiment 1)

	Stimulus Abstraction	
Expectancy-Consistency of Stimulus Item	Low (Behaviors)	High (Traits)
Consistent items	.53	.50
Inconsistent items	.61	.44

abstraction and overall estimated attention to the stimulus items, as in the first ANCOVA. The results yielded evidence that differential depth of processing mediated the superior recall observed for behavior versus trait stimulus items, Sobel's $Z = 2.21$, $p < .05$. The initially significant main effect of stimulus abstraction on inconsistency resolution, $F(1, 104) = 5.31$, $p < .05$, fell to a nonsignificant level following entry of the covariate, $F(1, 103) = 2.11$, $p = .15$. The covariate also showed a significant regression effect, $F(1, 103) = 4.45$, $p < .05$.

Intrusions into recall. Compared to prior person memory research (e.g., Hastie & Kumar, 1979; Srull, 1981), the present research showed a relatively large number of intrusions into free recall. To explore possible reasons for the unusually large number of intrusions, these recall responses were coded and analyzed on two dimensions: consistency with target expectancies and the abstraction of the stimulus items that gave rise to the intrusion (i.e., trait versus behavior). Expectancy-consistency of the intrusions was rated by respondents ($n = 29$) who had not participated in the experiment itself. For each intrusion, the respondents assessed the likelihood that a person with the characteristics listed in the relevant biographical sketch would display the behavior or quality denoted by the intrusion. Based on these ratings, each intrusion was classified as either consistent or inconsistent with expectancies. In addition, each intrusion was coded as to whether a respondent in the trait condition or the behavior condition had generated it. (Intrusions in the trait condition consisted nearly exclusively of traits, and intrusions in the behavior condition consisted nearly exclusively of behaviors.)

The average number of intrusions per participant was higher in the trait condition ($M = 0.71$) than in the behavior condition ($M = 0.28$), and there were more expectancy-consistent intrusions ($M = 0.36$) than expectancy-inconsistent intrusions ($M = 0.13$). In view of their skewed distributions, these intrusion frequencies were assessed using nonparametric tests. The greater number of intrusions in the trait versus behavior conditions (a between-subjects difference) was found to be significant in a Mann-Whitney test ($Z = -4.2$, $p < .001$). The higher number of expectancy-consistent than expectancy-inconsistent intrusions (a within-subjects difference) was also found to be significant in a Wilcoxon signed ranks test ($Z = -2.65$, $p < .01$).

Judgmental Indicators

Descriptive target impressions. We predicted more expectancy-consistent impressions of the target in the trait condition than in the behavior condition. This hypothesis was tested in relation to descriptive target impressions in an ANOVA, with stimulus abstraction as a between-subjects independent variable.

For the sake of simplicity, this analysis employed a single dependent measure of the descriptive expectancy-consistency of target impressions.[8] This variable was formed by averaging over all items from the global and Semantic-Differential measures of expectancy-consistency (Cronbach's $\alpha = .87$). High values on this composite scale indicated expectancy-consistent impressions. This ANOVA revealed a significant main effect for stimulus abstraction, $F(1, 103) = 5.81$, $p < .05$. The associated means were in line with the hypothesis. Impressions were more consistent with expectancies in the trait condition ($M = 4.6$) than in the behavior condition ($M = 4.3$).

We also predicted that depth of processing would mediate this relationship between stimulus abstraction and the expectancy-consistency of descriptive impressions. There were no grounds to test this mediational hypothesis, however, because depth of processing (operationalized as estimated attention) showed no relationship with the expectancy-consistency of descriptive target impressions (Baron & Kenny, 1986).

Evaluative target impressions. A further prediction was that differential judgmental weight would be given to expectancies as compared to the actual stimulus items, depending on whether the stimulus items consisted of traits or behaviors. More specifically, the relative judgmental weight given to expectancies was predicted to be higher in the trait condition than in the behavior condition. This hypothesis was tested in analyses of the three types of evaluative ratings that participants provided at the end of the written questionnaire: their evaluative ratings of the target person and their evaluative ratings of the two components of the stimulus information considered in isolation (viz., the biographical sketch and the stimulus items). These three sets of evaluative ratings were analyzed in two standard regression analyses, conducted separately for participants in the trait and behavior conditions, respectively. The dependent variable in these analyses was evaluative target impressions. To simplify the analyses, a single dependent measure was used; this measure was an average of the items from the global and Semantic-Differential measures of evaluative impressions (Cronbach's $\alpha = .92$).[8] The two predictor variables were participants' evaluative ratings of the biographical sketch and of the stimulus items. The regression coefficients for these two predictor variables provided estimates of the judgmental weight given to expectancies and to the stimulus items, respectively, in the formation of evaluative impressions of the target.

