The "Barnum Effect" Revisited: Cognitive and Motivational Factors in the Acceptance of Personality Descriptions

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Four studies examined factors mediating the so-called "Barnum effect"—the acceptance of character descriptions composed of high base-rate personality traits as uniquely applicable to the self. Departing from previous research, all experiments examined the effect in a context in which subjects were not deceived into believing that the descriptions had been based on personal information supplied by them. In Study 1 subjects who rated the applicability of personality characteristics to themselves viewed the characteristics as significantly more applicable than subjects asked to assess their applicability to an acquaintance. In Study 2 subjects estimated that they displayed both positive behaviors and their negatively valenced opposites more frequently than an acquaintance displayed them, indicating that the Barnum effect might be mediated by the greater availability of evidence to confirm traits in the self. In Studies 3 and 4 the perceived accuracy of paragraph-long personality descriptions increased with subjects' familiarity with the applicable individuals. Subjects rated the descriptions as most accurate for themselves, next most accurate for a close friend, next most accurate for a moderate friend, and least accurate for a casual acquaintance. In both of the latter studies, however, the influence of familiarity on perceived accuracy was largely confined to positively valenced descriptions. It was concluded that, in addition to being influenced by a prior belief in the credibility of a source, the Barnum effect may be mediated by a combination of cognitive and motivational factors.

Purveyors of anecdotes demonstrating our gullibility about ourselves have traditionally encountered no shortage of supporting material. The debunker of astrological horoscopes, for example, may point to the conviction with which a tenacious Gemini maintains that the Gemini birth sign description fits him or her exactly, his or her confidence in the goodness of the fit undeterred by the comment that tenacity is purportedly more characteristic of Taurus than of Gemini. The debunker's further protestations that Gemini is supposedly both excitable and verbose, whereas present company, in contrast, is notably laconic and unflappable, may also prove of no avail, for present company may counter that he or she is in fact both excitable and verbose, and further has the bona fide memories to prove it. Human credulity—or at least the prevalence of our belief in it—is also demonstrated by the recurrent theme, in literature and folklore, of the rewards that accrue the flatterer for detecting our finest hidden qualities. If, according to that folklore, our credulity is great, it is perhaps greatest when its object is the self.

But are we in fact relatively more gullible about ourselves? Since a classic study by Forer (1949), empirical evidence consistent with the folklore has been garnered in a series of ingenious experiments (e.g., Handelsman & Snyder, 1982; Snyder & Larson, 1972; Snyder, Larsen, & Bloom, 1976; Snyder, Shenkel, & Lowery, 1977). These experiments all assess a phenomenon which, following Meehl (1956), has been termed the "Barnum effect," after the man who purportedly stated that a good circus had a "little something for everybody."

They have consistently demonstrated that individuals who erroneously believe that certain high base rate personality profiles were prepared specifically for them usually rate them as extremely accurate descriptions of themselves. Although given the high base rate validity of the descriptions, the assessment of their applicability to the self does not in itself represent erroneous judgment, additional experiments have shown that subjects may rate some positively valenced descriptions as more applicable to themselves than to "people in general" (Snyder & Shenkel, 1976). Subjects are therefore "gullible" in that they believe the descriptions are unique to them, failing to realize that they apply equally well to others.

None of the cited experiments, however, have attempted to test directly the proposition that, holding constant other relevant variables, individuals are more accepting of the validity of high base rate personality descriptions *for themselves than for others*. In all of them, applicability to self has been confounded with the belief that the description was based on specific information furnished by the recipient. Higher applicability ratings for the self almost certainly were influenced by the knowledge that the descriptions were generated specifically for the self, and not for "people in general."

The above confound relates to an even more fundamental criticism of all Barnum effect studies—the suggestion that subject acceptance of the descriptions may be due less to gullibility concerning the self than to the demand characteristics (Orne, 1962) inherent in the paradigm. Acceptance of high base rate generalizations might be due, at least in part, to subjects' beliefs that the researcher expects them to accept the accuracy of character portraits ostensibly prepared specifically for them. The existence of this particular confound or demand characteristic in no way impugns the external validity of the Barnum effect studies, for the paradigm accurately reflects a frequently occurring real world condition—the receipt of high base-rate feedback from an expert, coupled with the belief that the feedback was prepared specifically for the self. However, an investigation of the relative acceptance (perceived applicability to self vs. perceived applicability to others) of high base-rate descriptions without the erroneous belief that the

descriptions were prepared specifically for the self might, we surmised, provide important insight into the specific cognitive and motivational antecedents of the effect. The four experiments described in this article were designed to investigate the Barnum effect in just such a deception-free context.

Potential Mediation by Motivational Factors

Several studies using the false feedback paradigm have reported that subjects accept positive descriptions more readily than negative ones (Collins, Dmitruk, & Ranney, 1977; Snyder & Shenkel, 1976). Although some evidence suggests that this difference might be at least partially due to the higher base rates of positive traits in the general population (Snyder & Shenkel, 1976), the results are also consistent with other studies reporting a positivity bias in self-evaluation. Chambliss (1964), for example, found that subjects rated positive traits as significantly more applicable to themselves than negative traits, and Wylie (1965) found that subjects consistently rated themselves as "above average" on certain key dimensions, further noting that subjects' self-evaluations exceeded evaluations of them by their peers. Numerous other studies report a related "self-serving" bias in attribution (Riess, Rosenfeld, Melburg, & Tedeschi, 1981; Bradley, 1978; Schlenker & Miller, 1977; Taylor & Koivumaki, 1976).

All of these experiments provide evidence that positively valenced descriptions might be rated as more applicable to the self than to another. In parallel fashion, a motivational bias would cause subjects to rate negative descriptions as *less* applicable to themselves. The latter prediction is also consistent with an explanation founded on the Freudian defense mechanism of projection, for to the extent that individuals "project," they should find negative traits relatively typical of another while denying them in themselves.

