DIRECTION OF COMPARISON IN TYPICALITY JUDGMENTS

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Two studies demonstrated that direction of comparison effects, a hallmark of feature matching models of comparison in preference and similarity judgments, were also found in typicality comparisons. College students compared the typicality of two group members (movie stars in Study 1, $N = 82$; fraternity members in Study 2, $N = 153$) who had been rated as equally typical in isolation. When group members shared typical features but had unique atypical features, participants rated the target of comparison (second group member) as more atypical than the referent (first group member). When group members shared atypical features, but had unique typical features, the pattern was reversed. Participants who were themselves members of the group provided similar ratings (Study 2). Consistent with past findings, the typicality judgments reflect a focus on the unique features of the target of comparison. Results are discussed in terms of judgments of members of stereotyped groups.

Stereotyping research has long explored how people's knowledge of social categories develops, noting in some cases that stereotypes can form without any actual correlation between features and group membership (Hamilton & Gifford, 1976). It has also been found that like other mental constructs, stereotypes guide judgments and influence assumptions once they have formed. Furthermore, research addressing the phenomenon of out-group homogeneity demonstrates that labeling a target person as being part of a group that one does not belong to oneself will likely result in the assumption that the target shares a number of "typical" fea-

tures with other members of the group (Linville, Fischer, & Salovey, 1989; Park & Rothbart, 1982).

This paper examines comparative judgments of stereotypes, exploring how people make relative comparisons about who fits a group category better.

Everyday conversations are peppered with assessments of how well people fit the various social categories into which they have been sorted (for example, comments such as "He's not your typical computer scientist" and "The candidate is much more of a traditional tax-and-spend Democrat than her predecessor"). Often, the comparison is based on processing a series of features, which suggests that the feature-based models of judgments that have been developed to explain preference judgments (e.g., Houston & Sherman, 1995) may also help to explain and to predict the outcome of feature-based typicality judgments. Just as people's preferences for one car over another may be based on positive features such as good gas mileage and racing stripes and negative features such as a bad service record or cramped headroom, their judgments of which of two people is the more typical university professor may be based on typical features such as a love of bookstores and wearing tweed and atypical features such as boxing for a hobby and being addicted to a soap opera.

The relationship between the features of the two options being compared — in particular, which features are shared by the two options and which are unique to one option or the other — plays a large part in the outcomes of feature-based preference (e.g., Hodges, 1998; Houston & Sherman, 1995; Houston, Sherman, & Baker, 1989) and similarity judgments (e.g., Dhar, Nowlis, & Sherman, 1999). The goal of the present studies was to see if the feature matching strategies used in preference judgments could also be found in people's comparative judgments of how typical someone is of a particular social category. Specifically, the studies address the question of whether changing the direction of a comparison can influence judgments of typicality.

DIRECTION OF COMPARISON

Comparisons are not symmetrical. Instead, they are directional, such that one thing, known as the target of comparison, is compared to another thing, known as the referent. Although the direction is often not explicitly noted, reversing the order of the comparison has noticeable effects. In one telling example provided by Medin, Goldstone, and Gentner (1993), comparing a surgeon to a butcher conveys a distinctly different message than comparing a butcher to a surgeon. Saying that Pleasant Valley Baptist Church in our hometown resembles Notre Dame

in Paris seems more sensible than saying that Notre Dame resembles the church in Pleasant Valley. The object in the referent position functions as a standard or an anchor for the judgment and evaluation of the other object. The other object, the target of comparison, is viewed in relation to the referent.

In general, there are a number of cues that predict which object will be used as a referent in a comparison. Standard versions or defaults tend to be used as referents; for example, people compare the "extended coverage health plan" to the standard package offered by their employer. The more common or familiar item is generally the referent as well: Zebras look like horses, rather than horses looking like zebras (Bowdle & Medin, in press). Referents are likely to precede the target of comparison temporally. For example, it is more common to hear of people comparing a daughter (target of comparison) to her mother (referent) than comparing the mother to the daughter (Beike & Sherman, 1998).

However, a temporal separation of a whole generation is far from necessary to get such order effects. Merely presenting one item a few seconds before another has been demonstrated to be a powerful manipulation of direction of comparison (Hodges, 1998; Houston et al., 1989). Unlike cases in which the referent is a reference point because it is standard or familiar (e.g., Bowdle & Medin, in press), in many circumstances that involve comparison (e.g., hiring employees, buying a new house, choosing which personal ad to respond to), the referent may arbitrarily be the first option encountered.[1]

Directional asymmetry in comparisons appears to a robust feature of human comparison strategies. In order to make sense of comparisons involving two items, people must first have some means of aligning the two items (Gentner & Markman, 1994; Medin et al., 1993). This alignment is accomplished by mapping features or qualities of the target of comparison onto those of the referent (Tversky, 1977). Shared features match up, providing an anchor for the comparison and leaving the unique features of the target of comparison as a measure of the target's distance from the referent. When making similarity judgments, initial similarity is framed by noting which features are shared and then adjusted depending on the number of "leftover" or unique features.

When the goal of a comparison is to arrive at a preference judgment, the importance of the unique features is even clearer: The shared features do not distinguish between the two options, and thus cannot be

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1. The referent tends to be the first item encountered; however, grammatically, the referent is generally the second item mentioned in the comparison - for example, "Spring [target of comparison] was better than winter [referent]."

used to form a preference for one versus the other. In preference judg-
ments, the shared features have been described as "canceling out"
(Hodges, 1997; Houston & Sherman, 1995), leaving only the unique fea-
tures of the target of comparison to drive the preference. All other things
being equal (including, by definition, shared features), the result of pref-
erence judgments can be predicted by examining the valence of the
unique features of the target of comparison: If the unique features of the
target of comparison are positive, it will be preferred, whereas if they are
negative, the referent will be preferred (Hodges, 1998; Houston &
Sherman, 1995).