The results of the regression analyses were consistent with the research hypothesis (see Table 2). The regression analysis for the trait condition showed a strong relationship ($\beta = .59$, $p < .001$) between evaluative ratings of the biographical sketch and evaluative impressions of the target yet no relationship between evaluative ratings of the stimulus items and evaluative impressions of the target. In contrast, the analysis for the behavior condition showed significant regression coefficients for both the evaluative rating of the biographical sketch ($\beta = .33$, $p < .01$) and evaluative rating of the stimulus items ($\beta = .44$, $p < .001$). As can be seen in the right column of Table 2, the zero-order correlations show the same pattern as the regression coefficients. In line with our hypothesis, these results suggest that participants in the trait condition based their evaluative impressions of the target primarily on their evaluative expectancies, whereas participants in the behavior condition gave substantial judgmental weight both to evaluative expectancies and to their evaluative judgment of the stimulus items.

DISCUSSION

The results of Experiment 1 yielded substantial support for most of the hypotheses under investigation. First of all, person information in the form of behavioral descriptions appeared to attract more attention, and were better recalled, than person information in the form of trait descriptions. Also, in line with both our prediction and prior theory (Craik & Lockhart, 1972), the greater recall observed for behavioral as compared with trait descriptions was found to be partially mediated by differing levels of attention to the two types of stimuli. These findings suggest that behavioral stimuli elicited deeper processing than trait stimuli, leading to a corresponding difference in strength of encoding in memory.

The overall difference in depth of processing of abstract versus concrete stimuli was also predicted to moderate the emergence of inconsistency resolution. More specifically, deeper processing of expectancy-inconsistent as compared with expectancy-consistent stimuli was predicted for behavioral stimuli but not for trait stimuli. Patterns of both attention to and recall for the person descriptions were consistent with this hypothesis (although the pattern constituted a nonsignificant trend in the case of attention). Greater attention to and recall for expectancy-inconsistent as compared with expectancy-consistent stimuli were found for behavioral descriptions but not for trait descriptions.

Table 2
Prediction of Evaluative Target Impressions From Evaluative Ratings of Biographical Sketch and of Stimulus Items (Separate Standard Regression Analyses for Trait and Behavior Conditions, Experiment 1)

	β	*r* (Zero-Order)
Behavior condition (low stimulus abstraction)[a]		
Evaluation biographical sketch	.33**	.50***
Evaluation of stimulus items	.44***	.57***
Trait condition (high stimulus abstraction)[b]		
Evaluation biographical sketch	.59***	.58***
Evaluation of stimulus items	–.09	.03

a. $n = 51; R^2 = .42$.
b. $n = 50; R^2 = .34$.
$^{**}p < .01$. $^{***}p < .001$.

Unpredicted differences in the number of intrusions into free recall produced by the trait and behavioral stimuli suggested moreover that the former were encoded less precisely than the latter. Post hoc analyses of these intrusion data suggested that the number of intrusions made by participants attempting to recall behavioral stimuli was comparable to that in prior person memory research (in which behavioral stimuli were also used, e.g., Srull, 1981). The relatively large number of intrusions in the present research is primarily attributable to the fact that the trait stimuli elicited about 2.5 times more intrusions than the behavioral stimuli. This significant difference indicates that recall for (abstract) trait person descriptions was not only quantitatively but also qualitatively poorer than recall for (concrete) behavioral descriptions.

These results concerning attention and free recall corroborate and extend what is already known about person perception. Two key findings of prior person memory research were replicated: Expectancy-inconsistent behaviors attracted more attention (e.g., Bargh & Thein, 1985; Hemsley & Marmurek, 1982; Stern, Marrs, Millar, & Cole, 1984) and were better recalled (e.g., Driscoll, Hamilton, & Sorrentino, 1991; Hastie & Kumar, 1979; Srull, 1981; Srull et al., 1985) than expectancy-consistent behaviors. Such greater relative attention to and recall for inconsistent behaviors has been interpreted as a reflection of the perceiver's active attempt to resolve inconsistencies in person information (e.g., Hastie, 1980, 1984; J. W. Sherman et al., 1998; Srull, 1981; Stangor & McMillan, 1992). However, the present study showed no evidence of such inconsistency resolution in the trait condition: Inconsistent as compared with consistent traits did not elicit significantly greater attention or recall. This suggests that linguistic abstraction, namely, the use of trait versus behavioral language in person descriptions, is an important contextual factor moderating whether social perceivers engage in inconsistency resolution.

The prediction that perceivers would form more expectancy-consistent impressions on the basis of trait as compared with behavioral person descriptions was also supported. Both descriptive and evaluative impressions showed stronger relationships with prior expectancies when impressions were formed on the basis of trait versus behavioral person descriptions. Together with the observed differences in overall attention and recall, this finding suggests that (abstract) trait language elicits more cursory, heuristic processing, whereas (concrete) behavioral language elicits deeper, more systematic processing.

