Assimilation and Contrast as a Function of Context-Target Similarity, Distinctness, and Dimensional Relevance

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Two studies examine conditions under which context information that is cognitively accessible and relevant to interpretation of an ambiguous target stimulus is primarily used as an interpretation frame (and leads to assimilation) or as a comparison standard (and leads to contrast). The currently dominating perspectives explain context effects in terms of the perceived extremity and appropriateness of context information. In the present studies, it is demonstrated that, beyond extremity and appropriateness, whether context information instigates assimilative interpretation or contrastive comparison processes may depend on three additional factors: (a) categorical context-target similarity, (b) perceived distinctness of the context information, and (c) relevance of the context information to the dimension on which the target will be judged.

There is no such thing as a context-free judgment. Our feelings and evaluations are experienced contextually and thus determined by their relationships to other affects and judgments. The Sears Tower is tall, heartbreak is horrible, chili con carne is hot, and Einstein is intelligent, but only in the context of other buildings, feelings, foods, and people. The context in which a target stimulus is embedded provides a frame of reference for interpretation and judgment. Hence, the same target can be associated with different responses depending on the context in which it is judged. Some contexts make things appear smaller, feel better, or taste spicier than others and make people look smarter than others.

The Effects of Context

What effects may contextually activated information exert on subsequent judgments? Social comparison and social judgment research has excelled in showing that when contextually activated information is used as a comparison standard, target judgments may be displaced away from the context—a phenomenon known as *comparison contrast.* Thus, when judging a person's physical attractiveness, people will give the target a more positive rating when they have just assessed the looks of the "Elephant Man" than after evaluating a beautiful fashion model (Kenrick & Gutierres, 1980). Similar contrast effects have been observed for judgments of personality traits (Herr, 1986), attitudes and beliefs (Bodenhausen, Schwarz, Bless, & Wänke, 1995), causality (Stapel & Spears, 1996), affect (Manis, 1967), self-esteem (Brown, Novick, Lord, & Richards, 1992), and intergroup perceptions (Krueger & Rothbart, 1988).

A myriad of studies in social cognition research, on the other hand, have shown that when judging an ambiguous stimulus, accessible information may guide the interpretation of this stimulus (Higgins, 1989, 1996; Wyer & Srull, 1989). For example, Srull and Wyer (1979) used a "priming task" to increase the accessibility of the

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concepts "hostility" and "kindness." After this task, participants judged a description of a target person, Donald, whose actions were ambiguously friendly/hostile. Results showed that Donald was rated as more hostile following the priming of the trait concept hostility and as more kind following the priming of the trait concept kindness. Target judgments may thus be *assimilated*, or displaced toward, contextually activated information (see also Higgins, Rholes, & Jones, 1977).

What may determine whether context information is used as an interpretation frame (and results in assimilation) or as a comparison standard (and results in contrast)? The answer to the first part of this question is relatively straightforward. Obviously, context information will be a guide to interpretation only when there is something to be interpreted, that is, when the target stimulus is ambiguous rather than unambiguous (Stapel & Koomen, 1997; Stapel, Koomen, & Van der Pligt, 1997). Furthermore, to exert assimilative interpretation effects, information has to be not only cognitively accessible but also applicable to interpretation of the target (Higgins, 1989, 1996). Thus, when one is trying to form an impression of behavior that can be interpreted as persistent or stubborn (e.g., "She never changes her mind"), the accessibility of inapplicable constructs (e.g., "adventurous" vs. "reckless") will exert no effect, whereas the accessibility of applicable constructs ("persistent" vs. "stubborn") may yield assimilative interpretation effects (Higgins et al., 1977; Sedikides, 1990; Srull & Wyer, 1979).

Thus, important determinants of whether or not context information is likely to yield assimilative interpretation effects are the extent to which this information is accessible and has interpretation relevance and the extent to which the target stimulus is ambiguous (Higgins, 1989, 1996). However, not all types of accessible information that are relevant to the interpretation of an ambiguous stimulus will result in assimilative interpretation effects. One of the goals of the present article is to show that when (accessible and interpretation-relevant) context information possesses features that make it likely to be used as a relevant comparison standard, contrastive comparison rather than assimilative interpretation effects may result. Thus, the question arises as to what features determine whether or not contextually activated information will spark comparison processes.

Extremity and Appropriateness

In classic studies of psychophysics and social judgment, the factor most frequently considered in the explanation of context effects is the perceived extremity or distributional norm of applicable context information (Brown, 1953; Eiser, 1990; Helson, 1964; Herr, 1986; Herr, Sherman, & Fazio, 1983; Kahneman & Miller, 1986; Manis, Nelson, & Shedler, 1988; Parducci & Wedell, 1990; Sherif & Hovland, 1961). Extreme context information is more likely than moderate context information to be used as an anchor with which a target stimulus is contrasted. As Hogarth and Einhorn (1992) put it, "The bigger the anchor, the harder it will fall" (p. 14). Thus, Herr (1986) found that when context information was extreme, contrast followed; an ambiguous target stimulus (friendly/hostile Donald) was judged as hostile when extremely friendly exemplars (e.g., "Ghandi") were primed. When context information was moderately extreme, assimilation was more likely; Donald was judged as relatively friendly when moderately friendly exemplars (e.g., "Robin Hood") were primed.

In more recent studies of context effects, researchers began to consider the role of the perceived appropriateness of the contextually activated information (Bargh, 1992; Schwarz & Bless, 1992; Strack, 1992; Wegener & Petty, 1995). People sometimes are aware that a reliance on contextual information is inappropriate and that this may create a bias in their judgment. If people detect a contextual bias, then they are likely to instigate correction-for-bias processes shifting their judgments in a reverse direction. Thus, contrast effects can occur as a result of correcting for an expected assimilative effect. For example, the unobtrusive priming of trait concepts (e.g., "hostile" or "adventurous") usually results in assimilation. However, when participants remember or are reminded of such a priming task, *correction contrast* occurs (Lombardi, Higgins, & Bargh, 1987; Strack, Schwarz, Bless, Kübler, & Wänke, 1993).