Thus, the way the features of the two items being compared match up
(or do not match up) creates an immediate context that will affect the
outcome of the comparison. The importance of a particular feature in
making a comparison depends on the comparison context (Murphy &
Medin, 1985). Order of presentation is probably responsible for some of
the most arbitrary comparison contextual influences, rendering differ-
ent status to two items that in many cases should be on equal footing. In
preference judgments for example, both options may in fact be objec-
tively equal, possessing equal numbers of equally positive and negative
features, but if the shared and unique features tend to be predominantly
of one valence, direction of comparison can produce lopsided prefer-
ences. For example, when trying to decide between Hondas and
Mazdas, a consumer may view both cars as energy efficient and reliable,
but think that the Honda is overpriced and has a bad trunk design
whereas the Mazda will be hard to find good service for and will have
poor resale value. In other words, the decision is framed as one between
two options that share positive features but have unique negative fea-
tures. Because of the temporal order effect in determining which object is
used as the referent and which as the target of comparison, whichever
car is encountered second becomes the target of comparison, and is
therefore likely to be least preferred due to the focus of attention on the
unique features of the target of comparison, which in this case are nega-
tive. If the consumer viewed the two cars as sharing negative features
and having unique positive features, then the opposite pattern would
occur: The second car encountered would be preferred, because of the
focus on its unique features, which in this case would be positive.

The strongest tests of this phenomenon have used items that receive
very similar evaluations in isolation (see Hodges 1998; Houston &
Sherman, 1995). Each of these items is favored when paired with one of
the other items with which it shares negative features, but the very same
item is shunned when it is paired with one of the other items with which
it shares positive features. Thus, it is not merely the presence of another
item that creates this context effect — the direction of the effect is re-

versed depending upon the valence of the shared features and unique features.

TYPICALITY

Feature matching models of comparison have been applied to similarity (Dhar et al., 1999; Tversky & Gati, 1978) and preference judgments (Hodges, 1998; Houston & Sherman, 1995; Houston et al., 1989). It seems plausible, but as of yet untested, that they should apply to feature-based judgments on other dimensions, such as typicality. The present studies ask whether direction of comparison affects people's judgments of how typical an individual is of a particular group. Instead of using features that were positively or negatively valenced to describe the individuals (as have been used in preference judgments), the descriptions were composed of features that were either typical or atypical of members of a particular group. Instead of asking which of the two descriptions they preferred, participants were asked which person was most typical of the group.

If feature matching models apply to typicality judgments, then there should be direction of comparison effects. If two things being compared have shared typical and unique atypical features (e.g., two professors who wear tweed and love bookstores, but one boxes and the other watches "General Hospital"), the target of comparison should be seen as more atypical than the referent because of the extra focus on the unique features of the target of comparison (see Figure 1). When the two things being compared have shared atypical and unique typical features (e.g., two professors who box, but one is so absent-minded she cannott remember her dog's name and the other has a whole closet full of tweed), the target of comparison should be seen as more typical than the referent, even though they might be rated as equally typical if they were seen separately from each other.

STUDY 1

METHOD

Participants. College students ($n = 82$, comprised of 51 females and 31 males) participated in large groups in exchange for partial fulfillment of a course requirement.

Procedure. Participants were told that the study they were taking part in involved making comparisons. They were told that they would read some information about two movie stars, and that they should think about which movie star was more typical of movie stars in general. Par-

Referent   Target of comparison

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┌────────────────────────────────────────┐      ------------      ┌──────────────────────────────────┐
│ Wears tweed                            │      ------------      │ Wears tweed                      │
│ Love bookstores                        │                        │ Loves bookstores                 │
│ but...                                 │                        │ but...                           │
│ Has subscription to "Muscle Cars Monthly"│                      │ Boxes for a hobby                │
│ Constantly listens to Top-40 radio     │                        │ Huge fan of "General Hospital"   │
└────────────────────────────────────────┘                        └──────────────────────────────────┘
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Boxes for a hobby
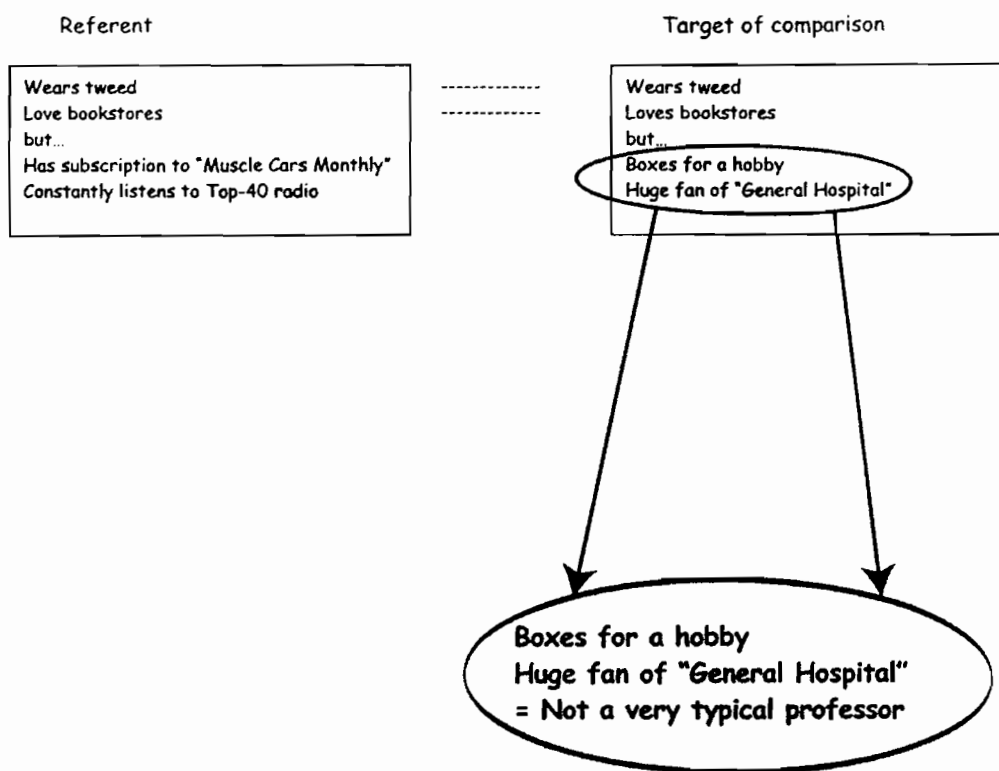**Huge fan of "General Hospital"**
= Not a very typical professor

FIGURE 1. Direction of comparison effect for two professors with shared typical and unique atypical features. The unique features of the target of comparison receive more attention than those features that match up with features of the referent.

ticipants were told to read through a packet that contained the movie star descriptions page by page in sequence. The descriptions were followed by questions about the movie stars.