Potential Mediation by Cognitive Factors

Despite the research indicating a positivity bias, a different line of reasoning might lead us to speculate that the Barnum effect may also reflect a simple cognitive error in adjustment of a judgment—a failure to make suffi-

cient allowance for the greater availability of self knowledge versus knowledge of others. Simply put, we have a larger memory store about ourselves than about any other person, and are consequently relatively more likely to find available behavioral evidence confirming any common trait in ourselves. But while use of the "availability heuristic" (Kahneman & Tversky, 1973) to assess the presence of traits in our own behavior may result in fairly accurate judgments, use of this heuristic to assess a trait in another may commonly lead us to underestimate its prevalence. The cause of inaccuracy may lie in our failure to consider the base rate of the population of available instances from which confirming evidence is to be drawn, and subsequently to upgrade our estimate of prevalence or applicability to compensate for this relatively scanty data base concerning the other. From this perspective, a self–other difference in perceived applicability of given traits is another example of failure to use population base rates in deriving judgments (Kahneman & Tversky, 1982). In the general sense that it posits an error in the process of inference that is independent of motivational factors, this explanation may be termed a cognitive one.

Is there research evidence consistent with this cognitive account? Using similar formats, Nisbett, Caputo, Legant, and Maracek (1973) and Goldberg (1981) found that, at least under certain circumstances, individuals rate common personality traits as less descriptive of themselves than of others while making significantly greater situational attributions for themselves. Monson, Tanke, and Lund (1980), in contrast, found that when subjects were simply asked to endorse or reject the applicability of personality traits (with no opportunity for situational attributions), they ascribed a significantly greater number of traits to themselves than to acquaintances. None of these experiments, however, directly investigated whether individuals, in estimating the relative frequency of certain common behaviors in themselves and others, adjust sufficiently for the differential availability of confirming evidence.

An experiment by Funder (1980) provides more directly relevant evidence. His subjects tended to rate themselves higher than did their peers on internal dispositional characteristics

(e.g., "is introspective"), whereas their peers tended to rate them higher on traits especially visible to an external observer (e.g., "is physically attractive"). These results imply that individuals in fact may fail to adjust for their insufficient knowledge of others' dispositional traits. The further implication is that individuals may rate Barnum style descriptions, which focus largely on internal states, needs, and aspirations (e.g., Forer, 1949), as less typical of acquaintances than of themselves.

Study 1 investigates these implications directly by assessing whether Forer's original list of personality traits is judged as more descriptive of the self than of an acquaintance. Studies 2, 3, and 4 assess more precisely the underlying questions of whether the mediation of self–other differences is primarily motivational, primarily cognitive, or best explained by a model including both cognitive and motivational factors, (e.g., Johnson & Judd, 1983).

Study 1

Method

Subjects. Subjects were 96 undergraduate volunteers from an introductory psychology class at the University of California, Davis.

Design and procedure. Each subject read a list of 13 personality characteristics originally taken by Forer (1949) from a newstand astrology book, and used in numerous subsequent experiments (e.g., Snyder & Larson, 1972; Snyder et al. 1976). Subject were randomly assigned to one of two conditions. Subjects in Condition 1 were asked to assess the applicability of the characteristics to themselves under the following instructions:

How common are certain personality traits in the general population?
Listed below are a number of different personality traits. How many of these traits are characteristic of you?
First consider how accurately each of the traits describes you. Then indicate how accurate the description is by circling the appropriate number on the scale immediately below the trait. Please mark all scales. Even if you believe you do not have enough information to make a choice, use your best guess.

Subjects in Condition 2 were asked to assess the applicability of the same personality traits to an acquaintance under the following instructions:

How common are certain personality traits in the general population?
Listed below are a number of different personality traits. How many of these traits are characteristic of someone whom you know?
Please think of an acquaintance of yours. By an acquaintance we mean someone whom you know, some-

times see, and with whom you sometimes speak, but do not know well enough to consider a close friend. We would like you to think of such a person now. Consider how accurately each of the traits describes that person. Then indicate how accurate the description is by circling the appropriate number on the scale immediately below the trait. Please mark all scales. Even if you believe you do not have enough information to make a choice, use your best guess.

The "best guess" instruction explicitly informs subjects that lack of information should not compel a judgment that the description is inaccurate. Under a normative model, a subject should use his or her own personality as a basis for estimating the prevalence of extremely high base-rate characteristics in a little known other, and a "best guess" strategy should involve the basic assumption that the unknown other possesses the trait to the same approximate degree as the self. We hypothesized, however, that even subjects explicitly instructed to use their "best guess" still would not guess that the relevant personality traits were fully replicated in others, and would systematically underestimate the applicability of the descriptions to their acquaintances.

Experimental materials.   The thirteen personality characteristics were drawn verbatim (with slight grammatical modifications) from Forer (1949), and are the classic Barnum effect statements utilized in numerous other published studies (i.e., Snyder & Larson, 1972).

The trait list used in Condition 1 was changed to the third-person singular for Condition 2. After assessing the accuracy of each of the traits on the list, all subjects were requested to "rate the overall accuracy of this list of characteristics as a description of yourself" (Condition 1) or "your acquaintance" (Condition 2). The dependent measure for each accuracy assessment was a nine-point scale with endpoints marked *not at all accurate* (1) and *extremely accurate* (9). We believed that these endpoint labels might, in this particular context, be less ambiguous to subjects than the *totally reject* to *totally accept* labels previously used in much of the Barnum effect research.

Results

To assess the significance of differences in self–other accuracy ratings, t tests were performed on each of the 13 traits on the list, on the overall accuracy rating of the list, and on the mean accuracy rating averaging across the 13 traits. Results of the t tests, together with the means for self-accuracy rating condition and other-accuracy rating condition, are shown in Table 1. For each of the 13 traits, mean accuracy ratings for the self were higher than mean accuracy ratings for the acquaintance. For 7 of the traits the difference was significant at the .05 level or beyond, and for all but two of the remaining traits the difference was marginally significant at the .10 level. The difference between the overall mean accuracy rating for traits in the self-rating condition versus

traits in the other-rating condition (averaging across the 13 accuracy ratings of each subject) was highly significant, $t(88) = 5.21, p < .001$.[1] In addition, subjects in the self-rating condition viewed the list as a whole as significantly more accurate than subjects in the other-rating condition, $t(93) = 2.38, p < .02$.