Similarly, assimilation may occur when people perceive that the context information has a *contrastive* influence. Thus, priming extreme exemplars (e.g., "Ghandi") usually results in a *comparison contrast* due to use of this information as a comparison standard. However, *correction assimilation* results when people are aware of the inappropriate biasing influences of these exemplars (Strack, 1992; Wegener & Petty, 1997; Wilson & Brekke, 1994).

The Present Research

In the present article, we argue that for context information to be used as a comparison standard in judgments of ambiguous targets, extremity and appropriateness might not always be sufficient. Three additional factors that have received considerably less attention in the relevant literature also are important: (a) *context-target similarity* concerning the category to which these stimuli belong, (b) the extent to which the context information is perceived as "distinct," and (c) the extent to which context information is thought about in terms of the dimension on which the target will be judged. Although we argue that these factors may be important

for the occurrence of comparison contrast, it is important to note that this should not taken to mean that similar factors play a role in other types of contrast effects such as correction contrast (Martin, Seta, & Crelia, 1990; Strack, 1992) or perceptual contrast (Coren & Enns, 1993).

The current research is motivated by two aims. First and most important, we try to show that the three preceding factors, along with extremity and appropriateness, constitute important conditions for the emergence of comparison contrast. Furthermore, we aim to show that the emergence of contrast and assimilation effects is under the control of several jointly operating variables. More specifically, in the present research, we present our participants with context information that is extreme and appropriate to use. Nevertheless, in this study, we expect contrast especially when the three additional factors of context-target similarity and distinctness *and* dimensional relevance are operating simultaneously. Although each of these three factors has been focused on separately in previous investigations of context effects, no research to date has investigated all proposed relevant factors together in one single research paradigm. We believe, however, that it is time to look at context effects from a comprehensive, multivariate perspective. Such an approach may help to introduce order into the complex field of context effects, where the focus on single variables constitutes the common research practice. Previous research has mainly manipulated one or two of the factors that we propose are important for the occurrence of comparison contrast while keeping the other factors constant (cf. Brown, 1953; Herr, 1986; Kenrick & Gutierres, 1980; Manis et al., 1988; Martin & Seta, 1983; Wedell, Parducci, & Geiselman, 1987).

The second aim of this research is to show how the same single context information may have a very different impact depending on the larger frame in which this information is embedded. In the present research, the specific content of the context information presented to participants always is the same (a very angry or very friendly ape). We want to demonstrate that the impact of this specific information on the rating of an ambiguous target (friendly/hostile Donald) may switch from assimilation to contrast depending on context-target similarity, distinctness, and dimensional relevance. The fact that in the present studies the content of the context information is identical in all conditions makes our research different from previous investigations of comparison contrast, which typically has examined the impact of specific variables (e.g., categorization, distinctness) by manipulating the specific content of context information (Brown, 1953; Eiser, 1990; Helson, 1964; Herr, 1986; Hogarth & Einhorn, 1992; Manis et al., 1988).

In the following three subsections, we discuss the three factors manipulated in the current studies in greater detail and relate them to the existing literature on context effects.

Context-Target Similarity

Objects that belong to the same category (e.g., two humans) more readily invite comparison processes than do objects that belong to dissimilar categories (e.g., people and animals) (Brown, 1953; Coren & Enns, 1993; Parducci, Knoble, & Thomas, 1976; Suls & Wills, 1991). This suggests that for comparison contrast effects to occur, there has to be categorical similarity between target and context stimuli. As Brown (1953) stated, "The anchor, to be effective, must be perceived as a member of the same class" as the target (p. 210).

In the area of social judgment, the importance of context-target similarity for the emergence of comparison contrast is evident in recent studies by Stapel and Koomen on effects of exemplar priming on judgments of an ambiguous target person (Stapel and Koomen, 1997; Stapel et al., 1997). These authors found that friendly or hostile animal exemplar primes (e.g., "shark" or "puppy") were not likely to be used as a comparison standard when judging an ambiguous human target (friendly/hostile Donald). Person primes (e.g., "Hitler" or "Ghandi"), however, were likely to be used as a comparison standard and led to a contrast effect (see also Kahneman and Miller's [1986] discussion of "local norms" and Manis and Paskewitz's [1984] work on "norm specificity").

Although previous investigations have drawn attention to the role of categorization variables, these studies rarely manipulated category membership while keeping the content of the context stimulus constant. In the present article, we extend this earlier research and argue that the same context information can have different effects on target judgments depending on the temporarily activated category membership associated with this information. A manipulation of category membership allows the same context stimulus to be both similar and dissimilar to the target stimulus (i.e., affecting context-target similarity). In other words, whether or not an aggressive context stimulus will be used as a comparison standard in judgments of an ambiguous friendly/hostile target person will depend on how this context stimulus is categorized. When target and context stimuli are categorized as similar (e.g., both are humans), contrast is more likely than when they are categorized as different (e.g., the context stimulus is an animal and the target stimulus is a human). In sum, the effects of a context stimulus on judgment might depend on how perceivers categorize this stimulus. In the present studies, we test this hypothesis.

Distinctness

Context-target similarity alone, however, might not be the only important determinant for comparison contrast to occur. To be used as a relevant comparison standard, contextual information also needs *distinctness.* Helson (1964) noted that stimuli that do not provide judges with information that is perceived as distinctive will not be used as subjective standards for purposes of comparison. Distinct information constitutes a separate entity with clear object boundaries and, therefore, is more likely to be used as a comparison standard than is indistinct, abstract information that can be less easily used as a clear and specific anchor point. The importance of distinctness as a moderator of context effects also is evident from Wyer and Srull's (1989) analysis of priming effects. These authors argued that accessible information is more likely to serve as a comparison standard when a distinct attribute-object link (e.g., "Hitler" or "hostile Adolph") is activated than when that information merely consists of an indistinct attribute concept (e.g., "hostility"). Recently, these claims were corroborated empirically (Stapel & Koomen, 1997; Stapel, Koomen, & Van der Pligt, 1996, 1997).