Movie Star Descriptions. We developed a list of behaviors and pretested them among a group of college students who were asked to tell us how typical each behavior was of movie stars (each behavior was rated by at least 31 students). Pretesting participants rated each behavior on a 7-point scale, with 1 indicating "not at all typical" and 7 indicating "very typical" of a movie star. Drawing from the pretested behaviors, we constructed three descriptions of movie stars that each had three typical features (rated at least 5.00 on the 7-point scale, such as "Lives in a penthouse"), three atypical features (rated no higher than 3.00, such as "Chews tobacco"), and one feature that was nondiagnostic of movie stars (rated between 4.23 and 4.31, close to the midpoint of the scale, such as "Favorite color is blue"). When rated in isolation, these three 7-item descriptions were rated very similarly in terms of overall typicality (ranging from 3.02 to 3.27 - somewhat atypical - on a 7-point scale).

Typicality Conditions. One description, the "constant description," could be paired with one of the other descriptions to form a pair of descriptions that shared typical features but not atypical features. The constant description could be paired with the third description to form a pair of descriptions that shared atypical features but not typical features. (The nondiagnostic features were also always unique in these pairs.) For the complete descriptions, see the Appendix.

Based upon which descriptions were in their packets, participants were randomly assigned to the shared typical/unique atypical condition or the shared atypical/unique typical condition. The "constant description" appeared in both conditions; what determined the condition was whether the constant description was paired with the description with which it shared typical features, or with the description with which it shared atypical features. Order within the pairs was counterbalanced, with the constant description sometimes appearing as the referent (first) and sometimes as the target of comparison (second).

Dependent Measures. The descriptions were followed in the packet by a questionnaire that first asked participants to rate which of the movie stars they had read about was more typical, using a 12-point bipolar scale (based on a question used in Houston et al., 1989), with the anchor at "1" indicating that the first movie star (the referent) was much more typical and the other anchor at "12" indicating that the second movie star (the target of comparison) was much more typical. Participants were then asked to rate the referent movie star on three 7-point scales: how typical a movie star the person was, how likely they would be to find someone like this who was a movie star, and how well this person fit their concept of a movie star (high numbers indicated greater typicality for all three questions). Participants were asked the same questions for the target of comparison movie star. Finally, participants were then given a surprise free-recall task, in which they were asked to recall as many features of each of the two movie stars as possible. After the recall, participants were given a debriefing questionnaire, assessing their understanding and any prior knowledge of the study.

RESULTS

Mean scores of less than 6.5 on the 12-point "bipolar scale" ("Which movie star is more typical?") would indicate that the referent (the first movie star) was seen as more typical, whereas mean scores greater than 6.5 would indicate that the target of comparison (the second movie star) was seen as more typical. The results for this scale revealed a clear direction of comparison effect. When the movie stars had unique atypical features, the referent was seen as more typical ($M = 5.22$, $SD = 2.99$), and
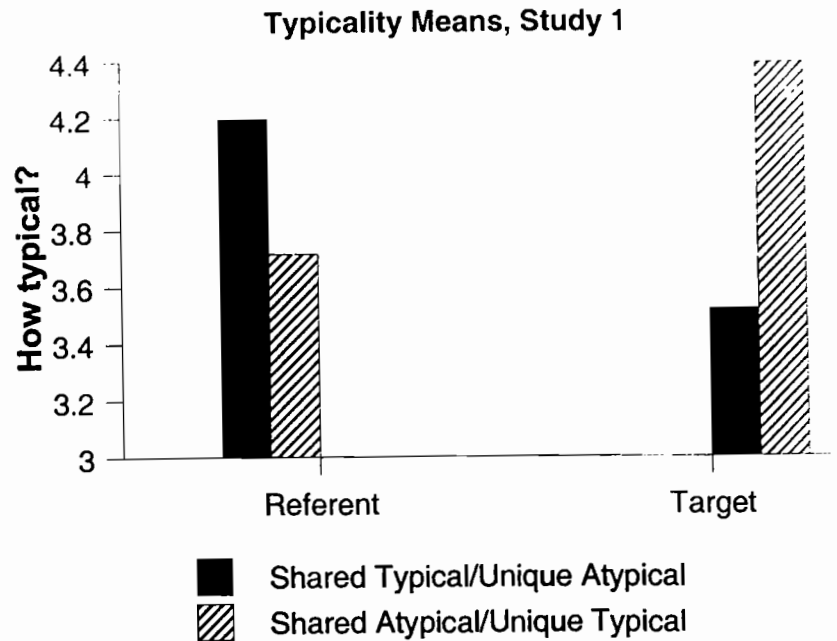
Typicality Means, Study 1

FIGURE 2. Typicality means, Study 1.

when the movie stars had unique typical features, the target of comparison was seen as more typical ($M = 6.63, SD = 2.96$), $t(80) = 2.15, p = .034$.

The intercorrelations of the three 7-point typicality questions (how typical a movie star the person was, how likely participants would be to find someone like this who was a movie star, and how well this person fit their concept of a movie star) were high, ranging from .48 to .80, so a mean typicality score was computed for each movie star. A 2-x-2 within-between ANOVA (with typicality condition as the between-subjects factor and movie star—first or second—as the within-subjects factor) on the mean typicality scores ratings revealed no main effect for typicality condition, $F(1, 80) = 1.48, p = .22$. However, consistent with a direction of comparison prediction, there was an interaction of the within-subjects factor of movie star order with typicality condition, $F(1, 80) = 11.57, p = .001$ (see Figure 2). A contrast demonstrated that the target of comparison (the second movie star) was rated as more typical when the two movie stars had unique typical features than when they had unique atypical features $F(1, 80) = 9.64, p < .003$. A contrast on the ratings of the first movie star showed a nonsignificant trend in the opposite direction, with participants rating the first movie star as more typical when it had unique atypical features than when it had unique typical features, $F(1, 80) = 2.93, p = .09$. Sex of participant had no main effect on typicality ratings, nor did it interact with the other variables.