Further analyses investigated the extent to which the self–other difference in judged accuracy may have been influenced by motivational factors. A separate group of 23 undergraduate judges subsequently rated each of the 13 personality trait descriptions, as well as the overall list, on a 9-point scale with endpoint 1 labeled *extremely positive* and endpoint 9 labeled *extremely negative*. Although the judges viewed the overall list as slightly positive ($M = 4.87$), they rated 8 of the descriptive statements (numbers 2, 3, 5, 6, 7, 9, 10, and 12 in Table 1) as at least slightly on the negative side of the neutral point, and only 5 statements (numbers 1, 4, 8, 11, and 13) on the positive side of the scale. As revealed by Table 1, there was a significant self–other difference on 4 of the 5 positive statements, but on only 3 of the 8 negative ones. As also indicated by Table 1, however, separate t tests performed on the mean ratings of both positive and negative statements revealed a significant self–other difference for each set.

A final 2×2 (Person Rated $\times$ Statement Valence) analysis of variance (ANOVA), in which mean rating of positive–negative statements was a within-subjects repeated measures variable, indicated main effects for both statement valence, $F(1, 88) = 51.60, p < .001$, and person rated, $F(1, 88) = 28.17, p < .001$, but no interaction between these variables, $F(1, 88) < 1$. Although positive statements were rated as more accurate descriptions of both self and other, both positive and negative statements were seen as more applicable to the self. In sum, although a higher proportion of individual positive statements indicated significant self–other differences, there was strong evidence that individuals, even when expressly instructed to adjust for insufficient information by use of their best guess, systematically

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[1] Because of missing responses on some dependent measures, data from 6 subjects were discarded from the analysis on mean accuracy ratings.

Table 1
Mean Accuracy Ratings of Thirteen Personality Traits: Study 1

Personality trait	Self-rating condition	Other-rating condition	t	df
1. Need to be liked[a]	5.94	4.98	2.19	94*
2. Tendency toward self-criticism[b]	7.00	4.30	7.44	94***
3. Unused capacity[b]	5.78	4.28	3.47	94***
4. Compensation for personality weakness[a]	5.59	4.45	2.99	94**
5. Sexual adjustment problems[b]	3.58	3.17	.88	93
6. Disciplined outside, insecure inside[b]	4.39	3.55	1.73	94
7. Serious self-doubts[b]	5.73	4.46	2.77	93**
8. Preference for change[a]	6.71	5.61	2.81	93**
9. Pride in independent thinking[b]	6.37	5.61	1.75	93
10. Frankness found unwise[b]	4.98	4.78	.46	92
11. Extraversion and introversion[a]	6.88	5.11	3.47	91***
12. Unrealistic aspirations[b]	4.63	3.70	1.82	92
13. Security as major goal[a]	6.20	5.39	1.88	93
Overall accuracy rating of list	5.65	4.72	2.38	93*
Mean accuracy rating of 13 statements	5.69	4.53	5.21	88***
Mean accuracy rating of 5 positive statements	6.30	5.06	4.80	88***
Mean accuracy ratings of 8 negative statements	5.31	4.20	4.38	88***

Note. Higher numbers indicate ratings of greater accuracy.
[a] Rated as positive by judges.
[b] Rated as negative by judges.
* $p < .05$. ** $p < .01$. *** $p < .001$.

underestimate the relative prevalence of both positive and negative personality traits in others.

Study 2

Study 2 was designed to examine more precisely the mediators of the self–other distinction in judged applicability of personality traits. It used a series of bipolar (positive–negative) trait adjectives to investigate the influence of valence in the context of a different set of stimulus materials. It was also designed to assess directly the cognitive explanation for the self–other distinction—that is, to investigate specifically whether individuals underestimate, relative to themselves, the number of instances in which others engage in high base-rate behaviors.

In examining the latter question, the study also attempted to shed light on certain current issues surrounding trait attribution. Monson et al. (1980) cogently argue that the greater situationality ascribed to the self in Nisbett et al. (1973) might have been the artifact of a response format in which subjects were asked either to select one of two bipolar traits as descriptive or to choose the "depends on the situation" option. Subjects who wished to attribute both traits in a bipolar pair to themselves were in effect coerced into situational attributions. When Monson and associates presented the traits separately, giving subjects the option of endorsing them both, subjects ascribed a significantly greater number of traits to themselves than to acquaintances. As noted by Goldberg (1981), however, these results may have been partially due to uncertainty—subjects may have rejected a trait as descriptive of another simply because they lacked definitive information about the target.

Study 2 directly examined whether individuals would view high base-rate behaviors as *less frequent* in others than in themselves when specifically instructed to adjust for inadequate information by using their best guess. In addition, it investigated the extent to which attribution to the self is influenced by trait positivity.

Method

Overview. Subjects were randomly assigned to one of two rating groups—bipolar or single trait. Bipolar group subjects rated both themselves and an acquaintance on a series of 9-point scales. One endpoint represented a positively valenced trait and the other represented a negatively valenced antonym. Single trait group subjects estimated the frequency with which both they and an acquaintance displayed each of the individual traits which appeared as endpoints on the bipolar scales.

Subjects. Subjects were 69 undergraduate students at the University of California at Davis. They received extra credit in an introductory psychology course for their participation.

Experimental materials. Traits used in the study were selected from an initial group produced by five undergraduate students. The students had been instructed to generate trait pairs with positive and negative antonyms at each pole and to list only traits with a high rate of prevalence among their peers. Of the original pairs so generated, 24 were subsequently rated by a separate group of undergraduate judges as markedly differing from one another in valence.[2] These 24 trait pairs were as follows, with the more positively rated trait appearing as the first in each pair: affectionate–reserved; sophisticated–naive; modest–vain; cautious–impulsive; cheerful–sad; clear-thinking–confused; brave–fearful; decisive–hesitant; enthusiastic–apathetic; friendly–disagreeable; generous–selfish; self-reliant–dependent; flexible–stubborn; good-tempered–irritable; optimistic–pessimistic; active–passive; calm–excitable; relaxed–tense; punctual–tardy; attentive–distractible; outgoing–shy; rugged–delicate; mature–childish; trusting–suspicious.