In the present research, we aim to show that the *same* single context stimulus can have different effects on person judgments depending on its degree of distinctness at the time of judgment. Following recent investigations by Martin and Seta (1983) and Stapel and Spears (1996), we manipulated distinctness by varying the order in which participants made their judgments. Martin and Seta (1983), for example, asked participants to form impressions of two stimulus persons. Some participants were asked to read about both stimulus persons and then evaluate each, whereas others were asked to read about and evaluate one person and then read about and evaluate the other. Martin and Seta found that when participants formed their impressions simultaneously, the impression of the second person was assimilated toward that of the first. Thus, an assimilation effect occurred when the impression formation process of the first person was "unitized" with that of the second person, serving as an indistinct interpretation frame when an impression of that person was formed. When participants formed their impressions sequentially, however, the impression of the second person was contrasted with that of the first. In other words, when the impression of the first person formed a distinct entity, it served as a comparison standard when judging the second person (see also Stapel & Spears, 1996).

Judgment order may thus be one important way in which the distinctness of accessible information can be manipulated. As social cognition research has shown, when an object is explicitly evaluated or judged, associated attribute information is clearly connected and confined to this object (Clore, 1992; Parducci & Wedell, 1990; Wedell et al., 1987; Wyer & Srull, 1989). Explicitly evaluating an object renders its mental representation concrete and distinct rather than abstract and indistinct (see also Martin & Seta, 1983; Murphy & Zajonc, 1993; Stapel & Spears, 1996). This suggests that when a context item is explicitly evaluated before the target, the context is more likely to be used as a comparison standard for target judgments and contrast should occur (Martin & Seta, 1983; Stapel & Spears, 1996). As Parducci has noted in several reviews of the relevant literature, contextual stimuli are most likely to become objects of comparison when they are explicitly judged (Parducci, 1992; Parducci & Wedell, 1990; see also Gilbert, Giesler, & Morris, 1995; Upshaw & Ostrom, 1984). On the other hand, when the context item is judged after the target judgments have been given, it will not be perceived as distinct and concrete and is less likely to be perceived as a relevant comparison standard.

Dimensional Relevance

Context-target similarity and distinctness alone, however, are not the only important determinants for the emergence of comparison contrast. *Dimensional relevance* is another important feature that a context item must possess to be used as a relevant comparison standard; that is, a context stimulus influences the subsequent evaluation of a target stimulus by means of comparison processes only if the stimulus is linked (made relevant) to the dimension of judgment (Brown, 1953; Schwarz & Bless, 1992; Upshaw & Ostrom, 1984). For most psychophysical stimuli, dimensional relevance is an inherent stimulus property. The size, color, or weight of context stimuli will be used to judge the size, color, or weight of target stimuli. However, complex sociopsychological stimuli, such as behavior descriptions, may be thought about in quite a number of dimensions, some of which will and some of which will not be relevant for the judgment task at hand. In this case, explicit judgments of the context on dimensions that are either relevant or irrelevant to the target evaluations may determine whether or not the context will become an object of comparison when constructing target judgments.

A study by Schwarz, Münkel, and Hippler (1990) nicely demonstrated the role of dimensional relevance. Respondents had to rate how "typically German" a number of different beverages were (e.g., wine, coffee). Before they rated these targets, respondents estimated how many Germans drink vodka or beer (a dimension related to typicality) or estimated the caloric content of these drinks (a dimension unrelated to typicality). The former (typicality-related judgment), but not the latter (typicality-unrelated judgment), produced contrast effects on the "Germanicness" of the target drinks.

In a study of person judgment, when a target person is to be evaluated (e.g., "How friendly is Donald?"), contextually activated information (e.g., "someone named Ralph") must be evaluated with regard to the dimension on which the target is judged (e.g., "friendliness"). When context stimuli are thought about in relation to dimensions that are not relevant for the target judgment (e.g., "intelligence"), they should not be used as a comparison standard (Upshaw & Ostrom, 1984). In the present research, we test this hypothesis.

Hypotheses: Assimilation and Contrast as a Function of Context-Target Similarity, Distinctness, and Dimensional Relevance

Context information may serve to interpret an ambiguous person description and result in assimilation when this information is accessible and relevant to interpretation of the target stimulus. However, when (accessible and interpretation-relevant) context information possesses features that increase the likelihood that it will be used as an object of comparison during judgment, contrastive comparison effects may occur. Thus, we distinguish two types of context effects—*interpretation effects* and *comparison effects*—and relate this distinction to the *type* of information that is activated (for similar distinctions, see Manis & Paskewitz, 1984; Schwarz & Bless, 1992; Strack, 1992; Wyer & Srull, 1989).

Specifically, we suggest that whether (accessible and interpretation-relevant) context information will lead to assimilation or contrast effects in judgments of an ambiguous target will (at least in part) depend on the following factors. Given that context information is perceived as both extreme and not inappropriate (two factors that are important determinants of comparison contrast but are not the focus of the present research), *contrast* is more likely when contextually activated information belongs to the same category as the target (context-target similarity), when this information is distinct (distinctness), and when it is thought about in terms of the dimension of judgment (dimensional relevance). Under conditions in which *any* of these three features does not apply, it will be less likely that comparison contrast occurs. Under such conditions, accessible and interpretation-relevant context information may have insufficient features that increase its use as a comparison standard, but its valence may guide the interpretation of ambiguous target stimuli and instigate *assimilation.*[1]

Research Overview

We tested our hypotheses in two studies. In each of these studies, we presented participants with two scenarios, each describing the behavior of a particular stimulus. The first scenario described the behavior of the target stimulus person, Donald. The behavior of the target stimulus was ambiguous and could be interpreted either as friendly or hostile (Srull & Wyer, 1979). The second scenario presented the context stimulus. The scenario described a behavior of an ape, Ralph. Ralph's behavior was unambiguous and implied either extreme hostility and aggressiveness or extreme friendliness and kindness. By having an ape as a context stimulus, we could use the inherent categorical fuzziness of anthropoids (Are they a special breed of humans, or are they best likened to animals?) to show how the flexibility of categorization can affect the use of one single context stimulus in subsequent judgments.