A subset of the participants' recall was coded by one of the authors and an undergraduate research assistant. They agreed 93% of the time about what features the participants were recalling, and the research assistant coded the remainder of the recall. Participants' overall recall performance tended to be roughly the same, regardless of whether they viewed two movie stars that shared typical features or atypical features (59% and 57% of the characteristics recalled, respectively, $F(1, 80) = 1.04$, ns.). However, it was easier for them to recall shared features than unique features, 69.9% versus 51.6%, respectively, $F(1, 80) = 42.87$, $p <$ .001. This effect was moderated by condition, $F(1, 80) = 11.04$, $p = .001$. Participants recalled more shared features in the shared typical/unique typical condition than in the shared atypical/unique typical condition (77% vs. 63%), but they recalled fewer shared features in the shared atypical/unique typical condition than in the shared typical/unique atypical condition (46% vs. 57%). In essence, this two-way interaction is really a main effect of typicality: The features that were typical of movie stars were easier for participants to recall than features that were atypical.

DISCUSSION

The data show clear evidence of a direction of comparison effect. The typicality level of the unique features of the target of comparison predicted the relative ordering of the two movie stars. When the second movie star had unique typical features, this movie star was seen as more typical than the first. When the second movie star had unique atypical features, this movie star was seen as less typical than the first.

Because one of the movie star descriptions appeared in all of the packets, sometimes as a referent and sometimes as a target of comparison, and sometimes sharing typical features and sometimes sharing atypical features with the other description, it was possible to see how the ratings of just this option were affected by direction of comparison and type of features. As can be seen in Figure 3, the results for this "constant" movie star echoed the results using all three descriptions. When this movie star was the target of comparison, it was rated as much more typical in the shared atypical/unique typical condition than in the shared typical/unique atypical condition. When this movie star was the referent, its ratings were similar, regardless of whether it shared atypical or typical features with the other movie star, with results moving slightly in the opposite direction of those obtained for the target of comparison.

Consistent with results from past studies (Hodges, 1997; Houston et al., 1989), characteristics shared by the movie stars were better recalled than characteristics that were unique to one movie star, probably due to a rehearsal advantage (shared features were part of both descriptions
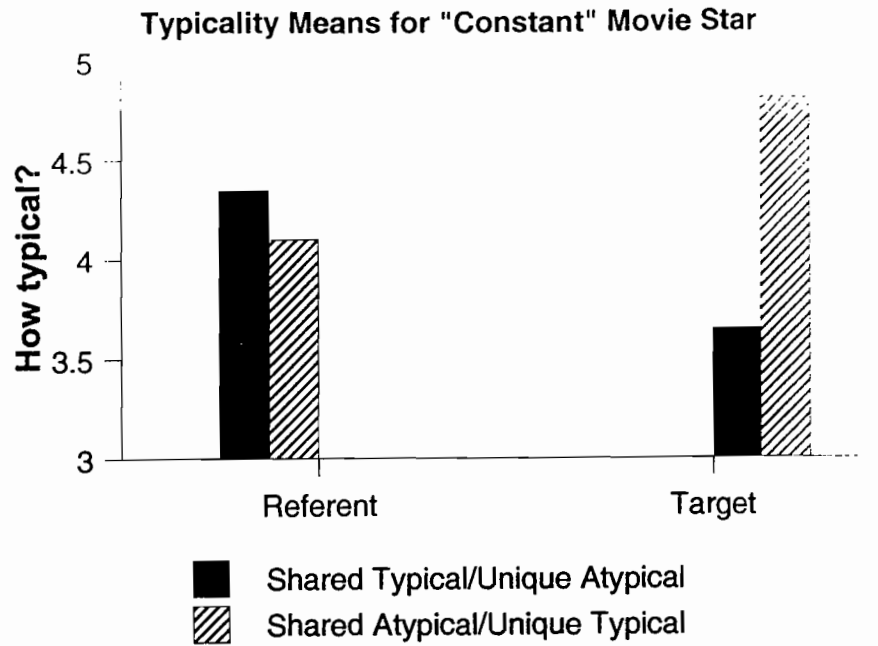
FIGURE 3. Typicality means, "constant" movie star.

and thus seen twice, whereas unique features were only seen once in one description). The recall data in Study 1 also suggest that participants generally had more trouble recalling atypical features about the movie stars (such as remembering that a movie star was a math genius or collected "Beanie Babies") than typical features (such as living in a penthouse or drinking skim milk lattés), suggesting a possible congruency effect on recall (Cohen, 1981). In order to replicate the basic finding and extend the generalizability to a different set of stimuli, we conducted a second study using descriptions of fraternity members instead of movie stars. This also allowed us to test whether people making typicality judgments of other members of their own in-group (i.e., research participants who were themselves fraternity members) would show the same pattern of results as participants judging targets of an out-group (movie stars). In addition, in Study 2, rather than having a "constant" description that could be paired with one description to create a shared typical/unique atypical pair and with the other description to create a shared atypical/unique typical pair, we used four descriptions. Each description, rather than just one, could be paired with one of the other descriptions to form a pair of fraternity members that shared typical features but had unique atypical features, and paired with another description to form a pair of fraternity members that shared atypical features but had unique typical features.

STUDY 2

METHOD

Participants. College students (*n* = 134) participated in exchange for partial fulfillment of a course requirement. Two participants were removed from analyses for not following directions and four others were removed because of a clerical error in the materials, leaving 128 participants (58 females and 70 males). Participants were run in small groups that ranged from 1 to 8 participants.

Procedure. Participants were told that they were taking part in a study that involved making comparisons. The experimenter explained that they would read some information about two "guys" on campus who were members of fraternities, and that while they were reading the information, they should think about how typical the two individuals were of fraternity members. The descriptions of the fraternity members were part of a packet that participants were told to read through one page at a time in sequence. The descriptions of the two fraternity members, followed by questions about the two fraternity members, were on separate pages.