Design and procedure. Subjects in both groups were informed that the experimenters were investigating "perceptions of the prevalence of certain personality traits," and were requested to rate both themselves and an acquaintance on the personality scales. An acquaintance was defined as "someone whom you know, see occasionally, and speak with occasionally, but do not know well enough to consider a friend." All subjects were instructed to "use your best guess" if they did not have enough information to make a choice.

Bipolar group subjects ($n = 34$) rated both themselves and an acquaintance on each of the trait pairs, with the positive and negative antonym in each pair appearing respectively as the positive and negative endpoint on a 9-point scale. Between-subjects conditions were order of presentation of traits (two different random orders) and order of individual rated (self rated first vs. acquaintance rated first). Subjects were randomly assigned to condition.

Single trait group subjects ($n = 35$) estimated the frequency with which both they and an acquaintance displayed each of the individual traits. Estimates were made on 9-point scales with endpoints marked "frequently" and "infrequently." As in the bipolar group, between-subjects conditions were order of presentation of trait and order of individual rated, with subjects randomly assigned to condition.

Results

Because subjects in the bipolar group and the single trait group used different rating scales, their data were separately analyzed. An initial series of $2 \times 2 \times 2$ (Order of Traits $\times$ Order of Person Rated (Self First/Acquaintance First) $\times$ Person Rated (Self/Acquaintance) ANOVAs were performed on each of the 24 bipolar scales and on each of the 48 single trait rating-scales. Order of traits and order of person rated were between-subjects variables; person rated was a within-subjects repeated measures variable.

Differences in self–other ratings varied markedly according to group. Bipolar group subjects saw a significant difference between themselves and others on only 2 of the 24 bipolar scales, viewing themselves as significantly more toward the hesitant pole of the hesitant–decisive scale, $F(1, 30) = 4.69$, $p < .05$, and significantly more toward the tense pole of the relaxed–tense scale, $F(1, 30) = 8.07$, $p < .01$. Single trait group subjects, in contrast, rated themselves as displaying 42 of the 48 traits more frequently than their acquaintances. For 13 of these traits—flexible, excitable, affectionate, modest, brave, apathetic, generous, self-reliant, dependent, tense, attentive, mature, and impulsive—differences were significant at the .05 level or beyond. Eight of these 13 traits had been previously rated as the positive trait in the pair. Subjects rated their acquaintances as displaying only one trait, tardiness, significantly more frequently than themselves.

To provide a more meaningful data summary, and in particular to examine the interaction of the effect for person rated with trait valence, additional ANOVAs were performed that collapsed across the ratings of individual traits. A $2 \times 2 \times 2$ (Order of Traits $\times$ Order of Person Rated $\times$ Person Rated) repeated measures ANOVA on the mean trait ratings of Bipolar Group subjects indicated that, although both self and acquaintance were rated closer to the positive pole of the scale, self was not rated more positively than acquaintance, $F(1, 30) < 1$, ($M = 3.79$ for self vs. $M = 3.86$ for acquaintance, with lower numbers indi-

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[2] Nineteen judges separately rated the valence of each trait on a 9-point scale ranging from *extremely positive* (1) to *extremely negative* (9). Twenty-two of the 24 pairs differed significantly in valence at the .05 level or beyond, and the means of the remaining two trait pairs—rugged–delicate and cautious–impulsive—were in the predicted direction.

cating more positive ratings). A 2 × 2 × 2 × 2 (Order of Traits × Order of Person Rated × Person Rated × Trait Valence) ANOVA was also performed on the mean ratings of single trait group subjects. Order of traits and order of person rated were between-subjects variables in this analysis, while person rated and trait valence were within-subject repeated measures variables. In a result parallel to that of Study 1, analysis indicated highly significant main effects for trait valence, $F(1, 31) = 135.55$, $p < .001$, and person rated, $F(1, 31) = 34.75$, $p < .001$, but no significant Trait Valence × Person Rated interaction, $F(1, 31) < 1$. Subjects, in other words, demonstrated an equivalent positivity bias in rating both themselves ($M = 6.72$ for frequency of positive behaviors vs. $M = 4.31$ for frequency of negative behaviors) and others ($M = 6.07$ for frequency of positive behaviors vs. $M = 3.91$ for frequency of negative behaviors). Although the rated absolute frequency for both positive and negative behaviors was higher for the self than for the other, the mean relative frequency, or ratio of positive behaviors to negative behaviors, was virtually identical (1.56 for self vs. 1.55 for other). Neither the main effect for trait valence nor the main effect for person rated interacted significantly with either of the between-subjects variables related to order of rating. These results are fully consistent with the analysis of the bipolar group indicating the absence of a greater positivity bias on self ratings.

Discussion

The results of Study 2 are consistent with a purely cognitive interpretation of self–other differences in acceptance of the applicability of prevalent traits in that they indicate that the differences may be primarily due to inadequate adjustment for the lesser availability of knowledge concerning the other. Although the data coincide with previous research indicating a strong positivity bias in person evaluation (e.g., Sears, 1983; Bruner & Taguiri, 1954), they also indicate that the bias is equally strong for evaluations of self and other. The mean ratios of frequency of positive behaviors to frequency of negative behaviors indicate that subjects rated both themselves and others as engaging in positive behaviors approximately 61% of the time, a percentage close to the "golden section" identified in previous research. The results of Adams-Webber (1979) and Rigdon and Epting

(1982) indicate that subjects confronted with a dichotomous choice select the positive role as descriptive of others approximately 62% of the time, perhaps because it is in this proportion that negative events are maximally striking as figure against a general background of positive events. Despite these equivalent ratios, however, and in accord with the cognitive explanation for the Barnum effect, subjects systematically underestimated the frequency with which their acquaintances, relative to themselves, engaged in both positive and negative behaviors. Study 3 investigated whether this symmetry in relative underestimation of positive and negative behaviors would extend to the evaluation of paragraph-long, Barnum-style descriptions, as opposed to single adjective traits, or whether, in the context of longer descriptions, the self–other distinction would interact with description valence. It also examined certain additional issues not considered by the initial studies.