In each of the two studies, we examined the influence of the unambiguous context stimulus (Ralph) on judgments of the ambiguous target (Donald). In Study 1, we investigated how manipulations of context-target similarity and distinctness affect whether assimilation or contrast occurs. In Study 2, we kept these two factors constant (high context-target similarity and high distinctness) and tested our hypothesis concerning the importance of dimensional relevance for the emergence and direction of context effects (assimilation and contrast).

CONTEXT-TARGET SIMILARITY AND DISTINCTNESS: APE STUDY 1

Method

PARTICIPANTS AND DESIGN

Participants (N = 114) were undergraduates (mean age 18 years) from the University of Michigan who participated in exchange for partial course credit. The total sample of participants consisted of 62% female and 38% male students. The participants were randomly assigned to the conditions of a 2 (context categorization: human, animal) × 2 (context valence: positive, negative) × 2 (judgment order: target first, context first) between-subjects design.

PROCEDURE

After participants arrived in the laboratory, the experimenter handed out the questionnaires and introduced the experiment as a study on "reading and evaluating newspaper articles." The first newspaper article that participants read was the ambiguous description of Donald, whose behavior could be categorized as either hostile and unfriendly or assertive and friendly (Srull & Wyer, 1979). On the next page was the description of the behavior of the context stimulus, the ape (Ralph). When participants finished reading, they worked through the questions. On completion, the questionnaires were collected and the participants were asked what they thought the experiment was about, thanked, and debriefed.

INDEPENDENT VARIABLES

Context categorization. In the context scenario, the behavior of Ralph, an ape, was described. The categorization of Ralph ("human" or "animal") was manipulated by emphasizing either the "humanness" or "animalness" of apes in the first paragraphs of the context scenario. Following are some examples of context-as-animal and context-as-human categorizations:

> Of all animals, apes are definitely the most interesting and most entertaining to watch and study. Together with other animal species such as lions, tigers, snakes, and exotic birds, apes are among the most popular attractions in zoological gardens all over the world. (Animal)
>
> Apes are just like people, and that makes them so very interesting and entertaining to watch and study. Apes laugh, they cry, they fight, and they walk on two legs. Recent research has shown that apes can learn to work (and play) with computers. Furthermore, it has been demonstrated that apes are experiencing thoughts and feelings in ways that resemble human cognitive functioning. (Human)

> All over the world, the behavior of apes is being studied on a day-to-day basis by researchers connected to zoological gardens or animal biology departments of prestigious universities. (Animal)
>
> All over the world, the behavior of apes is being studied to better understand human behavior. Thus, evolutionary psychologists and sociobiologists often study the behavior of apes. (Human)

> Ralph provides the researchers of the National Zoological Park with valuable insights in their beloved object of investigation, the behavior of animals. (Animal)
>
> Ralph provides the researchers of the Institute for Evolutionary Psychology with valuable insights in their beloved object of investigation, the evolution of the behavior of human beings. (Human)

Context valence. In the *positive* (*negative*) condition, the general introduction of the context scenario was followed by several descriptions of Ralph's behavior that implied *friendliness and kindness* (*hostility and aggressiveness*). In a pretest (n = 18), respondents rated "hostile Ralph" as very hostile and not at all kind, whereas they rated "friendly Ralph" as not at all hostile and very kind. Following are some relevant excerpts from the scenarios:

> Recently, Ralph's behavior has been helping the researchers in their understanding of *friendliness* (*aggressiveness*). The last couple of years, Ralph's behavior has become more and more *friendly* (*aggressive*), according to Professor Brown. . . . Unfortunately, to date, Brown and his research group have not been entirely successful in explaining the recent increase of *amiable* (*hostile*) acts in Ralph's behavior. . . . When Ralph is given his food, most of the time he *looks very happy* (*howls maliciously*) and *eats it with a smile around his face* (*throws it away as far as he can*). Ralph *is also very eager* (*often refuses*) to partake in the games and tests that the researchers give him. When a researcher approaches him, Ralph *opens his arms in an inviting manner* (*growls and starts to strike out left and right*). . . . Ralph is very *friendly* (*hostile*) and *agreeable* (*adverse*).

Judgment order. The distinctness manipulation consisted of the order in which participants were asked to rate Ralph (the unambiguous context stimulus) and Donald (the ambiguous target) on trait dimensions. Participants in the target-first condition first rated Donald and then Ralph. Participants in the context-first condition first rated Ralph and then Donald.

DEPENDENT VARIABLES

After participants had read the two newspaper articles, they indicated their impressions of Ralph and Donald. Participants rated each stimulus on five trait dimensions. Two dimensions implied either a high or low degree of hostility ("friendly," "hostile"), and three dimensions were unrelated to hostility ("intelligent," "narrow-minded," "interesting"). The latter scales were included to decrease the possibility of participants becoming suspicious that the concept of interest was hostility related. Related and unrelated rating scales were interspersed with each other. Ratings were made along a scale from 1 (*not at all*) to 9 (*extremely*). The ratings of Donald (the ambiguous target) constitute the main dependent variables.

To assess whether our context categorization manipulation was successful, at the end of the questionnaire, participants were asked how strongly they agreed (1 = *strongly disagree*, 9 = *strongly agree*) with several opinion statements. Two of these statements contained manipulation checks on the context categorization manipulation: "The behavior of apes does not show much resemblance to the behavior of people" and "The scientific study of the behavior of apes does not teach us much about human behavior."

Results and Discussion

MANIPULATION CHECKS

Context valence. First, it was checked whether the manipulation of the valence of the unambiguous context stimulus (Ralph) was effective. Multivariate analyses showed a significant main effect of context valence ($p <$ .01) on ratings of Ralph's friendliness and hostility. As predicted, analyses of variance (ANOVAs) revealed that respondents rated Ralph as more friendly (M = 7.8) and less hostile (M = 2.2) in the positive condition than in the negative condition (Ms = 3.9 and 6.9, respectively), $F(1, 106) > 200$, $p < .001$. These analyses show that the

valence manipulations led to different impressions of the context stimulus.