Fraternity Descriptions. Descriptions of fraternity members were developed from a pool of behavior and trait items developed by Peters and Rothbart (2000). Peters and Rothbart asked college students to rate these items on a 7-point scale, with "1" indicating that the item "very strongly disagreed" with their image of the typical fraternity member and "7" indicating that the item "very strongly agreed" with their image of the typical fraternity member. The descriptions of the fraternity members in the present study contained seven features: three that were typical of fraternity members (such as "owns a sweatshirt with Greek letters on it"), three that were atypical of fraternity members ("dislikes football") and one that was not diagnostic of fraternity membership ("prefers McDonald's to Burger King"). In order to be considered typical, an item had to receive an average rating of greater than 5.00 (items ranged from 5.14 to 6.37). In order to be considered atypical, an item had to be rated on average less than 3.00 (items ranged from 1.60 to 2.92). Nondiagnostic items received ratings between 4.03 and 4.30.

Four different fraternity member descriptions were developed in pretesting. When rated in isolation, these four descriptions were rated very similarly in terms of overall typicality (ranging from 3.10 to 3.27 - somewhat atypical - on a 7-point scale). Each of the descriptions could be paired with one of the other descriptions to form a pair of descriptions that shared typical features but not atypical features and paired with another description to form a pair of descriptions that shared atypical fea-

tures but not typical features. The nondiagnostic features were always unique. (For the complete descriptions, see the Appendix.)

Typicality Conditions. Four possible pairings of the descriptions could be made: two with shared typical/unique atypical features and two with shared typical/unique atypical features. Thus, based upon which descriptions were in their packets, participants were randomly assigned to the shared typical/unique atypical condition or the shared atypical/unique typical condition.

Any description could appear in either the shared typical/unique atypical condition or the shared typical/unique typical condition; what determined the typicality condition was which features the two descriptions shared. In addition, the order within a pair of descriptions could be flipped, resulting in eight possible different ordered pairs. One of the eight different ordered pairs was randomly distributed to each participant in a packet.

Dependent Measures. The descriptions were followed in the packet by a questionnaire that first asked participants to rate which of the two fraternity members they read about was more typical. This question (as in Study 1) used a 12-point "bipolar" scale, with the anchor at "1" indicating that the first fraternity member (the referent) was much more typical and the other anchor at "12" indicating that the second fraternity member (the target of comparison) was much more typical. Participants were then asked to rate the referent fraternity member on three 7-point scales: how typical a fraternity member he was, how likely they would be to find someone like him in a fraternity and how much he fit their concept of a fraternity member (high numbers indicated greater typicality for all three questions). Next, participants were asked the same questions about the target of comparison fraternity member. This first packet of questionnaires was collected by the experimenter, and participants were given a surprise free-recall task, in which they were asked to recall as many features of each of the two fraternity members as possible.

RESULTS

As in Study 1, on the 12-point "bipolar" question, mean scores less than 6.5 indicated that the referent (the first fraternity member) was seen as more typical, whereas mean scores greater than 6.5 indicated that the target of comparison (the second fraternity member) was seen as more typical. Consistent with the predicted direction-of-comparison hypothesis, when the fraternity members had unique atypical features, the referent was seen as more typical ($M = 5.67$, $SD = 2.58$) and when the fraternity members had unique typical features, the target of comparison was seen as more typical ($M = 7.12$, $SD = 2.38$), $t(126) = 3.31$, $p = .001$.
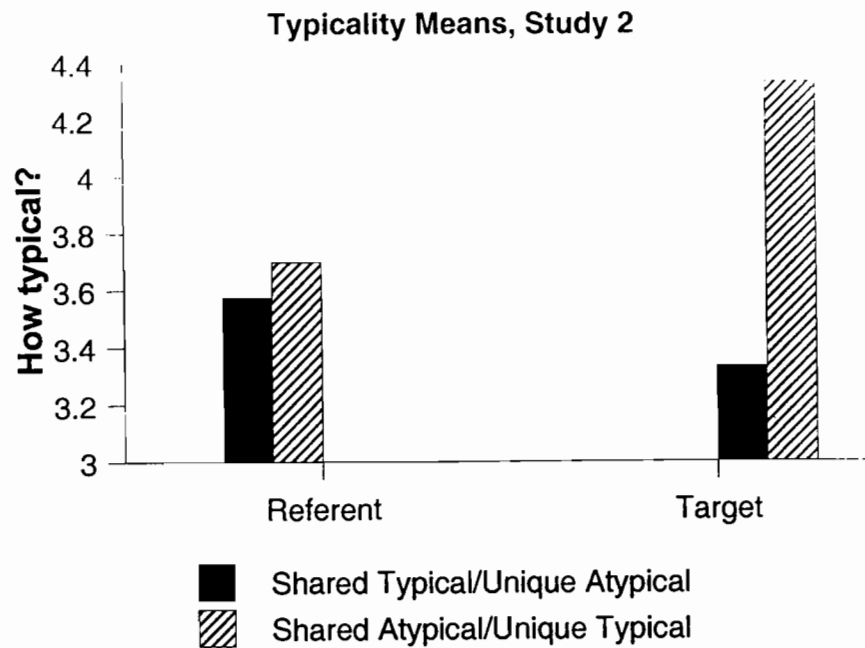
FIGURE 4. Typicality means, Study 2.

The intercorrelations among the three 7-point typicality questions that asked participants to rate each fraternity member separately (how typical, how likely to be in a fraternity, and how well he fit the concept of fraternity member) ranged from .60 to .77, so for each fraternity member, a mean typicality score was computed by taking the mean of these three measures. A 2-x-2 within-between ANOVA (typicality condition was the between-subjects factor and fraternity member—first or second—was the within-subjects factor) on the mean typicality scores ratings revealed a main effect for typicality condition, $F(1, 126) = 8.49, p = .004$ (see Figure 4). However, an examination of the means reveals that this pattern was much more pronounced in the ratings of the second fraternity member (the target of comparison) than the first (the referent), as indicated by the interaction of the within-subjects factor of fraternity member with the between-subjects factor of typicality condition, $F(1, 126) = 14.41, p < .001$. A contrast demonstrated that the target of comparison (the second fraternity member) was rated as more typical when the two fraternity members had unique typical features than when they had unique atypical features $F(1, 126) = 16.85, p < .001$, but that this difference was not present for the referent (the first fraternity member). Although there was a marginal trend for female participants to view both fraternity members as less typical than male participants, $F(1, 126) = 3.68, p = .057$, sex did not interact with any of the other factors.

