
Personality and Judgment Heuristics: Contextual and Individual Difference Interactions in Social Judgment

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Research on judgment heuristics has shown the importance of context in influencing the information used (and that ignored) in making judgments. The authors tested the hypothesis that personality differences also affect susceptibility to heuristic reasoning processes. Participants scoring high and low on the Sociable scale of the Personality Adjective Checklist were given problems like those used by Kahneman and Tversky to study the representativeness heuristic under experimental conditions that differed in the extent to which contextual cues intended to activate theoretically relevant motives and concerns about approval and rejection were present. Significant differences between sociability groups were found only in a sociability-relevant condition in which the judgment problem dealt with a theme of rejection and abandonment. Results are discussed in terms of the priming of relevant schemas by contextual cues and resulting effects on attentional deployment and judgmental processes.

Important aspects of social cognition can be understood from a judgment and heuristics perspective (e.g., Fiske & Taylor, 1991; Nisbett & Ross, 1980). Kahneman and Tversky (1972, 1982) have described a number of heuristics that are commonly used in judgments of frequency, chance, and group membership to reduce complex problem solving to simpler judgmental operations. It is both elegant and somewhat surprising that the relatively simple cognitive framework underlying the study of heuristics provides such a powerful explanatory tool in social judgment theory. On the other hand, we might ask whether that framework and its empirical derivations might be expanded in ways that not only shed new light on the cognitive processes that underlie an important array of social judgment phenomena but also enhance our understanding of personality processes. More than two decades ago, Underwood (1975) made a

compelling case for using individual differences as "a crucible for theory construction" (p. 128). He argued that bringing individual differences into the arena of nomothetic theory construction could provide direct tests of the mediational processes posited by the theory in instances in which the individual differences represent the presumed mediators. In this article, we explore one way in which individual differences can be incorporated into the current heuristics framework. We suggest that individual difference variables can provide a new set of tests for the heuristics approach and that these tests can also further our understanding of individual differences in personality as they relate to cognitive functioning.

One common type of social judgment requires people to assess the probability that an object, event, or person belongs to a particular group or class. According to Kahneman and Tversky (1972), such judgments of class membership typically are based on the extent to which a specific object or event represents the prototypic features of the class in question. This strategy has been termed the representativeness heuristic, and it involves the matching of an event or object to some prototype of the parent class or population. Fiske and Taylor (1991, p. 384) suggest that representativeness may be our most

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basic heuristic in making social judgments, and Nisbett and Ross (1980, p. 120) argued that the representativeness heuristic is, in part, responsible for the fundamental attribution error. The acts of identifying people as members of categories or assigning meaning to actions are highly relevant to representativeness and fundamental to all social inference and behavioral choices.

Kahneman and Tversky (1972, 1973) have supplied numerous examples of the representativeness heuristic and the judgmental errors it can produce. For example, in their famous lawyer-engineer problem, people were asked to assess the probability that each of several personality descriptions (allegedly sampled at random from a group of 100 engineers and lawyers) actually belonged to an engineer. In one condition, participants were told that the population consisted of 70 lawyers and 30 engineers, whereas in another condition the population was described as having 30 lawyers and 70 engineers. Kahneman and Tversky reasoned that an informed and systematic approach to arriving at a likelihood judgment should be influenced by the base-rate information. However, when participants were given individuating information about the target, they provided nearly identical probability estimates, essentially ignoring the base-rate information and instead basing their estimates almost exclusively on the degree to which each personality description was representative of the target class of engineers.

Much of the theorizing and research on judgment done by Tversky and Kahneman suggests that contextual factors influence information processing. As Kahneman and Tversky (1982) note, "it appears that the actual reasoning process is schema-bound or content-bound so that different operations or inferential rules are available in different contexts" (p. 130). Indeed, much of their work has shown the effects of context on judgment and decision making. For instance, in the classic lawyer-engineer problem used to illustrate base-rate neglect resulting from the use of the representativeness heuristic, participants relied exclusively on the base-rate information when they did not have additional information. In contrast, they underused the base rate (with respect to a Bayesian standard) when given individuating information that provided new contextual cues. These cues were apparently given considerable weight when used in the heuristic judgment strategy.