Further analyses of context ratings revealed no other main or interaction effects. The absence of judgment order effects indicated that ratings of the context stimulus (Ralph) were similar regardless of whether they were made before or after ratings of the target stimulus (Donald). The absence of categorization effects indicated that ratings of Ralph were similar regardless of whether he was categorized as a human or an animal.

Context categorization. Analyses of the categorization measures revealed that this manipulation also was successful. Respondents who were told that apes were animals and different from humans agreed more with statements that the behavior of apes is dissimilar to that of people and does not teach much about their behavior ($M = 4.0$) than did respondents who were told that apes and people are similar ($M = 3.1$). This difference between context-categorized-as-animal condition and context-categorized-as-human condition was reliable, $F(1, 106) = 17.74$, $p < .01$. No other main or interaction effects were found ($Fs < 1$).

TARGET ANALYSES

It was predicted that participants' judgments of the ambiguous target would be contrasted with the unambiguous context stimulus when the context was perceived as belonging to the same category as the target and when context ratings had to be made before judging the target. When participants categorized the context as being dissimilar to the target and/or rated the target stimulus before the context, their judgments would be assimilated to the context. Thus, a three-way interaction was predicted among the effects of the context categorization, context valence, and judgment order factors.

These predictions were tested in ANOVAs. No main or interaction effects were found on the unrelated rating scales ("intelligent," "narrow-minded," "interesting"). Effects were found, however, on the related rating scales ("friendly," "hostile"). This is evidence against the possibility that participants were responding to the evaluative aspects of the concepts activated by the context information and were merely forming evaluatively consistent judgments (Higgins et al., 1977; Martin et al., 1990). A reliability analysis of the related rating dimensions was conducted to form a composite scale of these two ratings (after rescoring "hostile" ratings). This related ratings index was sufficiently reliable (Cronbach's alpha = .63). Participants' mean scores on this index, ranging from 1 (*negative*) to 9 (*positive*), were used as a dependent variable in the main analyses.

To test the predicted pattern of results, we submitted the scores on the related ratings index to a Context Categorization × Context Valence × Judgment Order ANOVA. This revealed the predicted three-way interaction, $F(1, 106) = 7.84$, $p < .01$; a Context Categorization × Context Valence interaction, $F(1, 106) = 18.74$, $p < .01$; a Context Valence × Judgment Order interaction, $F(1, 106) = 15.74$, $p < .01$; and a Context Valence main effect, $F(1, 106) = 10.05$, $p < .01$. Table 1 shows participants' scores for each of the conditions.

TABLE 1: Mean Ratings of Ambiguous Target (Donald) as a Function of Context Categorization, Context Valence, and Judgment Order: Ape Study 1

	Person		*Animal*	
Judgment Order	*Positive Valence*	*Negative Valence*	*Positive Valence*	*Negative Valence*
Context (Ralph) first	3.0^a	4.5^b	4.4^b	3.2^a
Target (Donald) first	4.4^b	3.3^a	4.8^b	3.1^a

NOTE: Means are computed over the related rating scales ("friendly" and "hostile"). Scale range is from 1 to 9. Higher scores indicate more positive ratings. Means that do not share superscripts differ significantly at $p < .05$.

To further clarify this pattern of results, we conducted separate analyses for the context-categorized-as-human condition and context-categorized-as-animal condition of the design.

Context-categorized-as-human condition. An ANOVA revealed a Context Valence × Judgment Order interaction, $F(1, 52) = 18.15$, $p < .01$. No other main or interaction effects were revealed ($Fs < 1$). As can be seen in Table 1, these effects reflect that, as predicted, participants who first judged the context stimulus *contrast* their target ratings to the context. These participants rated Donald as more positive when Ralph was negative ($M = 4.5$) than when Ralph was positive ($M = 3.0$), $F(1, 52) = 12.85$, $p < .01$. The ratings of participants who first judged the target stimulus reveal *assimilation.* These participants rated Donald as more positive when Ralph was positive ($M = 4.4$) than when Ralph was negative ($M = 3.3$), $F(1, 52) = 5.97$, $p < .05$.

Context-categorized-as-animal condition. An ANOVA revealed a context valence main effect, $F(1, 54) = 37.21$, $p < .01$. No other main or interaction effects were revealed ($Fs < 1$). As can be seen in Table 1, this effect reflects that, as predicted, participants *assimilate* their target ratings to the context independent of judgment order. These participants rated Donald as more positive when Ralph was positive ($M = 4.6$) than when Ralph was negative ($M = 3.2$).

This pattern of findings indicates that the accessibility of the same single context stimulus may result in assimilation as well as in contrast effects. Respondents' judgments of the ambiguous target were *contrasted* with unambiguous context information when that informa-

tion was perceived as belonging to the same category as the target (context-target similarity) *and* when context ratings had to be made before judging the target (distinctness). When either of these two preconditions for contrast was not met, assimilation occurred.

DIMENSIONAL RELEVANCE: APE STUDY 2

The findings of Study 1 do not inform us about the role of *dimensional relevance*—the third factor that, according to our hypothesis, is an important determinant of the occurrence of comparison contrast effects. In the first study, dimensional relevance was not manipulated and always was present; that is, in all conditions participants judged the context stimulus on dimensions that were related to the target description ("hostile" and "friendly"). In Study 2, we tested our hypothesis that for context information to be perceived as a comparison standard, it needs to be thought about in terms of the relevant judgment dimensions (cf. Schwarz et al., 1990; Upshaw & Ostrom, 1984). When context information lacks dimensional relevance, assimilative interpretation effects may occur. Thus, in Study 2, we exposed respondents to a context stimulus that was perceived as distinct (context judgments were given before target judgments) and as similar to the target (the ape, Ralph, was categorized as human), but we manipulated whether participants rated the context stimulus on dependent measures that were related ("hostile" and "friendly") or unrelated ("honest" and "boring") to the target description.