Some of our participants ($n = 9$) were fraternity members themselves, and we considered the possibility that in-group members might use different comparison strategies than out-groups. Using a mass pretesting session to locate fraternity members in the subject pool, as well as collecting some data at a neighboring university, we recruited an additional sample of 24 fraternity members, to give us a sample of 33 fraternity members. These participants showed a very similar pattern of results on the 12-point scale, rating the referent as more typical when the fraternity members had unique atypical features, ($M = 5.18, SD = 2.48$) and the target of comparison as more typical when the fraternity members had unique typical features ($M = 7.38, SD = 2.25$), t (31) = 2.66, $p = .012$. When these participants rated each fraternity member separately, their typicality ratings of the second fraternity member (the target of comparison) also looked very similar to the larger sample. The second fraternity member was rated as more typical when the two fraternity members had unique typical features ($M = 4.77, SD = .98$) than when they had unique atypical features ($M = 4.06, SD = 1.11$). Fraternity members' ratings of the referent (the first fraternity member) showed a weaker version of the opposite pattern. The referent was rated as more typical when it had unique atypical features ($M = 4.40, SD = 1.08$) and less typical when it had unique typical features ($M = 4.10, SD = 1.07$). This interaction was significant, F (1, 31) = 7.50, $p = .01$.

Three sets of recall data were discarded, one because the recall instructions were defective and two because participants appeared to have copied recall responses from other participants (listing atypical features that were not part of the descriptions in their packets and that were part of the descriptions in other packets). As in Study 1, a subset of the recall data was coded by one of the authors and a research assistant, who agreed 98% of the time, and the research assistant coded the rest of the recall. Overall, participants' recall performance was the same whether they received fraternity members with shared typical and unique atypical features or fraternity members with shared atypical and unique typical features (61% of the characteristics recalled in both conditions). As in Study 1, participants tended to recall a higher percentage of shared characteristics (79.7%) than unique characteristics (46.6%) about both fraternity members, F (1, 123) = 213.92, $p < .001$.

DISCUSSION OF STUDY 2 AND GENERAL DISCUSSION

The data from Study 2 clearly replicate those from Study 1, providing strong evidence of a direction of comparison effect. Once again, the unique features of the target of comparison predicted the relative typicality ranking of the two fraternity members. When the second fraternity

member had unique typical features, he was seen as more typical than the first, but when the second fraternity member had unique atypical features, he was seen as less typical than the first. By using the same descriptions and simply varying the order in which they were presented and whether typical and atypical features were unique or shared, the effect of immediate context is apparent. The same descriptions appeared as both targets of comparison and referents and also appeared in both the shared typical/unique atypical condition and the shared atypical/unique typical condition. Thus, the effects that were demonstrated can be attributed to feature matching strategies, not to any one particular description.

Although we did not ask participants in either study how positively or negatively they viewed the target groups, the general campus stereotype seemed to be somewhat negative for fraternity members (anecdotal evidence of this was apparent in the comments of a participant who, when asked if he himself was in a Greek organization, responded, "Hell, no!"). However, no such negative stereotype was apparent for movie stars (nor, for that matter, was there any evidence of a positive stereotype of movie stars). Had we only found direction of comparison effects for fraternity members, it could have been argued that "typicality" was a proxy for "undesirability" (and "atypicality" a proxy for "preference") and that our participants were in fact simply using feature matching to make preference judgments, a phenomenon that has already been replicated several times in other studies. The fact that we obtained similar results for both sets of stimuli further supports the idea that feature matching strategies are used in comparisons on dimensions other than preference.

The dimension judged in the current two studies (typicality) may be thought of as a specific case of similarity judgments. A prevailing view in cognitive psychology is that in order to talk about making comparisons - and in particular similarity judgments - one also has to provide the dimension on which the comparison is to be made (see Medin et al., 1993). For example, in similarity judgments, the dimension can be specified explicitly (e.g., "How similar are Oregon and Washington in terms of climate?") or may emerge from context (e.g., if someone turns red, begs for a glass of water, and then reports that the chile pepper she just ate "was similar to a jalapeño," one is likely to assume that dimension of similarity is piquancy).

When asking which of two people is more typical of a particular group, the dimension for comparing the two people is defined by an additional implicit comparison to a prototypical member or a definition of the group. In order to compare typicality, people have to know what constitutes a prototypical member of the category, in the same way that

they would have to know what "rainy" was to compare the weather in two northwestern states or "piquant" was to compare two chile peppers. In comparisons where this prototype itself serves as the only referent (e.g., "Is Bob a typical fraternity member?"), any atypical features of the target of comparison will be unique: By definition, a feature that is atypical of a group will not be found in a description of a prototypical group member. While several earlier studies have demonstrated direction of comparison effects in similarity judgments when one item serves as a habitual reference point (e.g., Catrambone, Beike, & Niedenthal, 1996; Tversky & Gati, 1977), the present studies differ in that they explore these effects when the direction of comparison is determined arbitrarily by order of presentation. In comparisons such as those found in the present studies, prototypes may differentially affect typicality judgments of the two group members. Typicality judgments of the first member encountered might be largely determined by distance from the prototype, whereas judgments of the target of comparison may show more immediate contextual effects, with influences from both the stored reference point of a group prototype and the immediate referent provided by the features listed in the first description participants read. It is those immediate context effects that make a target of comparison look quite typical, even if it has three highly atypical features - as long as those atypical features are shared with the immediate referent.