In this article, we argue that such judgments can be affected not only by contextual factors but also by individual difference variables that affect attention, encoding, and information processing. Consequently, contextual and individual processes can combine to create Person \times Situation interactions in social judgment. To the present time, personality variables have not

been systematically studied in relation to heuristic reasoning, perhaps because the relevance of the schema-bound formulation of heuristic reasoning to personality functioning has not been fully appreciated. From this perspective, any personality variable that is associated with specific reasoning rules could influence the use of heuristics, given that the contextual cues are relevant to and therefore engage the appropriate processes. For example, an individual who is overly concerned with the prospect of social rejection may be more susceptible to contextual cues involving social rejection than an individual who is less concerned with social rejection. Contextual cues involving social rejection may elicit a judgment that relies more heavily on the representativeness heuristic, and this could lead to differential social judgments.

Although the application of personality variables to heuristic reasoning may appear somewhat novel, the notion that personality affects responsiveness to certain classes of contextual cues has a long tradition in personality theory. For example, Allport (1937) suggested that "traits are often aroused in one type of situation and not in another; not all stimuli are equivalent in effectiveness" (pp. 331-332). Likewise, Jung (1933) emphasized that personality types influence the ways in which people process and selectively respond to different aspects of the same "objective" stimulus. Murphy (1947) defined the process of autism as the "movement of the cognitive processes in the direction of need satisfaction" (p. 365). Many personality theorists (e.g., Kelly, 1955; Millon, 1990; Rogers, 1959; Shapiro, 1965) have also assumed that style of thinking stems from and, in turn, reinforces personality style. To the degree that this premise is valid, situations that strongly elicit the needs, values, and attitudes that define particular personality styles should also strongly elicit the styles of thinking associated with them. Support for this assumption exists in the areas of achievement motivation (McClelland, Atkinson, Clark, & Lowell, 1953) as well as subliminal presentation (Erdelyi, 1992; Silverman & Silverman, 1964). Likewise, Lazarus (1991) has suggested that the motivational structure that is one component of personality creates *personal agendas* that influence the salience of environmental cues for a given individual as well as the appraisal processes that follow. We should not be surprised, therefore, if cognitive processes such as heuristics are influenced by personality and motivational variables that affect the salience of particular cues.

To test the hypothesis that use of the representativeness heuristic can be influenced by a personality variable, we chose to study the gregarious or sociable personality style described by Millon (1981, 1990). We chose this variable because a number of theorists agree that a core relational theme—namely, the need for ap-

proval and fears of disapproval and rejection—are a central aspect of this personality construct. Thus highly sociable people are described as being highly dependent on the reactions of others and as actively solicitous of their attention and approval. This frequently results in an exaggerated emphasis on physical attractiveness, an outgoing interpersonal style designed to engage others and solicit attention, compulsive needs for approval and acceptance, fear of rejection, overconformity, and dependency. In accounting for such behavioral dispositions, recent cognitive formulations by Beck, Freeman, and Associates (1990) and by Young (1994) have emphasized the role of schemas (cognitive structures that represent knowledge about oneself and the environment and that guide attentional processes and information processing) in the cognitive, affective, and behavioral patterns exhibited by various personality patterns, including the sociable personality and its dysfunctional extension, the histrionic personality.¹ Like Millon, Beck and his coworkers proposed that such individuals have high needs for approval and acceptance and that they are especially vulnerable to separation anxiety and to fears of disapproval and rejection. For this reason, persons exhibiting the sociable personality pattern would be expected to be schematically reactive to stimuli that involve themes of attractiveness, approval, acceptance, and rejection. This schema activation assumption receives support in the social cognition literature, in which it has been demonstrated that schematic priming effects are strongest when relevant meanings as well as positive or negative valences are primed (Fiske & Taylor, 1991). Moreover, people who are preoccupied with a particular theme or construct are particularly sensitive to cues denoting it (Bargh & Pratto, 1986). In this sense, schematic priming effects represent a particular kind of Person \times Situation interaction within the information-processing domain.