Method

PARTICIPANTS AND DESIGN

Participants ($N = 63$) were undergraduate students (mean age 19 years) from the University of Michigan who participated in exchange for partial course credit. The total sample of participants consisted of 59% female and 41% male students. The participants were randomly assigned to the conditions of a 2 (context valence: positive, negative) × 2 (dimensional relevance: relevant, irrelevant) between-subjects design.

PROCEDURE, INDEPENDENT VARIABLES, AND DEPENDENT MEASURES

The procedure of the present study was similar to the one followed in Study 1. The materials and dependent measures used were similar to those used in the context-categorized-as-human-and-judged-first conditions of Study 1. Participants read the ambiguous target scenario about Donald, read the unambiguous context scenario about Ralph, and then rated these two stimuli on several trait dimensions The *context valence* manipulation was similar to the one used in Study 1. As in the first study, participants rated the ambiguous friendly/hostile target stimulus on two related ("friendly," "hostile") and three unrelated ("intelligent," "narrow-minded," "interesting") dimensions. Context ratings differed between levels of *dimensional relevance.* In the *relevant* condition, participants rated the unambiguous (friendly vs. hostile) context stimulus on the same (related and unrelated) dimensions as they rated the target stimulus. In the *irrelevant* condition, no relevant context ratings were made; the two relevant dimensions were replaced by two irrelevant dimensions ("boring," "honest").

Results and Discussion

MANIPULATION CHECKS

Context valence. First, we checked whether the context valence manipulation of the unambiguous context stimulus indeed changed people's judgment of Ralph. As predicted, ratings of Ralph were affected by the valence manipulation only when these rating scales tapped the relevant dimension. Thus, respondents rated Ralph as more friendly ($M = 7.3$) and less hostile ($M = 2.5$) in the positive condition than in the negative condition ($Ms = 3.4$ and 6.8, respectively), $Fs(1, 59) > 35$, $ps < .001$, whereas no effects were found in the condition where these "friendly" and "hostile" ratings were replaced by "honest" and "boring" ratings. Analyses of the other context ratings ("intelligent," "narrow-minded," "interesting") revealed no effects.

Context categorization. Similar to Study 1, after participants had rated the context and target stimuli, they were asked how much they agreed with the statements that (a) the behavior of apes is dissimilar to that of people and consequently (b) does not teach much about human behavior. Because in Study 2 all participants were exposed to the context-categorized-as-human condition of Study 1, we expected that participants' scores on these categorization measures would be similar to those in the relevant condition of Study 1. This indeed was the case; in the present study, respondents' scores on the two context categorization measures were similar to the scores of the context-categorized-as-human respondents in Study 1 ($Ms = 3.3$ and 3.1, respectively).

TARGET ANALYSES

We anticipated that participants' judgments of the ambiguous target (Donald) would be contrasted with the context when that context stimulus was perceived as being distinct and a member of the same category as the target and, most important for our present concern, was rated on dimensions that were relevant to the target description. We expected that assimilation would occur when the context was rated on irrelevant dimensions. Thus, a Context Valence × Dimensional Relevance interaction was predicted.

Similar to Study 1, this prediction was tested in an ANOVA with the related ratings index (Cronbach's

alpha = .72) as a dependent variable (no main or interaction effects were found on the unrelated rating scales). This revealed the predicted interaction, $F(1, 59) = 16.67$, $p < .01$. Table 2 shows participants' scores for each of the conditions. As can be seen in the table, this interaction reflects the fact that, as predicted, in the relevant conditions, participants contrasted their target ratings with the context. These participants rated Donald as more positive when Ralph was negative ($M = 4.1$) than when Ralph was positive ($M = 2.7$), $F(1, 59) = 14.82$, $p < .01$. The ratings of participants in the irrelevant condition suggest an assimilation effect. These participants rated Donald as more positive when Ralph was positive ($M = 3.6$) than when Ralph was negative ($M = 2.9$), $F(1, 52) = 3.55$, $p = .06$.

These findings support our hypothesis that for comparison contrast to occur, it is not sufficient that there is context-target similarity and that the context is perceived as distinct (see Study 1). In Study 2, respondents were exposed to a context stimulus that was perceived as distinct (context was judged before judging the target) and as similar to the target (context and target both were categorized as "human"), but *contrast* occurred only when respondents rated the context stimulus on measures that were relevant to the target description. When the context was rated on irrelevant dimensions, assimilation followed.

TABLE 2: Mean Ratings of Ambiguous Target (Donald) as a Function of Context Valence and Dimensional Relevance Given the "Context-Categorized-as-Person-and-Judged-First" Condition: Ape Study 2

Dimensional Relevance	*Positive Valence*	*Negative Valence*
Relevant	2.7^{a}	4.1^{bb}
Irrelevant	3.6^{b}	2.9^{aa}

NOTE: Means are computed over the related rating scales ("friendly" and "hostile"). Scale range is from 1 to 9. Higher scores indicate more positive ratings. Means with different superscripts differ significantly at $p < .05$ (a-b, a-bb, b-aa) and $p < .07$ (aa-bb).

GENERAL DISCUSSION

The results of these experiments are consistent with our hypotheses concerning the impact of contextually activated information on judgments of ambiguous targets. Context information that belongs to the same category as the target, is perceived as distinct, and taps the relevant judgment dimension is likely to be used as a comparison standard in subsequent judgments and result in contrast. However, when context information lacks context-target similarity *or* distinctness *or* dimensional relevance, it is less likely to spark such comparison processes. In this case, the contextually activated information does not possess sufficient features to be used as an object of comparison during judgment and is more likely to merely serve as an interpretation frame given that the information is accessible and relevant to interpretation of an ambiguous target. Then assimilation will occur.