Typicality judgments that compare a specific person to a prototype, such as, "Is Pat like other Canadians?" are probably somewhat more common than the judgments we used in these studies, that compare one specific person to another specific person, e.g., "Is Pat more Canadian than Dorothy?" However, pair-wise comparisons of typicality such as the ones we asked for in this study are not rare, and neither are typicality comparisons involving an exemplar (i.e., a specific person who has previously been judged to be a representative, albeit not necessarily a perfect example of a group - see Smith & Zarate, 1992) that is used as the referent. For example, former President Clinton may be seen as a presidential exemplar. Characteristics of Clinton that are not very typical of presidents overall (e.g., raised by a widow) may count less against typicality ratings of future presidential types who are being compared to the previous man in office.

For our studies, we picked two groups (fraternity members and movie stars) with which college students were highly familiar, but under some circumstances, people may have difficulty bringing to mind a prototypical or exemplar member of the group and in these cases, the immediate referent (the first member of the group encountered) may play an even greater role in influencing judgments about the typicality target of comparison. For example, investigators trying to determine

who should be arrested for committing a bizarre or rare crime may not have a clear picture of a prototypical suspect in mind as they begin the investigation. The features of an initial suspect may have a greater effect on the perceived plausibility of a later suspect in this case than in a case in which investigators have an a priori profile of the typical perpetrator.

One possible limitation to the generalizability of our study is that we created stimuli that were in some objective sense actually not very typical of their group. After all, all of our movie stars and fraternity members had at least three features that were judged as being quite atypical in pretesting. However, similar circumstances in real life may prompt spontaneous comparisons of typicality - arguing over which of two quintessential fraternity guys is more typical seems less interesting than arguing over which of two marginal members is more typical.

CANCELLATION EFFECTS

It is interesting to note that the shared features "canceled" out for the target of comparison, but there was little evidence that they were canceled out for the referent. Direction of comparison effects have been presented as part of a two-part process that involves first canceling shared features and then basing judgments on the unique features of the target of comparison (Houston & Sherman, 1995). When the shared or unique status of a feature of the target of comparison is confounded with its being typical or atypical, or when its shared or unique status is confounded with valence, as has been the case in previous studies (e.g., Hodges, 1998; Houston et al., 1989; Houston & Sherman, 1995; Houston, Sherman, & Baker, 1991; Sanbonmatsu, Kardes, & Gibson, 1991), there is no real way to separate cancellation and direction of comparison effects for the target of comparison. For example, in typicality judgments, if the target of comparison has unique typical features and shared atypical features, focusing on the typical features and canceling the atypical features would both have the same effect: They make the target of comparison look more typical.

For ratings of the referent in this example, however, the effects of canceling shared features and focusing on the unique features of the target of comparison work in opposition: Canceling shared atypical features should make the referent seem more typical; focusing on the unique typical features of the target of comparison (instead of those of the referent) should make the referent seem less typical in contrast. Thus, between-subjects comparisons should reveal any effects of cancellation on ratings of the referent. If shared features are canceled out for the referent, then the referent ratings should be less typical in the shared typical con-

dition (because the shared typical features cancel out) and more typical in the shared atypical condition (because the shared atypical features cancel out). This pattern of referent ratings is clearly not present in Study 1, and it is barely evident in Study 2, where typicality ratings of the referent were about the same, regardless of whether the two fraternity members shared typical or atypical features. This is perhaps not surprising, given that previous preference judgment studies with similar designs also failed to show analogous cancellation effects for the referent (Hodges, 1998; Houston & Sherman, 1995).[2]

In fact, incontrovertible cancellation effects for the referent are quite hard to obtain (Hollenstein, 2001), and seem to occur in preference judgments only when some sort of subsequent judgment occurs beyond the comparison of the target to the referent—for example, asking participants to rate a third option (Hodges, 1997) or asking participants whether they would like to see additional options (Dhar & Sherman, 1996). In other words, cancellation of features shared by two options may only occur when people first believe that the initial two options presented represent the entire range of options available, but then later are presented with an expanded range. For example, in the Hodges (1997) study, subjects first saw descriptions of two apartments and were asked to evaluate them, and then they were later told that a third apartment had just come on the market.

RECALL

As in Study 1, recall analyses in Study 2 revealed that shared features were generally more memorable (probably because they were seen and thus "rehearsed" twice). However, unlike Study 1, this effect was not moderated by condition in Study 2: The recall means for both shared and unique features were relatively unaffected by whether the features were typical or atypical of fraternity members. Apparently, typicality does not affect memorability of these characteristics in the same way it did for characteristics of the movie stars. It is possible that the features chosen to be atypical of movie stars were simply less memorable than those that were atypical of fraternity members. The ratings of typicality for the two sets of features were obtained under slightly different procedures, which may have led to atypical features for the fraternity members that

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2. 1. The Houston et al. studies do not actually report means broken down by target and referent. They do, however, report means broken down by "selected" and "rejected" option, and they also report data indicating under which conditions the selected and rejected options are likely to be the target or referent.

were actually inconsistent with the fraternity stereotype, whereas the atypical features of the movie star might have been more generally statistically rare (for anyone, not just movie stars) and not necessarily inconsistent with a movie star stereotype. Features that were not just rare but inconsistent may have attracted participants' attention and caused them to think about these features more, aiding recall (Fiske & Taylor, 1991). One final possibility is that because participants were encountering information about fellow college students, our college student subject pool may have engaged in self-referencing when processing the fraternity members' features, which may have helped bring recall performance for atypical features up to that for typical features (Rogers, Kuiper, & Kirker, 1977).

IMPLICATIONS FOR STEREOTYPING

The present studies also bring feature matching theories into the realm of person perception with implications for phenomena related to stereotyping such as in-group/out-group perceptions and subtyping. As others have suggested, there are dynamic effects of context on the fit between a group member and its group category (e.g., Rothbart, Sriram, & Davis-Stitt, 1996). Feature matching provides a model of additional effects of immediate context.