Study 3

If a purely cognitive mediation of the Barnum effect implies similar self–other differences in the acceptance of positive and negative descriptions, mediation by motivational factors alone implies opposite self–other effects for descriptions of opposing valence—although positive descriptions would be perceived as more applicable to the self, negative descriptions would be seen as less applicable. Put another way, predictions based on a motivational explanation dovetail with those based on a cognitive explanation for positive descriptions, but diverge for negative descriptions. In the latter case, motivational factors should compel greater rejection of negative descriptions as applicable to the self, but a cognitive explanation based on the differential availability of confirming evidence would predict their greater perceived applicability.

In addition to examining these differing predictions, Study 3 expanded the number of persons rated to self, close friend, moderate friend, and casual acquaintance. In this regard the experiment tested the prediction, supported by both cognitive and motivational explanations, of a systematic relation between degree of familiarity and perceived accuracy.

Finally, Snyder et al. (1977) noted no gender effects in previous Barnum effect research. A

secondary purpose of Study 3 was to examine the interaction of the self/other effect with sex of subject under our particular paradigm.

Method

Overview. In a latin square design (Cochran & Cox, 1957), subjects rated the applicability of various paragraph-long descriptions to themselves, a close friend, a moderate friend, and a casual acquaintance. Each subject rated 8 paragraphs in 4 sets, with a set including a paragraph related to a positive trait—for example, affectionate—and one related to a negatively valenced antonym—for example, reserved. Each subject rated the applicability of each of the paragraphs in a set to a different person—that is, one set was judged for accuracy with regard to the self, one set for accuracy with regard to a close friend, and so forth. Pairing of set with person rated was completely counterbalanced between subjects.

Subjects. Subjects were 64 undergraduates at the University of California, Davis. They received extra credit in an introductory psychology course for their participation.

Experimental materials. Paragraphs were generated by undergraduate writers to describe prevalent behaviors among their peer group that were characteristic of particular trait dimensions. The positivity or negativity of the behaviors described was moderated to meet the high base-rate restriction. Twenty-three undergraduate judges subsequently rated the applicability of each of the paragraph descriptions to the average person on 9-point scales, with higher numbers indicating greater accuracy. Analysis indicated no significant systematic main effect for Valence on the rated prevalence of the description, ($M = 5.30$ for positive paragraphs vs. $M = 5.42$ for negative paragraphs), $F(1, 22) < 1$.

In constructing the paragraph descriptions, certain guidelines were consistently followed: The statements were vague and relatively short, and the descriptions were frequently hedged with qualifiers, for example, "sometimes" or "occasionally."[3] Paragraph pairs involved the trait dimensions of affectionate/reserved; resolute/irresolute; generous/selfish; and careful/rash. To exemplify the stimulus materials, the affectionate/reserved paragraph pair is shown in its entirety:

(Affectionate paragraph): When this individual is with a person who can be trusted, warm feelings for that person may be expressed. Best friends may be told how much their company is appreciated. When others share their inner thoughts and emotions with this individual, he or she may find it easy to do the same. With friends it may be quite easy for this person to speak what is on his or her mind and to share deep feelings that are not shared with strangers. In the company of such friends the person feels honest and true to his or her emotions. At such times this person finds it easy to be open and demonstrative. People may sometimes remark on how talkative and affectionate this individual seems to be on these occasions.

(Reserved paragraph): This individual may feel there is a time and a place for emotions, and may occasionally show embarrassment about displaying affection in public. Sometimes the person may prefer to keep some distance from others. In particular, there are certain tasks that this person would prefer to do alone. When friends have hurt this person, he or she may experience difficulty in

showing them that he or she still cares. People who don't know this person well may be inclined to say he or she sometimes appears cold and indifferent to strangers. This person may find it difficult to express genuine feelings for acquaintances that he or she does not know well and may sometimes be uncomfortable about showing affection for others.

Design and procedure. Each subject read all four sets of stimulus paragraphs. Subjects were randomly assigned to two orders of presentation of paragraphs such that one half read the four positive paragraphs first and one half read the four negative paragraphs first. There were 12 males in each of the order conditions, 19 females in the positive paragraphs first condition, and 21 females in the negative paragraphs first condition. Each subject rated all four individuals, but only one person (the same individual) on each of the two paragraphs in the four paragraph sets. The person rated was completely counterbalanced for each paragraph set, so that one quarter of all subjects rated themselves on the affectionate–reserved paragraph set, one quarter rated a close friend on this set, one quarter a moderate friend, and one quarter a casual acquaintance. Under this procedure, each subject rated each of the 4 individuals and each paragraph set, but only one paragraph set/individual combination. Order of rating both individuals and paragraphs was also completely counterbalanced between subjects, with the constraint that either the four negative or the four positive paragraphs be rated first. Subjects rated each paragraph immediately after reading it.

Subjects were randomly assigned to condition. They were debriefed after completing the task.

Instructions. Subjects were requested to read several paragraphs and to decide "how accurately each of these paragraphs describes someone whom you know." Before reading the paragraphs, all subjects were requested to think of a close friend (a person whom "you know very well" and "see frequently"); a moderate friend (a person whom "you know and see occasionally and also consider a friend"); and a casual acquaintance ("someone you know in passing but not very well . . . either someone you do not see often or do not spend more than a few minutes with when you see him or her"). The instructions stressed that subjects should think of the *same* close friend whenever rating the applicability of a paragraph to a close friend, and the *same* moderate friend when rating the applicability of a paragraph to a moderate friend, etc.

Dependent measure. The dependent measure for all paragraphs was the rating on a 9-point scale of how accurately the paragraph described the designated individual with ranges from *not at all accurately* (1) to *extremely accurately* (9). Subjects were again instructed to "use your best guess" in the event of uncertainty.