The attentive and well-informed reader might argue that this description of the current assimilation effects as *interpretation* effects is perhaps somewhat strange. After all, in each of the two studies, participants were exposed to the context scenario (about Ralph) *after* they had read the target scenario (about Donald). Srull and Wyer (1980) demonstrated that the effects of accessible information on the encoding of ambiguous information occur primarily at the time the information is first received and that once an impression has been formed, information that is activated subsequently has little influence on the interpretation of a target (Srull & Wyer, 1980; see also Stapel et al., 1997). There is, however, an important difference between the current studies and the Srull and Wyer studies. In the present studies, the context scenario was presented immediately after the target scenario and before respondents were explicitly asked to evaluate the stimuli on specific rating dimensions. In the Srull and Wyer studies, the delay between exposure to the target description and the context information was considerably longer (i.e., 24 hours to 1 week). Thus, whereas in the present studies participants could easily postpone or not finalize their evaluations of the target until after reading the context scenario, in the Srull and Wyer studies it would have been extremely difficult to remember the original target description at the time that context information was presented. As Thompson, Roman, Moskowitz, Chaiken, and Bargh (1994) showed recently, people can easily "re-encode" ambiguous target information when context information is given immediately after initial encoding. Re-encoding is much more difficult when the delay between exposure to target and context information is much longer (Sedikides, 1990; Thompson et al., 1994).

The present conceptualization shares some similarity with previous studies pointing to the importance of context-target similarity (Manis & Paskewitz, 1984), distinctness (Stapel et al., 1997), and dimensional relevance (Schwarz et al., 1990) for the occurrence of comparison contrast. Compared to these previous studies, however, the research presented here shows that the joint operation of these factors may determine whether or not context information is perceived as a relevant comparison standard. Whereas previous research has mainly focused on the (main) effect of one of these variables, the present conceptualization and experimental paradigm allowed us to simultaneously study the (interaction) effects of context-target similarity, distinctness, and dimensional relevance.

Furthermore, when compared to previous investigations of assimilative interpretation and contrastive com-

parison effects, the present studies show that a *single* context stimulus may be perceived as similar or dissimilar to the target, distinct or indistinct, and dimensionally relevant or irrelevant, depending on subtle contextual cues. Hence, in the current set of studies, we used rather novel manipulations of these variables. Our results thus demonstrate the flexibility of categorization as well as its subtle but important impact on subsequent judgments. Subtle features of the judgment task may determine how a given context stimulus ("aggressive/friendly Ralph") is perceived and whether assimilation or contrast will occur.

The assimilation and contrast effects found in the current studies depended on the context-target similarity, distinctness, and dimensional relevance of the contextually activated information. Previous social judgment research has focused primarily on the importance of both the perceived "extremity" and "appropriateness" of contextually activated information as preconditions for contrast (for reviews, see Eiser, 1990; Helson, 1964; Parducci, 1992; Parducci & Wedell, 1990; Schwarz & Bless, 1992; Sherif & Hovland, 1961). Thus, it is necessary to consider whether the current results can be explained solely in terms of these two well-known factors.

In the present research, all participants were exposed to a context scenario that was extreme. Thus, across all conditions of the two experiments, the extremity precondition for comparison contrast was met. This fact, and the fact that both assimilation and contrast resulted from the same single context stimulus, rules out the possibility that our findings can be explained in terms of actual or relative extremity of the context stimulus.

It also is difficult to explain our results in terms of appropriateness. According to such an account, contrast effects could result from the correction for "inappropriate" contextual influence (Martin et al., 1990; Strack, 1992; Wegener & Petty, 1995). However, one reason why it is unlikely that correction rather than comparison processes led to our contrast findings is that the predicted pattern of assimilation and contrast effects across the current studies (recall that the direction of context effects is dependent on the *combined* consequences of quite subtle manipulations of context-target similarity, distinctness, and dimensional relevance) seems too complex to be explained in terms of demand characteristics or people's naive theories about how to correct for perceived bias. Furthermore, recent research on correction contrast has shown that for correction processes to be brought about, people have to be pointed explicitly to the contaminating influence of context information on target judgments. Even in conditions where the possibly corrupting influence of context information is extremely salient (e.g., the context is close at hand, extreme, explicitly judged, and vividly presented), most people seem to correct only when they are explicitly told not to let the context affect their judgments (Stapel, Martin, & Schwarz, 1996). Finally, Wegener and Petty (1995, 1997) showed that when people are first asked to judge specific *exemplar* information (e.g., "How desirable is the weather in Hawaii?") and then are asked to judge a target stimulus (e.g., "How desirable is the weather in Kansas?"), they generally hold theories of *contrastive bias* (e.g., "Hawaii will make Kansas look awful"), and when told to correct, they will therefore correct in the direction of assimilation (Stapel, Martin, & Schwarz, 1996; Wegener & Petty, 1995, 1997). This suggests that in the present set of studies, in which exemplar information ("friendly/aggressive Ralph") was activated, the correction processes instigated by variables such as target-context similarity, distinctness, and dimensional relevance would have resulted in assimilation and not in contrast. This implies that a correction account of assimilation and contrast effects would have predicted the exact opposite of what our findings show (see also Stapel, Koomen, & Van der Pligt, 1996, 1997).

For these reasons, we prefer to view the contrast effects reported here as a *comparison contrast*, resulting from an implicit comparison of the context and target scenarios, as opposed to a *correction contrast*, resulting from attempts to subtract contextual "contamination" from target judgments. More generally, we argue that both the assimilation and contrast effects obtained in our studies represent "natural" or "uncorrected" context effects (see also Stapel, Koomen, & Van der Pligt, 1996, 1997; Wegener & Petty, 1995, 1997). Thus, this research can be taken as contributing to the current debate regarding the natural and correction context effects (Martin, 1996; Martin et al., 1990; Schwarz & Bless, 1992; Strack, 1992; Wegener & Petty, 1995). Whereas some researchers may assert that "the predominant context effect in the social judgment literature is the contrast effect" (Herr et al., 1983, p. 325; see also Brown et al., 1992; Gilbert et al., 1995; Manis & Paskewitz, 1984) and others argue that assimilation, not contrast, is the more natural context effect (Higgins, 1989; Martin et al., 1990), our findings suggest that there is no truly natural context effect (see also Stapel, Koomen, & Van der Pligt, 1996, 1997; Wegener & Petty, 1995).