Considered as a whole, the present findings provide convergent evidence, on numerous process measures and judgmental outcomes, in line with the hypothesis that linguistic abstraction moderates processing style, with concrete language engaging relatively deep, systematic processing and abstract language engaging more cursory, heuristic processing. An important question raised by this consistent pattern of findings is whether it reflects a common structural cause. Can the observed memory and attentional advantage for concrete over abstract stimuli, together with the judgmental effects, be viewed as a generalizable, structural consequence of linguistic abstraction? Or, alternatively, might these differences in overall attention, recall, and judgments instead be attributable to the more context-dependent phenomenon of inconsistency resolution? In other words, might they be attributable to a tendency for behavioral descriptions of an individual person to elicit inconsistency resolution, whereas trait descriptions do not? Replication of the overall attentional, memory, and judgmental effects observed in the first study—in a processing context that does not give rise to inconsistency resolution—would suggest more broadly generalizable processing implications of linguistic abstraction. These implications are, namely, lower overall depth of processing, accompanied by greater assimilation to expectancies, for (abstract) trait as compared with (concrete) behavioral person descriptions. Such evidence of structural consequences of linguistic abstraction could have broader implications for the study of social cognition.

EXPERIMENT 2

This second experiment constituted a replication of the first experiment in a different task context, one that is known not to elicit inconsistency resolution. The task context used in Experiment 1, in which participants formed impressions of an individual target person, elicits the implicit assumption that there is a fundamental unity to the individual, leading perceivers to view the individual as an integrated whole. In contrast, an aggregate group target is not necessarily perceived as a unified, coherent whole. Indeed, research comparing individual and group targets has shown that perceivers do not engage in inconsistency resolution when presented with an aggregate group target, except in the case of an "entitative" group (i.e., a close-knit, unified group sharing a common identity; see Hamilton & Sherman, 1996; Susskind, Maurer, Thakkar, Hamilton, & Sherman, 1999). For this reason, the task context selected for Experiment 2 was impression formation in relation to a nonentitative, aggregate group target.

The method used in Experiment 2 was identical to that in Experiment 1, except that the entitative individual target used in the first experiment was replaced with a nonentitative aggregate target, that is, an aggregate of persons eliciting no expectations of a unified, coherent personality. In the absence of expectations of a coherent target personality, impression formation involves encoding and integration of the target information only. There is no need to reconcile inconsistencies within the stimulus items, regardless of whether they consist of traits or behaviors, because nonentitative targets do not elicit inconsistency resolution (e.g., Srull, 1981; Srull et al., 1985; Stangor & McMillan, 1992; Stern et al., 1984; Wyer, Bodenhausen, & Srull 1984; for a review, see Hamilton & Sherman, 1996). As such, in this task context involving an aggregate group target instead of an individual target, we expected that linguistic abstraction would no longer moderate differential attention and recall for inconsistent versus consistent information: Neither behavioral nor trait person descriptions were expected to give rise to inconsistency resolution. Hence—in contrast to our prediction and findings in Experiment 1—we expected to find no interaction between stimulus abstraction and expectancy-consistency in analyses of the attention and free recall data. On the other hand, in line with our argument that linguistic abstraction has general depth-of-processing implications independent of inconsistency resolution, we did expect greater overall attention, accompanied by an overall recall advantage, for concrete as compared with abstract target descriptions.

The same reasoning was applied to the judgmental implications of trait and behavioral person descriptions. If the relationship between linguistic abstraction and judgmental outcomes observed in Experiment 1 was merely a consequence of different degrees of inconsistency resolution, then replication of these outcomes would not be expected in Experiment 2. On the other hand, if the judgmental outcomes observed in Experiment 1 were instead attributable to an overall general tendency toward deeper, more systematic processing of (concrete) behavioral stimuli as compared to (abstract) trait stimuli, then these outcomes should also be observable in Experiment 2. We find the latter interpretation more plausible, in view of the theoretical considerations outlined in the introduction. Therefore, in Experiment 2, we expected replication of not only the overall differences in attention and recall but also the judgmental differences observed in Experiment 1.

METHOD

Participants were 100 paid volunteer students (46 male, 54 female) at the Free University Amsterdam. They were recruited via a university newspaper. Their average age was 21.4 years (range: 18 to 28 years).

As indicated above, the method was identical to that in Experiment 1 except for the nature of the target. The individual target used in the first experiment was replaced with an aggregate target, that is, a group of persons sharing the general characteristics listed in the biographical sketch. Participants were given no reason to believe that there was otherwise any connection or contact among the persons making up the aggregate target, which was given a generic label ("Group M"). Each of the 18 stimulus items was said to describe a different member of the nonentitative group.

RESULTS[9]

Processing Indicators

In the following, we report the analyses of attention, recall, and intrusions in two separate sections. First, we present the results for the general hypotheses concerning differential depth-of-processing trait as compared with behavioral language. Subsequently, we discuss the results concerning inconsistency resolution.