In this study, participants were divided into high- and low-sociable groups on the basis of a standardized scale designed to measure individual differences in sociability. Both groups were given a judgment task designed to demonstrate the use of the representativeness heuristic under one of three different experimental conditions. In the sociability-neutral condition, participants were given the standard lawyer-engineer judgment problem used by Kahneman and Tversky (1973). We predicted that sociability group differences would not emerge in this condition because the standard lawyer-engineer problem would not engage the social acceptability themes that are differentially salient to the two groups of participants.

The other two experimental conditions were designed to engage the approval-rejection concerns of the

high-sociability participants through either a situational manipulation or a content manipulation. In the situational condition, the standard lawyer-engineer task was administered under evaluative experimental conditions that were designed to evoke concerns about approval, acceptance, and personal attractiveness, especially for those who score high in sociability. In the content condition, the judgment problem itself was modified to a scenario involving rejection and abandonment, and the stimulus person was endowed with several unattractive characteristics that would be expected to be linked to a rejection prototype. We predicted that these situational and problem-content cues would be especially salient to highly sociable individuals, thereby decreasing their attention to other important contextual cues, such as base-rate information. This should make them more prone to use the representativeness heuristic.

METHOD

Participants

The participants were 210 undergraduate women, 155 from the University of Washington and 55 from the University of California at San Diego.² Proportional numbers of participants from each sample were randomly assigned to the three experimental conditions. The mean age of participants in the Washington sample was 18.50 years ($SD = 1.29$), and the mean age in the California sample was 18.71 years ($SD = 1.09$).

Personality Measure

Participants were selected for participation based on scores on the Sociable scale of the Personality Adjective Checklist (PACL; Strack, 1987). The PACL is designed to classify respondents according to normal-range variants of the eight basic personality styles specified in Millon's (1990) personality theory. The PACL has demonstrated acceptable internal consistency and test-retest reliability, and extensive college-student norms are available for both males and females.

The Sociable scale consists of 21 adjectives (e.g., gregarious, outgoing, theatrical, animated, flirtatious). Participants are asked to place a check mark next to all adjectives that describe them. To adjust Sociable scale raw scores for variations in the overall number of PACL items endorsed by each subject, T score transformations were conducted using the procedures and college-student norms provided by Strack (1990). Participants falling above the upper quartile of the Sociable scale distribution (T scores greater than 57) were designated as high in sociability, whereas those falling below the lower quartile (T scores below 43) were defined as low in sociability.

Experimental Conditions

Sociability-neutral condition. For participants in the sociability-neutral condition, the materials and procedures were similar to those used by Kahneman and Tversky (1973) in their classic lawyer-engineer study. Participants in this condition were presented with several brief personality descriptions supposedly sampled at random from a group of 30 engineers and 70 lawyers, and participants were then asked to assess the probability that each description was actually that of an engineer. The description of experimental interest (Leanne) was designed to be representative of a prototypic engineer and was almost identical in wording to the description used in the original research. The description of interest was presented third in a series of five descriptions, four of which were fillers. The problem was presented as follows:

A group of sociologists studied college women who had recently applied for admission to graduate school in engineering. To understand this topic, they compared women who reported that they had recently applied to engineering school with women who reported they had recently applied to law school. Descriptions were gathered from 100 college women, 70 of whom had applied to law school, and 30 of whom had applied to engineering school. Below you will find five descriptions chosen at random from the 100 available descriptions. For each one, indicate your estimate of the probability that person is one of the engineering school applicants, on a scale from 0 to 100.

Leanne is 20 years old. She has a strong need for order and clarity and tends to become obsessed with minute details. She describes herself as a loner who has little interest in social activities or issues. She devotes much of her time to her many hobbies, which include computers, mathematical puzzles, and reading science fiction.

The probability that Leanne is one of the 30 engineering applicants in the sample of 100 is ____ %.