Results

A 2 × 2 × 4 (Order of Paragraph Presentation × Paragraph Valence × Person Rated)

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[3] The descriptions were subsequently rated for valence by undergraduate judges using 9-point scales. Three of the four pairs differed significantly in valence at the .05 level or beyond and mean ratings for the remaining pair, careful–rash, were in the predicted direction, $F(1, 18) = 1.39$, $p < .25$.

Table 2
Mean Accuracy Judgments of Personality Descriptions for Four Different Individuals: Study 3

Rating	Self	Close friend	Moderate friend	Casual acquaintance
Rating for positive descriptions	6.97	6.39	5.09	4.73
Rating for negative descriptions	4.77	4.61	4.80	4.76
M	5.87	5.50	4.95	4.75

Note. Higher numbers indicate ratings of greater accuracy.

ANOVA was performed on paragraph accuracy judgments, collapsing across individual paragraphs. Order of paragraph presentation was a between-subjects variable designating whether subjects rated the four positive paragraphs or the four negative paragraphs first. Paragraph valence (positive/negative) and person rated (self/close friend/moderate friend/casual acquaintance) were within-subjects variables.

The analysis indicated a highly significant main effect for paragraph valence, with subjects rating positive paragraphs as generally more applicable than negative paragraphs, $F(1, 62) = 17.04, p < .001$. There was also a highly significant main effect for person rated, $F(3, 186) = 13.52, p < .001$. The precise nature of the latter effect, however, was more meaningfully investigated by an a priori contrast testing whether perceived applicability varied systematically with degree of acquaintance. When this comparison $(3, 1, -1, -3)$ was performed on the means shown in the final row of Table 2, the results were highly significant, $F(1, 186) = 39.40, p < .001$, with the contrast accounting for 97% of the variance among the means. Subjects perceived the character descriptions as most applicable to themselves, next most applicable to a close friend, next most applicable to a moderate friend, and least applicable to a casual acquaintance. Separate analyses of the four individual pairs of stimulus paragraphs, although revealing some variation from the general pattern, indicated that applicability ratings for self and close friend contrasted significantly (at least at the .05 level) with applicability ratings for moderate friend and casual acquaintance $(1, 1, -1, -1$ comparison$)$.

There was, however a significant Person Rated × Valence interaction, $F(3, 186) = 5.41, p < .002$. As may be noted by an examination of the means in Table 2, this pattern was con-

fined to ratings of positive paragraphs. Although the contrast was significant when performed on judgments of positive paragraphs alone, $F(1, 186) = 52.55, p < .001$, accounting for 96% of the variance among the means, it did not attain significance on ratings of negative paragraphs, $F(1, 186) < 1$. Degree of acquaintance was not systematically related to the latter ratings.

Neither the effect for valence nor the effect for person rated interacted significantly with order of paragraph presentation (positive paragraphs first/negative paragraphs first), both interaction Fs < 1, and there was also no main effect for order, $F < 1$. An additional ANOVA adding gender as a between-subjects blocking variable also indicated no significant main effect or interactions involving sex of subject.

Discussion

Study 3 provided strong evidence of a systematic relation between degree of acquaintance and judged accuracy of personality descriptions. Results, however, also indicated a pronounced valence-related asymmetry. Although positive descriptions displayed the predicted relation, negative descriptions did not. Study 4 was undertaken to investigate whether this asymmetry would replicate with different subjects and different specific stimulus materials.

Study 4

Method

The design, procedure, instruction set, and dependent measures in Study 4 were all identical to those used in Study 3. The sets of stimulus paragraphs used, however, involved the bipolar trait dimensions of trusting–suspicious, self-reliant–dependent, stubborn–flexible, and cautious–impulsive. Paragraphs were composed by undergraduates under guidelines and constraints identical to those of Study

Table 3

Mean Accuracy Judgments of Personality Descriptions for Four Different Individuals: Study 4

Rating	Self	Close friend	Moderate friend	Casual acquaintance
Rating for positive descriptions	6.35	5.98	5.39	5.18
Rating for negative descriptions	4.33	4.26	4.39	3.68
M	5.34	5.12	4.89	4.43

Note. Higher numbers indicate ratings of greater accuracy.

3 and entailed descriptions of high base rate characteristics with either a moderately positive or moderately negative valence.[4] As in Study 3, the paragraphs were subsequently rated by undergraduate judges on 9-point scales for their applicability to the "average person." Consistent with the Study 3 results, analysis revealed no significant systematic main effect for valence on perceived prevalence (M for positive paragraphs = 4.91 vs. M for negative paragraphs = 5.11, $F(1, 22) < 1$.

Paragraphs averaged two to three sentences longer than those used in Study 3. Subjects in the experiment were 80 undergraduates at the University of California at Davis, who received extra credit in an introductory psychology course for their participation. There were 28 females and 12 males in the positive paragraphs first condition, and 26 females and 14 males in the negative paragraphs first condition.

Results

A 2 × 2 × 4 (Order of Paragraph Presentation × Paragraph Valence × Person Rated) ANOVA on paragraph accuracy judgments again indicated a highly significant main effect for paragraph valence, with subjects rating positive paragraphs as more applicable, $F(1, 78) = 50.10$, $p < .001$. The main effect for person rated was also highly significant, $F(3, 234) = 9.27$, $p < .001$, as was the a priori contrast (3, 1, −1, −3), $F(1, 234) = 26.76$, $p < .001$, which accounted for 96% of the variance among the means. As indicated by the means in the final row of Table 3 (which collapse across the valence variable) the pattern of the effect directly parallels the pattern of Study 3, although the applicability ratings are generally slightly lower. Subjects rated the descriptions as most applicable to themselves, next most applicable to a close friend, next most applicable to a moderate friend, and least applicable to a casual acquaintance. Analysis of individual paragraph sets, although revealing some variation from the general pattern, indicated that for three of the four pairs applicability ratings for self and close friend contrasted significantly (at the .05 level for two of the pairs

and at the .08 level for the third) with applicability ratings for moderate friend and casual acquaintance. The exception to this general pattern was the cautious–impulsive paragraph set, in which accuracy ratings for self and close friend did not differ significantly from accuracy ratings for moderate friend and casual acquaintance.