Linguistic abstraction and depth of processing. The first question to be addressed is whether behaviors, as compared with traits, were more attended to, were recalled better, and elicited fewer intrusions. Thus, we predicted replication of these effects, as observed in Experiment 1, even with a nonentitative group as the social target. To examine these predictions, relevant main effects were examined in two ANOVAs, with estimated attention and recall as the respective dependent variables. These ANOVAs included one between-subjects variable (stimulus abstraction) and two within-subjects variables (item consistency, item valence).

As predicted, estimated attention to the stimulus items (square-root transformed) was lower in the trait condition than in the behavior condition, $F(1, 97) = 5.32$, $p < .05$ (nontransformed means: $M_T = 2.3$ s, $M_B = 2.8$ s).[10] Furthermore, there was no main effect for consistency as there had been in Experiment 1. There was, however, a main effect of valence, $F(1, 97) = 6.05$, $p < .05$. Greater attention was given to negative stimulus items than to positive stimulus items (nontransformed means: $M_N = 2.7$ s, $M_P = 2.4$ s).[11]

The ANOVA of proportions representing correct recall for the 12 expectancy-relevant items revealed main effects of stimulus abstraction and valence, as observed in Experiment 1. As predicted, the proportion of correctly recalled items was lower in the trait condition ($M = .39$) than in the behavior condition ($M = .46$), $F(1, 98) = 4.92$, $p < .05$. In addition, recall was better for negative stimulus items ($M = .46$) than for positive stimulus items ($M = .39$), $F(1, 98) = 6.83$, $p < .05$. As in the first experiment, an ANCOVA yielded evidence that the greater overall attention given to behavioral versus trait stimuli mediated the recall advantage observed for behavioral over trait stimuli (Sobel's $Z = 1.76$, $p < .05$). The initially significant main effect of stimulus abstraction (reported above) decreased substantially following entry of overall attention as a covariate, $F(1, 96) = 2.71$, $p = .10$. The covariate also showed a significant regression effect, $F(1, 96) = 6.68$, $p < .05$.

Examination of intrusions into free recall revealed the same relationships found in Experiment 1: Intrusions were more frequent in the trait condition ($M = 1.22$) than in the behavior condition ($M = 0.26$; Mann-Whitney $Z = 4.98$, $p < .001$). Moreover, there were more expectancy-consistent intrusions ($M = 0.51$) than non-expectancy-consistent intrusions ($M = 0.23$; Wilcoxon signed ranks test: $Z = –4.21$, $p < .001$).[12]

In sum, even though groups served as the social target in Experiment 2, it was still the case that the abstract (trait) language elicited less attention and was recalled less effectively and less precisely than the concrete (behavioral) language.

Inconsistency resolution. A series of analyses was conducted to test the prediction that stimulus abstraction (trait versus behavioral information) would not moderate the processing of information consistent and inconsistent with expectancies for a nonentitative group target. That is, unlike in Experiment 1, we expected no inconsistency resolution for a group target, even in the behavior condition.

The ANOVAs described above for differential attention and recall were used to test this hypothesis concerning inconsistency resolution. If the inconsistency resolution results of Experiment 1 were replicated for group targets, this would be indicated by Stimulus Abstraction × Consistency interactions in both ANOVAs, with greater attention and recall for inconsistent versus consistent information in the case of behavioral but not trait stimuli. As expected, this interaction was not observed either for attention, $F(1, 97) < 1.00$, or for recall, $F(1, 98) < 1.00$.

Thus, even though behaviors ascribed to a group target evoked greater attention, greater recall, and fewer memory intrusions, inconsistency resolution was not observed for either behaviors or traits when the target was a nonentitative group. This suggests that the attention and recall effects were rooted in different aspects of the stimulus context than the inconsistency resolution effects. The former appear to depend on the degree of concreteness/abstraction of stimuli, whereas the latter require expectations of target cohesiveness together with concrete (behavioral) stimuli.

Judgmental Outcomes

The next research question was whether judgmental outcomes with group targets would, as hypothesized, replicate the results of Experiment 1, with trait stimuli leading to more expectancy-consistent target judgments than behavioral stimuli.

Descriptive target impressions. First, descriptive target impressions were analyzed in an ANOVA, with stimulus abstraction as a between-subjects independent variable and the combined measure of expectancy-consistency (see Experiment 1) of target impressions as a dependent variable. Consistent with our hypothesis, this ANOVA revealed a significant main effect for stimulus abstraction, $F(1, 97) = 4.87$, $p < .05$. The direction of this effect was as expected: Impressions were more expectancy-consistent in the trait condition ($M = 4.8$) than in the behavior condition ($M = 4.6$).