Study 2 allowed us to test whether direction of comparison effects would be seen in typicality judgments made by in-group members, as well as out-group members. Participants who were themselves members of fraternities showed the same basic pattern of results. If anything, these participants' ratings of in-group members looked even more like the results for Study 1, where (presumably) all participants were rating out-group members (movie stars). Participants in Study 1 and fraternity members in Study 2 showed a true crossover interaction their ratings, rather than a simple "open jaw." In other words, for these participants, ratings of the referent were the reverse of the ratings of the target of comparison, rather than occupying an intermediate position between two extreme points anchored by ratings of the target of comparison in the two different conditions. The target's typicality rating corresponded to the unique features of the two stimuli; the referent's typicality rating corresponded to the type of features (typical or atypical) shared by the two stimuli.

Why should fraternity members' ratings of their own in-group look like college students' ratings of movie stars (an out-group)? Some variable other than group membership may be mediating these parallel re-

sults. For example, it could be that the open jaw pattern of results is more likely to be obtained when judging a group for whom the stereotype is very rigid and narrow (e.g., non-fraternity members judging what they perceive to be a homogenous out-group) and the crossover pattern is more likely to be obtained when there is greater variability in the stereotype (as might be the case for stereotypes of movie stars, or for fraternity members judging members of their own group).

Participants who were members of fraternities tended to give more similar ratings of typicality to the two targets (the mean absolute difference in their ratings was .747, SD = .905, as compared to a mean absolute difference of 1.11, SD = 1.04 for non-fraternity members and a mean absolute difference of 1.49, SD = 1.19 for participants rating movie stars in Study 1). Furthermore, fraternity member participants generally rated the fraternity targets as more typical of fraternity members (the mean typicality rating across the two targets for fraternity members participants was 4.33, SD = .91, as compared to a mean rating of 3.76, SD = .98 for non-fraternity members). These results probably reflect a form of out-group homogeneity: non-fraternity members may well have had a narrower range of what constituted typical fraternity features than fraternity members did.

Future research could explore whether members of negatively stereotyped groups might be able to use the direction of comparison results presented here to their individual advantage. For example, a member of a negatively stereotyped group applying for a job might be able to present herself as quite atypical of the stereotype, even if she possessed qualities that were part of the stereotype, as long as she was being compared to other members of the group — in other words, when she was the target of comparison. The key would be to portray any qualities that were part of the stereotype as shared with other members of the group, but to portray all nontypical qualities as unique (e.g., for someone from the southern United States, "Sure I love grits as much as the next Tennessean, but did you know that I am the only person from my hometown who speaks at 200 words a minute?"). Stereotypes are often biased views of the true modal group member (e.g., Darley & Gross, 1983; Hamilton & Gifford, 1976; Martin, 1987), and even when a stereotype does accurately describe a prototypical member, the chance of any given member of the group having a few unique atypical features is highly probable. However, it must be noted that this strategy may help the individual group member at the expense of the group, by making the individual seem atypical of the group with-

out addressing any inaccuracy in the group stereotype or estimates of group homogeneity.

Varying whether atypical features are shared or unique may affect subtyping. When people encounter a member of a group who does not fit their stereotype of that group, they may develop a subtype that incorporates the ill-fitting information, so that the original stereotype can remain intact (e.g., Weber & Crocker, 1983). A member of a stereotyped group who happens to have atypical features that the last encountered member of the stereotyped group also possessed might be less likely to trigger a subtype because the atypical features will match up. However, if atypical features are unique - that is, different from those possessed by the last member of the group encountered - and presented in a context in which typicality judgments were relevant, these atypical features would be the focus of attention and might be more likely to prompt a judgment that the person was an exception among members of his or her group.

In conclusion, the effects found in the current two studies can be seen as an effect of context on judgment: They rely on changing the comparison context by specifically changing the person to whom the target of comparison is compared. It is important to point out that the contextual effects in these judgments are not simply contrast effects. In both studies, the referent was equally typical of the group stereotype, regardless of whether it shared typical or atypical features with the target of comparison. Thus, the target of comparison was not seen as more atypical just because it was compared to a very typical referent, or more typical just because it was compared to a very atypical referent.

The typicality judgments in the two studies demonstrate a clear example of feature matching strategies being used to make judgments on dimensions other than preference and similarity, and correspond to other recent work by Hodges, Bruininks and Ivy (in press) which has suggested that feature matching may be used in making trait judgments of other people based upon lists of their behaviors that are diagnostic of the trait. Feature matching appears to be a fundamental tool in the human cognitive toolbox, used in a wide variety of comparisons that require forming comparative judgments based upon sets of shared and unshared characteristics.

APPENDIX

MOVIE STAR DESCRIPTIONS

The description in the top left cell shared typical features (bold type) with the description in the top right cell and shared atypical features (italics) with the description in the bottom left cell. Nondiagnostic items are in standard roman type.

Lives in California *Was born in Eugene* **Drives a convertible Porsche** *Was in the Marines* Favorite color is blue *Is a math genius* **Drinks lattés with skim milk**	**Lives in California** *Changes own oil in car* **Drives a convertible Porsche** *Chews tobacco* Favorite flavor of ice cream is chocolate *Collects beanie babies* **Drinks lattés with skim milk**
Works out in a gym *Was born in Eugene* **Lives in a penthouse** *Was in the Marines* Favorite flavor of ice cream is chocolate *Is a math genius* **Is tall**	

FRATERNITY MEMBER DESCRIPTIONS

Each description shared typical features (in bold type) with one other description and atypical features (in italics) with another. The feature in standard roman type is nondiagnostic of fraternity membership. Descriptions in the same column share atypical features but have unique typical features; descriptions in the same row share typical features but have unique atypical features.

goes downhill skiing *dislikes parties* **owns a sweatshirt with Greek letters on it** *works part time in a flower shop* enjoys hiking *has a subscription to an academic journal* **plays video games once in a while**	**goes downhill skiing** *is celibate* **owns a sweatshirt with Greek letters on it** *dislikes football* has brown hair *is planning on joining the Peace Corps* **plays video games once in a while**
family is well off *dislikes parties* **likes beer** *works part time in a flower shop* is majoring in sociology *has a subscription to an academic journal* **likes rock music**	**family is well off** *is celibate* **likes beer** *dislikes football* prefers McDonald's to Burger King *is planning on joining the Peace Corps* **likes rock music**

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