In another parallel to Study 3, however, this rank order of means occurs for ratings of positive paragraphs alone. The accuracy ratings of positive paragraphs show a progressive increment with degree of acquaintance, with the a priori contrast highly significant, $F(1, 234) = 17.12$, $p < .001$, accounting for 97% of the variance among the means. Although the Person Rated × Valence interaction does not attain significance $F(3, 234) = 1.14$, the pattern of accuracy ratings for negative paragraphs is strikingly different. With negative paragraphs, accuracy ratings for self, close friend, and moderate friend do not differ significantly from one another (all $Fs < 1$), but accuracy ratings for these 3 individuals in the aggregate differ significantly from accuracy ratings for casual acquaintance, $F(1, 234) = 4.86$, $p < .05$ with this comparison accounting for 98% of the variance among the means. As in Study 3, neither the effect for paragraph valence nor the effect for person rated interacted significantly with order of paragraph presentation; there was

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[4] The Study 3 paragraphs in the careful–rash set, which did not differ significantly in valence ratings by the separate group of judges, were also the only paragraphs that showed no significant main effect for positivity on subjects' judgments of accuracy. The cautious–impulsive set in Study 4 embodied descriptions on a similar trait dimension that were rated by undergraduate judges as differing significantly in valence (at the .01 level). Study 4 investigated whether this significant difference in valence would be associated with a significant effect for positivity on perceived accuracy. The undergraduate judges also found that the paragraphs in the other three pairs used in Study 4 also differed significantly in valence at the .05 level or beyond.

also no significant main effect for order. An additional ANOVA with gender as a between-subjects variable indicated an absence of a significant main effect and the absence of any significant interaction between sex of subject and paragraph valence or person rated.

Discussion

In sum, the results of Study 4 generally replicated those of Study 3, with the slightly lower applicability ratings perhaps explained by the observation of Sundberg (1955) that longer descriptions are generally perceived as less accurate. In both experiments a highly significant effect for person rated assumed the same pattern—the more familiar the individual rated, the more likely was a description to be judged applicable to that person. In both experiments, however, this effect was due largely to the pattern of accuracy ratings for positive paragraphs alone.

General Discussion

This series of experiments investigated whether the Barnum effect—the acceptance of high base rate descriptions as uniquely applicable to the self—would occur when subjects had not been deceived into believing that the descriptions had been prepared specifically for them. All four of the studies showed a strong self–other distinction under these circumstances, supporting the proposition that the effect is not mediated exclusively by the credibility awarded the alleged source—for example, psychologist, astrologer, or computer—of the description. The results, it would seem, are also difficult to explain in terms of demand characteristics. Absent the belief that the personality summaries were prepared specifically for the subject, a strong motivation to confirm the expectations of the experimenter by accepting the descriptions which he or she prepared does not explain the greater perceived applicability to the self. Rather, the studies supply evidence that self–other differences in perceived applicability may be mediated by both cognitive and motivational factors.

Study 1 examined accuracy ratings of the personality descriptions originally prepared by Forer (1949) and subsequently used as stimulus materials in several later Barnum effect studies. Subjects judging the applicability of these statements to themselves rated them significantly higher in accuracy than subjects judging their applicability to an acquaintance and this difference prevailed for both positive and negative statements. Study 2 provides evidence suggesting that the effect may be mediated by a failure to adjust sufficiently for the relative lack of confirming evidence of high base-rate characteristics in the other. Subjects rating the frequency with which dispositional characteristics were displayed underestimated the frequency with which an acquaintance, relative to the self, manifested both positive and negative traits.

The data of Study 2, although not inconsistent with Nisbett et al. (1973) and Goldberg (1981), also provide some explanation for the findings of Monson et al. (1980) that individuals asked simply to accept or reject traits find a greater number applicable to themselves than to others. Our results indicate that subjects rating themselves readily find more evidence confirming the existence of individual traits. When traits are rated on bipolar scales, however, relatively strong evidence confirming the existence of a trait may be effectively cancelled by relatively strong evidence confirming the existence of its polar opposite, with the end result that bipolar ratings of the self do not differ significantly from bipolar ratings of an acquaintance.

These data regarding systematic self–other differences in the estimated prevalence of high base-rate behaviors indicate that any adjustment subjects make for the differential availability of confirming evidence is inadequate. One explanation for the inadequacy is that subjects ignore self–other differences in the base rates of instances from which confirming evidence is to be drawn. Under this account, the relative dearth of available evidence of common traits in another may have led them to believe that these traits were in fact more prevalent in themselves. A different explanation, however, would attribute the self–other difference to subjects' conservatism in committing themselves on the existence of traits in another. Although explicitly instructed to use their "best guess" in the absence of information sufficient to make a choice, subjects might nevertheless have experienced some reluctance to guess, instead estimating that the behaviors of which they had little pertinent knowledge were relatively infrequent.

Note, however, that these two different explanations have an underlying affinity. In certain contexts a judgmental conservatism may be well-justified, but not in the context of our particular paradigm. In that paradigm, both a firm belief that high base-rate behaviors are more prevalent in the self (Explanation 1) and a reluctance to ascribe those behaviors to a little-known other (Explanation 2) may be viewed as variations of the same basic failure to draw the normatively appropriate inference, or as two different versions of the same cognitive "error." The appropriate inference is that, just as human beings might be thought quite likely to have two eyes, two arms, and two legs, they are also reasonably likely, in the face of little tangible evidence to the contrary, to manifest traits with an extremely high base rate. Apart from motivational influence, we would expect to find little systematic underestimation of the physical traits—for example height and weight—of little-known others, or of certain demographic characteristics—for example age or amount of education. The reason for the difference between the two categories of traits may be that, although there is much tangible and objective evidence as to the distribution of physical and demographic traits, there is less evidence of the commonality of inner states or psychological variables. Both the outright denial of the commonality of the latter characteristics, as well as the reluctance to admit their prevalence without strong supporting information, may be products of a fundamental failure to appreciate a generally high degree of similarity between our acquaintances and ourselves.