We also considered the possibility that the greater expectancy-consistency of descriptive impressions observed for trait as compared with behavioral stimuli was mediated by an overall difference in depth of processing. However, as in Experiment 1, there were no grounds to test this mediational hypothesis because our operationalization of depth of processing (viz., overall attention) showed no relationship with the expectancy-consistency of descriptive target impressions.

Evaluative target impressions. An additional prediction was that different judgmental weights would be given to expectancies versus the actual stimulus items, depending on whether the stimulus items consisted of traits or behaviors. More specifically, the relative judgmental weight given to expectancies was predicted to be higher in the trait condition than in the behavior condition. As in Experiment 1, this hypothesis was tested in analyses of the three types of evaluative ratings that participants provided in the written questionnaire: their evaluative ratings of the target person and their evaluative ratings of the two components of the stimulus information considered in isolation (viz., the biographical sketch and the stimulus items). These three sets of evaluative ratings were analyzed in two standard regression analyses, conducted separately for participants in the trait and behavioral conditions, respectively. The dependent variable in these analyses was evaluative target impressions. As in Experiment 1, this measure was an average of the items from the global and Semantic-Differential measures of evaluative impressions (Cronbach's $\alpha = .92$). The two predictor variables were participants' evaluative ratings of

Table 3
Prediction of Evaluative Target Impressions From Evaluative Ratings of Biographical Sketch and of Stimulus Items (Separate Standard Regression Analyses for Trait and Behavior Conditions, Experiment 2)

	β	*r* (Zero-Order)
Behavior condition (low stimulus abstraction)[a]		
Evaluative rating of biographical sketch	.53***	.53***
Evaluative rating of stimulus items	.27*	.26*
Trait condition (high stimulus abstraction)[b]		
Evaluative rating of biographical sketch	.60***	.60***
Evaluative rating of stimulus items	.01	.21

a. $n = 47$; $R^2 = .35$.
b. $n = 45$; $R^2 = .36$.
*$p < .05$. ***$p < .001$.

the biographical sketch and of the stimulus items. The regression coefficients for these two predictor variables provided estimates of the judgmental weight given to expectancies and to the stimulus items, respectively, in the formation of evaluative impressions of the target.

The results of the regression analyses were in line with expectations (see Table 3). The regression analysis for the trait condition showed a strong relationship ($\beta = .60, p < .001$) between evaluative ratings of the biographical sketch and evaluative impressions of the target, yet no significant relationship between evaluative ratings of the stimulus items and evaluative impressions of the target. In contrast, the analysis for the behavior condition showed significant regression coefficients for both evaluative ratings of the biographical sketch ($\beta = .53, p < .001$) and evaluative ratings of the stimulus items ($\beta = .27, p < .05$). As can be seen in the right column of Table 3, the zero-order correlations showed a similar pattern. These results suggest that participants in the trait condition based their evaluative impressions of the target primarily on their evaluative expectancies, whereas participants in the behavior condition gave substantial judgmental weight both to evaluative expectancies and to the stimulus items.

GENERAL DISCUSSION

STIMULUS ABSTRACTION AND PERSON MEMORY

The results of the two experiments reported in this article together provide a clearer picture of specific contextual constraints operating on inconsistency resolution. The critical modification introduced in Experiment 2 was the use of a nonentitative group target instead of an individual target. In line with earlier theory and research suggesting that entitative targets elicit inconsistency resolution, whereas nonentitative targets do not (Hamilton & Sherman, 1996; Stangor & McMillan, 1992; Susskind et al., 1999), inconsistency resolution was neither predicted nor observed in Experiment 2. More specifically, whereas the first experiment showed patterns of heightened attention to and recall for expectancy-inconsistent behaviors but not for expectancy-inconsistent traits, the second experiment yielded no such evidence of inconsistency resolution at either level of stimulus abstraction.

Besides corroborating earlier theory and research suggesting that an entitative target is a necessary condition for the emergence of inconsistency resolution, the combined results of the present experiments also tell us something new. This is namely that inconsistency resolution requires not only an entitative target but also a certain type of linguistic context. Processing circumstances that lead perceivers to engage in the cognitive work of resolving inconsistencies in behavioral stimuli do not elicit the same attempt to resolve inconsistencies in more abstract, trait stimuli. Hence, it appears that stimulus abstraction constitutes one of the processing circumstances that moderates the emergence of inconsistency resolution.

According to Stangor and McMillan (1992), the reasons why some processing circumstances elicit inconsistency resolution, whereas other do not, can be characterized as essentially motivational and environmental: Certain circumstances discourage (or prevent) perceivers from carrying out the cognitive work of inconsistency resolution. This explanation is applicable to the question of why (abstract) trait stimuli might discourage inconsistency processing. As prior research has demonstrated, abstract words and texts show a general tendency to elicit less attention and engagement than concrete words and texts; on this basis, one could argue that abstract target descriptions may not elicit the requisite level of engagement needed to enable perceivers to undertake the work of inconsistency resolution. Yet another relevant factor is the robust tendency for poorer recall of abstract as compared with concrete stimuli: Inconsistency resolution involves active consideration and comparison of previously presented person information, activities that would be difficult or impossible in the absence of sufficient memory for this information.