The forgoing discussion is consistent with recent findings by Winkielman and Schwarz (1996). In their studies, participants were primed with extreme exemplars that varied on categorical relation to the targets of judgments. If the primes could be included in the representation of the target category, then assimilation followed. If the primes could only be used to construct a standard of comparison, then contrast followed. Given that the priming was done subliminally, these results cannot be plausibly explained by corrective processes.

The present analysis thus focuses on contrast effects in which the context is used as a standard of comparison. In the social judgment literature, it has been argued that there are at least two forms that such contrast effects could take. One is a comparison involving the subjective representation of the context stimulus (e.g., "aggressive Ralph") and the target stimulus ("friendly/unfriendly Donald"). According to this perspective, comparison contrast is a centrally mediated (i.e., perceptual phenomenon. Just as lukewarm water "feels" cold when one has just had a hot bath, Donald is "seen" as less friendly compared to aggressive Ralph (Helson, 1964).

The alternate view is that comparison contrast is an output phenomenon that occurs when individuals attempt to translate a previously formed impression in an overt response (Upshaw & Ostrom, 1984). More specifically, it is assumed that individuals align the extremes of the available response alternatives with the extreme values of the stimulus they expect to judge. A change in the relation between the objective and subjective ranges would cause a stimulus of a given subjective value to be mapped onto a different objective response category; that is, if participants in the positive context conditions had used "friendly Ralph" to define the positive end point of response scales, the meaning of this end point might have been more positive than in the negative context conditions. According to this account, comparison contrast does not result from changes in cognitive representation; instead, it is thought to reflect changes in the way in which this representation is described (rated).

It was not a goal of our studies to provide evidence for or against either *perceptual* or *semantic* accounts of comparison contrast. In fact, several authors have noted that, especially when it concerns psychosocial stimuli, it is extremely difficult to unequivocally distinguish these two types of contrast effects (Manis & Paskewitz, 1984; Parducci, 1992; Strack, 1992; Upshaw & Ostrom, 1984). However, there are several findings in the present set of studies for which a semantic model of comparison contrast could not account. First, in Experiment 1, all participants were exposed to the same context and target stimuli and rated these stimuli on the same response scale. Therefore, in that experiment, all respondents should have had the same stimulus range and the same response range. Hence, they should have aligned their subjective and objective ranges in the same way across conditions. If so, then the semantic model of comparison contrast should have predicted that there would be no differences in judgments. We think that the most parsimonious explanation, therefore, is that in the present studies contrast occurred because respondents' representation of the target stimulus changed. Those conducting future research might want to more specifically delineate what type of comparison contrast is underlying the present pattern of findings.

One of the goals of this article was to delineate some determinants of the occurrence of comparison contrast in judgments of ambiguous targets. Our findings show that when context information is not used as a comparison standard, assimilation rather than contrast is likely to occur. This suggests an "if no contrast, then assimilation" rule. As we noted in the introductory paragraphs, however, the mechanisms underlying context effects are a little more complex. Previous research suggests that assimilative interpretation effects will occur in judgments of ambiguous targets only when the context information is both relatively accessible and relevant to interpretation of the target (Higgins, 1989, 1996). Interestingly, the results of Study 2 suggest that context information that possesses "interpretation relevance" may exert its assimilative influences *independent* of whether this context information is explicitly judged on relevant or irrelevant dimensions. Specifically, in Study 2, contrast was found in conditions where a context stimulus was rated on dimensions that were relevant to the interpretation of an ambiguous target stimulus, whereas assimilation occurred when this context stimulus was rated on irrelevant dimensions. Apparently, when people rate a context stimulus on dimensions that are irrelevant to subsequent target judgments, the information that is activated through the rating process does not possess features that increase the likelihood that it is used as a comparison standard. However, when the *contents* of a context stimulus are sufficiently relevant to interpret the target stimulus (e.g., imply extreme traits on the relevant dimensions such as "Ralph is extremely friendly" vs. "Ralph is extremely hostile"), its effects seem unaffected by the cognitions triggered during the construction of "irrelevant" context judgments (e.g., "To what extent is Ralph boring?"). In this case, the activated context information appears to linger, with assimilation as a result.

To summarize, the main theoretical contribution of the present research has been to show that the same context scenario can be used as an interpretation frame or a comparison standard during impression formation, depending on subtle changes in the context of judgment. Furthermore, the present conceptualization suggests that, similar to the necessity of *interpretation relevance* for assimilative interpretation effects (accessible information needs to be relevant to the interpretation of an ambiguous target), *comparison relevance* seems to be an important factor when it comes to predicting contrastive comparison effects. Context information is especially likely to be used as a comparison standard when it is perceived as relevant. What determines comparison relevance? Whereas previous conceptualizations mainly

emphasized the importance of extremity and appropriateness (Eiser, 1990; Parducci & Wedell, 1990), the present studies revealed the importance of context-target similarity, distinctness, and dimensional relevance.

NOTE

1. It is important to note that previous studies in psychophysics and social judgment suggest that under conditions in which context stimuli do not spark comparison processes, the context will not affect judgment at all (Gilbert et al., 1995; Parducci, 1992; Parducci & Wedell, 1990; Sarris & Parducci, 1978). Information that does not constitute a relevant comparison standard will be discarded as irrelevant for the judgment task at hand (see also Brown, 1953; Kahneman & Miller, 1986; Manis & Paskewitz, 1984). Social cognition research implies, however, that at least some null effects of context reported in earlier psychophysics and social judgment research might be related to the fact that the target stimuli used in these research paradigms are *un*ambiguous target stimuli that need no extensive interpretative effort (e.g., judgments of the heaviness of weights, size of buildings, ferocity of animals, or price of cars). As we noted earlier, when a target stimulus is ambiguous, accessible information may be used not only as a comparison standard but also as an interpretation frame resulting in assimilation (Herr, 1986; Higgins, 1989; Schwarz & Bless, 1992; Stapel et al., 1997; Wyer and Srull, 1989).

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