The findings of Studies 1 and 2, indicating insufficient adjustment for lesser knowledge of both positive and negative traits in others, suggested that descriptions of positive and negative valence, separately judged, might both be rated as more applicable to the self than to others. The results of Studies 3 and 4 did indicate highly significant main effects for person rated, and furthermore indicated a systematic relation between degree of familiarity and perceived accuracy of the description. In both experiments, however, this main effect for familiarity was largely confined to positive descriptions, indicating the influence of motivational factors. This particular asymmetry is in fact quite consistent with Snyder and Shenkel (1976), who found that subjects rated

positive feedback as more applicable to themselves than to "people in general," but saw no significant difference between the applicability of negative feedback to themselves and a generalized other.

The observed relation between perceived accuracy and degree of familiarity is reminiscent of the results of Taylor and Koivumaki (1976), who found that a positivity bias in attribution increased with degree of acquaintance. These results might be taken to imply that the Barnum effect is largely motivational in origin—a product of the desire to view self and friends in a relatively positive light. But how does a motivational explanation account for the asymmetrical nature of the effect? Individuals motivated to rate mildly positive descriptions as most applicable to themselves ought, it would seem, also be motivated to rate mildly negative descriptions as least applicable to themselves, but none of the present studies provide any indication of the latter tendency. One reasonable explanation for the asymmetry involves the assumption that, while people are motivated to be particularly kind in evaluating themselves and their friends, they are not motivated to be particularly unkind in evaluating little-known others. But this account, although plausible, does not fully explain why, if we are motivated to view ourselves and our friends in a positive light, the negative paragraphs in both of the latter two studies were rated at medium-level accuracy (between 4 and 5 on 9-point scales) as descriptions of both self and friends. It may be that a nonmotivational factor—personal knowledge that the descriptions were in fact applicable—inhibited a relatively strong motivation to reject the descriptions as accurate portraits of the self.

Our results would appear to indicate that the Barnum effect may be influenced both by motivational factors and by cognitive factors related to our failure to adjust for the lesser availability of confirming evidence regarding the little-known other. Because both the amount of available information and the desire to view an individual positively may increase with degree of acquaintance, cognitive and motivational influences may converge for positive descriptions, producing a systematic positive relation between familiarity and judged accuracy. With negative descriptions, however, cognitive and motivational influences may produce opposing tendencies. Both the store

of knowledge concerning the prevalence of negative characteristics and the motivation to reject their applicability may increase with degree of acquaintance. These countervailing influences may in effect nullify one another, resulting in similar medium-level accuracy ratings for descriptions of both self and other. However, increasing the motivation to reject the applicability of negative descriptions to the self (by, for example, presenting *extremely* negative descriptions) might well result in less perceived accuracy for the self than for others, confirming the predictions of a purely motivational model.

The results of Studies 3 and 4, which otherwise are remarkably parallel, diverge slightly in that the Study 4 ratings of the applicability of negative descriptions to a casual acquaintance are lower than applicability ratings for the other 3 persons in the aggregate; in Study 3 the perceived applicability of negative descriptions does not vary significantly with person rated. One plausible explanation for this discrepancy is that both personal knowledge of, and inferences concerning, personality traits in casual acquaintances may vary with the particular trait. In instances in which personal knowledge of a trait is particularly scanty, a negative description may be rated as less applicable to a casual acquaintance than to the self or friends, even though perceived applicability to the latter may have been reduced by a motivational bias. The present experiments, which were designed to examine the Barnum effect with the original Forer stimulus materials and other high base rate descriptions resembling astrological character sketches, did not systematically explore sources of variation related to category of trait. One goal of future research might be to investigate the influence of variations along the external–internal trait dimension proposed by Funder (1980).

A more basic issue involves the question of why the pattern of self–other rating differences was influenced by valence in Studies 3 and 4 when neither Study 1 nor Study 2 gave any clear indication of such an influence. The most obvious explanation relates to fundamental differences in the stimulus materials used. It may be that the motivation to deny the applicability of negative traits to the self becomes a significant factor only when those negative traits are presented in the form of a relatively lengthy description, which carries with it the implication of being a fairly complete character sketch. It may be one thing, for example, to acknowledge frequent stubbornness in the self, potentially attributable to a particular category of situations, and yet quite another to accede to the accuracy of the character sketch of a stubborn person, with its concomittant implication that stubbornness is a central trait attributable to dispositional factors.

Despite the valence-related asymmetry, the main effect for acquaintance assumed the predicted pattern in both Studies 3 and 4. Given the clear real-world analogues to the stimulus materials, the conclusion to be drawn is apparent. When personality descriptions—for example, the character sketches which frequently appear in books and newspaper columns on astrology—consist of a mix of common positive and negative traits, those descriptions will tend to be regarded as significantly more accurate when the person described is well known to the perceiver and will be seen as most accurate when the person described is the actual perceiver. The results also indicate that this effect is not wholly contingent on any prior credibility accorded the source of the description. Rather, in accord with the results of Snyder et al. (1976), it is likely that the source gains additional credibility as a function of the perceived accuracy of the personality sketch.

It should be emphasized that, although the perception of applicability of high base rate characteristics to the self is not, in and of itself, inaccurate, the data do provide substantial evidence of one departure from normative accuracy—our subjects failed to adjust their accuracy judgments upward to compensate for their relative lack of available data on friends and acquaintances. The error, it would appear, lies in our failure to appreciate that, just as we may have substantial evidence of Gemini characteristics in ourselves (and, for that matter, substantial evidence of the characteristics of each of the signs of the Zodiac), both Aunt Harriett and the postman may also have ample data bases indicating that they also frequently behave as typical Geminis.

While our failure to adjust for insufficient knowledge, and concomitant reluctance to assume the existence of high base-rate characteristics in everyone, may reflect an inferential error, that error may well have cultural foundations. Subjects' estimations that they per-

form certain common behaviors more frequently than their acquaintances would appear to reflect the implicit assumption that our everyday behavior is not fully replicated, even on the limited dimension of frequency, in the experience of little known others. Although this assumption may be the product of a desire for uniqueness (Snyder & Fromkin, 1980), it may also reflect the expectations of a Western culture, which emphasizes the differences between individuals and minimizes their similarities.

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