Additional research will be needed to determine the precise implications of the present findings regarding inconsistency resolution for associative network models of person memory (e.g., Srull, 1981; Srull & Wyer, 1989; Wyer, Bodenhausen, et al. 1984). Nevertheless, it is clear that an expansion of existing network models will be necessary to accommodate the present results. Unlike countless reviewers of the person memory literature, who readily draw conclusions from studies of memory for expectancy-consistent and -inconsistent behaviors regarding the processing and encoding of expectancy-consistent and -inconsistent information, the associative network models of Srull, Wyer, and colleagues are very specific about the linguistic nature of the constructs included in associative network structures they postulate: Underlying a person concept are nodes representing the person's behaviors, which may be organized in relation to correspondent trait constructs.

Although the present results demonstrate that traits cannot simply be substituted for behaviors in existing associative network models of person memory, further research will be needed to specify the details of an expanded associative network model incorporating expectancy-consistent and expectancy-inconsistent trait descriptions of a person. Existing associative network models have emerged incrementally, based on years of study of not only levels of recall but also recall latencies, conditional probabilities, and other indicators of recall order. Because the methodology of the present studies did not allow for the latter analyses, additional experimental research will be needed if existing associative network models are to be expanded to include trait descriptors.

One possible avenue for such an expansion is offered by Carlston's (1994) associated systems theory of person representation. This theory casts traits and behaviors as two of nine distinct representational forms with differing roles and implications for person perception. Underlying the nine representational forms are two basic dimensions of difference: "degree of concreteness or abstraction," and "degree of focus on the target or the perceiver" (p. 13). Although associated systems theory is weak in specificity and lacks strong empirical foundations, it does offer a promising general framework for an integrated model of person representation. The theory's inclusion of degree of concreteness or abstraction as a key conceptual dimension makes it highly suited to accommodating the processing and encoding implications of stimulus abstraction suggested by the present research. For the same reason, associated systems theory could also accommodate distinctions related to the level of abstraction of the person concept itself, as investigated by prior researchers (e.g., Andersen & Klatzky, 1987; Andersen, Klatzky, & Murray, 1990; Pryor, McDaniel, & Kott-Russo, 1986).

STIMULUS ABSTRACTION AND PROCESSING STYLE

A second important contribution of the present research was its documentation of processing and judgmental differences between behavioral versus trait stimuli. Irrespective of whether the target was entitative (an individual) or nonentitative (an aggregate group), lower attention, lower recall, more intrusions into recall, and more expectancy-consistent impressions were observed for trait stimuli compared to behavioral stimuli. In other words, for (concrete) behavioral stimuli, processing appeared to be more attentive, encoding stronger and more precise, and impression formation less heuristically guided than for (abstract) trait stimuli. These results are consistent with the general thesis advanced at the beginning of this article: Concrete language elicits systematic processing and abstract language more cursory, semantically driven processing.

The notion that concrete and abstract language elicit systematic and semantically driven processing, respectively, is generally congruent with theoretical positions espoused previously in the social psychological literature. It has, for instance, been argued that objects viewed in a general or categorical fashion are thought about and responded to very differently from objects viewed in specific or personal terms (Brewer, 1988; Fiske & Neuberg, 1990; Sears, 1983). Also, Abelson (1994) has suggested a dichotomy in cognitive activity that is based on the level of generality of the stimulus object. More recently, S. J. Sherman et al. (1999) have argued that a dual-processing account may explain broadly convergent inconsistencies in responses to general versus specific cases, with general cases eliciting peripheral or heuristic processing and specific cases central or systematic processing. Our interpretation of present results corroborates and builds on these points of view.

A similar processing distinction has, of course, been made in the persuasion literature, which distinguishes between central and peripheral processing of message content (e.g., Petty & Cacioppo, 1986) or between systematic and heuristic processing of persuasive messages (Chaiken, 1987). Research in the persuasion literature has been particularly successful in shedding light on the antecedent conditions necessary for these respective styles of processing. Central or systematic processing is engaged by the importance or the self-relevance of the message content (Petty & Cacioppo, 1990), by the availability of cognitive resources (Petty, Priester, & Wegener, 1994), or by the personality trait of high need for cognition (Cacioppo, Petty, & Morris, 1983). The present findings suggest that stimulus abstractness/concreteness may constitute another important factor affecting processing style; further research will be needed to investigate whether the effects of stimulus abstraction observed in the present studies in an impression formation context generalize to other contexts such as the processing of persuasive messages.

One hypothesis with respect to depth of processing found no support in either of the experiments reported: Estimated levels of attention to the stimulus items could not account for the relationship between stimulus abstraction and the expectancy-consistency of target judgments, suggesting that depth of processing does not mediate this relationship. In both experiments, the process measures suggested deeper processing and encoding and the judgment measures less expectancy-driven processing of concrete as compared with abstract stimuli. Nevertheless, there was no evidence that the judgmental effects of stimulus abstraction were in fact mediated by depth of processing.

This absence of mediational evidence is open to a number of interpretations. To begin with, it could be that our imperfect estimate of attention was simply too inaccurate, and too subject to random error, to provide a sufficiently sensitive test of this mediational hypothesis. Another possibility, suggested by prior research, is that the mechanisms governing encoding and recall are cognitively distinct from those governing the formation of judgments: Perceivers' encoding and memory of social stimuli typically show weak or no relationships with the judgments they form based on these stimuli (Hastie & Park, 1986; see also Anderson, 1996; Anderson & Hubert, 1963; Wyer, Srull, & Gordon, 1984). Additional research will be needed to clarify these issues.

LANGUAGE AND SOCIAL COGNITION

The present findings provide new evidence confirming the key role of language in social cognition. The convergent effects observed over two different stimulus contexts (entitative and nonentitative social targets), together with the broad basis of empirical studies from which the present hypotheses were derived, suggest that verbal stimulus abstraction has systematic effects on processing, encoding, and social judgment.

In addition, the present studies serve to expand the domain of relevance of the linguistic category model (Semin & Fiedler, 1988). Research conducted within the framework furnished by this model can be divided into three roughly successive phases (cf. Semin, 1995). Early work served to map out basic categories and cognitive properties of interpersonal language, identifying systematic differences in cognitive inferences elicited by concrete and abstract interpersonal language (Semin & Fiedler, 1988, 1991). Later, language was conceptualized as a tool with specific affordances and functions in social interaction. For example, Maass, Milesi, Zabbini, and Stahlberg (1995) demonstrated how language users vary the abstraction of their messages to communicate and perpetuate intergroup stereotypes. More recently, attention has turned to language as a stimulus property with important structural consequences for social cognition. Research of the latter type suggests that linguistic abstraction can have fundamental effects on memory and social judgment (e.g., Semin, 2000; Semin & De Poot, 1997; Semin & Smith, 1999). The present findings complement and extend this third line of research on linguistic abstraction as a stimulus property: Formulation of person descriptions using (abstract) trait versus (concrete) behavioral language was found to have consistent effects on how information was processed, encoded, and used to form judgments.

Concerning the fundamental basis for relationships between linguistic abstraction and social cognition, the present research leaves one important question unanswered: What exactly is it about trait and behavioral person descriptions that elicits systematic effects on depth of processing and encoding and subsequently on the expectancy-consistency of judgments? It will be recalled from the introduction that our selection of depth of processing as a key potential mechanism in these effects was based on a substantial body of evidence from the fields of cognitive psychology and linguistics, which demonstrates that concrete verbal stimuli attract more attention and are better recalled than abstract verbal stimuli. Unfortunately, despite the remarkable robustness of these concreteness effects in verbal memory—generalizing over instructional sets (e.g., semantic, imagery, and memory tasks), stimulus types (e.g., single words, word pairs, sentences, paragraphs), languages (e.g., English, Indian, Chinese), and memory measures (e.g., recall, recognition memory; see reviews by Marschark & Cornoldi, 1991; Paivio, 1995)—a convincing theoretical account for concreteness effects has yet to be established. Countless highly controlled experimental studies have been devoted to accounting for concreteness effects on the basis of word characteristics naturally confounded with concreteness (e.g., distinctiveness, meaningfulness, frequency of use, and associative set size). Nevertheless, concreteness effects have been shown to be independent of all of these word properties (Gee, Nelson, & Krawczyk, 1999; Marschark & Cornoldi, 1991; Nelson & Schreiber, 1992; Paivio, 1995). In sum, although these studies help to rule out alternative explanations, they leave us without an unequivocal answer to the question of what exactly it is about verbal concreteness that yields robust effects on processing and mental representation.

LANGUAGE AND THE STUDY OF SOCIAL COGNITION

The present results also underscore the need for greater attention to the nature and methodological implications of linguistic stimuli used in social psychological research. This point of view, which we are not the first to advance (e.g., Ostrom, 1984; Semin, 1995; Semin & Marsman, 2000; Wyer et al., 1992), is clearly supported by the main results of Experiments 1 and 2. In view of the numerous processing and judgmental differences observed for trait versus behavioral target descriptions, it is clear that conclusions about social perception derived from research with behavioral stimuli cannot be assumed to generalize to trait or other forms of person information. This point acquires particular relevance if one considers that generalizations from the behavior-based person memory paradigm about the processing and encoding of consistent and inconsistent person information can be found in numerous textbooks and review articles.

To close on a historical note, the present results cast new light on the paradigm shift in person perception research that took place 20 years ago, from trait stimuli (e.g., Anderson & Hubert, 1963; Asch, 1946) to behavioral stimuli (e.g., Hastie & Kumar, 1979; Srull, 1981). This methodological shift, which led to unanticipated findings, was accompanied by a rapid change in the framing of research issues and in models of person perception: Prior to the paradigm shift, person perception was cast almost exclusively in terms of heuristic, expectancy-driven processing (e.g., Taylor & Crocker, 1981); since then, models have come to recognize the possibility of individuated or data-driven processing emphasizing unexpected information (e.g., Brewer, 1988; Fiske & Neuberg, 1990; Srull & Wyer, 1989). In light of the specific relationships between linguistic abstraction and processing style suggested by the present research, we wonder whether this theoretical expansion may have been set in motion largely coincidentally, as a result of the stimulus paradigm shift catalyzed by Hastie and Kumar's (1979) study.

APPENDIX A
Expectancy-Inducing Biographical Sketches Used in Experiments 1 and 2

Housewife target
Marion Brown is 47 years old, is married, and has several children. She is primarily a homemaker but does occasional sewing work for a clothing warehouse. She completed three years at a vocational secondary school. Knitting is her hobby.

Businessman target
Michael Brown is 47 years old, is married, and has several children. He is financial director at an international bank. He has a university degree in economics, with a minor in finance and an MBA from a university in England. His work is his hobby.

APPENDIX B
Trait and Behavioral Stimulus Items Used in Experiments 1 and 2

Trait Stimuli	Behavioral Stimuli
1. (H+) nurturant	1. (H+) brought her/his child's forgotten lunch to school
2. (H+) unselfish	2. (H+) worked as a volunteer at the local hospital
3. (H+) empathic	3.(H+) cried during a documentary on famine in Africa
4. (H–) submissive	4. (H–) asked for spouse's permission to buy a watch
5. (H–) self-effacing	5. (H–) disregarded his/her own wishes regarding family vacation
6. (H–) simple-minded	6. (H–) spent an afternoon reading gossip magazines
7. (B+) assertive	7. (B+) expressed a controversial opinion
8. (B+) achievement oriented	8. (B+) worked long days on an important project
9. (B+) intelligent	9. (B+) spoke in four different languages at a reception
10. (B–) aloof	10. (B–) avoided the neighborhood party
11. (B–) status hungry	11. (B–) joined the most prestigious golf club
12. (B–) authoritarian	12. (B–) seized control over a meeting

Note. H = stimuli expected of the housewife target and unexpected of the businessman target; B = stimuli expected of the businessman target and unexpected of the housewife target; (+) = evaluatively positive stimuli; (–) = evaluatively negative stimuli. Each experimental participant viewed either the trait stimulus set (all 12 items in the left column) or the behavioral stimulus set (all 12 items in the right column).

NOTES

1. In two of the four studies using trait stimuli (Kanungo & Das, 1960; Kanungo & Dutta, 1966), the independent variable under investigation was not the expectancy-consistency of the trait stimuli but rather their motivational implications in an intergroup context.

2. The authors would like to thank Roos Vonk for making these data available for reanalysis.

3. Average evaluative valence of the stimulus items did not differ between the trait and behavioral stimulus sets. Similarly, the trait and behavioral stimuli did not differ in their average consistency or inconsistency with target expectancies.

4. Participant gender and target gender yielded no effects of interest and were not included in any of the analyses reported in this article. Minor inconsistencies in degrees of freedom are due to missing data.

5. These findings must be interpreted with caution because they are based on an estimate of attention to the (short) trait stimulus sentences versus the (longer) behavioral stimuli (see the Method section). An ANOVA of actual observation times revealed comparable results, except that the main effect for item abstraction was much stronger, $F(1, 104) = 76.33$, $p < .001$.

6. Correct recall for the six expectancy-irrelevant stimulus items and for the information contained in the biographical sketches did not differ between the two stimulus abstraction conditions.

7. The main effect for valence is consistent with prior research showing that negative information attracts more attention, and has a stronger influence on judgments, than positive information (for reviews, see Skowronski & Carlston, 1989; Taylor, 1991). However, other studies on the relationship between valence and recall have shown mixed results (e.g., Matlin & Stang, 1978; Pratto & John, 1991).

8. A MANOVA in which the two measures were entered as separate dependent variables produced fully comparable results.

9. Unless otherwise indicated, the data analytic procedures used in Experiment 2 were identical to those used in Experiment 1.

10. One case was deleted from the attention analyses as an outlier.

11. An analysis of actual observation times showed similar results, except that the main effect for item abstraction was much stronger, $F(1, 98) = 34.65$, $p < .001$.

12. As in Experiment 1, correct recall for the six expectancy-irrelevant stimulus items and for the information contained in the biographical sketches did not differ between the two stimulus abstraction conditions.

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