Sociability-situational condition. For participants in the sociability-situational condition, the stimulus materials were identical to those used in the neutral condition, but the procedure was altered to create a situational context designed to activate concerns relating to acceptance, approval, and attractiveness. Participants were led to believe that the judgments they made, together with the results from a subsequent interview with the experimenter, would be used to assess their interpersonal attractiveness and likability. They were also told that the male experimenter would give them direct face-to-face feedback about the results of this assessment. Prior to presentation of the experimental rationale and task, participants in this condition were presented with the following instructions:

Following completion of the experimental tasks and inventories, you will be interviewed by the experimenter, Stan Moore. Based upon your responses during this interview, as well as your responses to the experimental tasks and inventories, he will provide you with a psychological assessment of your interpersonal style. This assessment will focus upon the ways you are perceived by others and the way in which your interpersonal style may either facilitate or detract from your social attractiveness and likability. Mr. Moore is currently a doctoral candidate in clinical psychology and his psychological assessment will be based upon his experience of 8 years as a practicing psychotherapist, as well as the information contained in his published work on the topic of personality.

Sociability-content condition. For participants in the sociability-content condition, procedures were identical to those used in the neutral condition, but the stimulus materials were altered so that the judgment task was pertinent to concerns about acceptance, approval, and attractiveness. Specifically, participants in this condition were presented with several brief personality descriptions supposedly sampled at random from a group of 100 women, including 30 who had suffered a recent romantic rejection and 70 who had experienced no such rejection. Participants were asked to assess the probability that each description was actually that of a rejected woman. The description of experimental interest (Amy) was designed to be representative of, or to resemble, a prototypically unattractive and unpopular young woman who could potentially have experienced romantic rejections. Again, the critical description was presented third in a series of five descriptions. The task was presented as follows:

Dating and the development of significant romantic relationships can be an exciting and rewarding part of college life for many coeds. The successful establishment and maintenance of such relationships can lead to enhanced feelings of acceptance, belonging, approval, and attractiveness. However, for those coeds whose romantic relationships end in rejection, the experience can be emotionally devastating. These women often report that romantic rejection leaves them feeling lonely, unloved, unattractive, and abandoned.

A group of sociologists studied women who had recently experienced an important rejection by a lover or boyfriend. To understand this topic, they compared women who reported a recent rejection with women who reported they were in relationships and had experienced no recent rejections. Descriptions were gathered from 100 college women, 30 of whom had reported a recent rejection, and 70 of whom had reported no rejections. Below you will find five descriptions chosen at random from the 100 available descriptions. For each one indicate your estimate of the probability that this

person is one of the women who did experience a recent rejection, on a scale from 0 to 100.

Amy is 19 years old. She has brown hair, hazel eyes, and is overweight. She describes herself as serious and somewhat compulsive. She reports having little interest in campus social activities and devotes much of her time to her many hobbies, which include computers, mathematical puzzles, and reading science fiction.

The probability that Amy is one of the 30 women who did experience a romantic rejection in the sample of 100 is ____ %.

This study thus used a 2 (low/high sociability) \times 3 (neutral/situation/content) between-participants design. The experimental manipulation involved either (a) a neutral scenario (the original lawyer-engineer problem used by Kahneman & Tversky, 1973); (b) the same problem in the context of an interaction with the experimenter intended to evoke the themes of approval, acceptance, and social attractiveness that are salient to the sociable personality style; or (c) a parallel problem with a scenario focusing on the social rejection and abandonment themes that are relevant to the sociable personality style.

RESULTS

The dependent variable was the judged likelihood that the target person in the problem was a member of the relevant category (i.e., either an engineer or someone who had recently experienced a painful social rejection). The experimental hypotheses predicted that in the sociability-content and sociability-situational conditions, the high-sociability group would give higher likelihood estimates than the low-sociability group because of greater use of the representativeness heuristic. Planned contrasts were used to test the differences between the two personality groups within each condition. Preliminary tests showed that the homogeneity of variance assumption was satisfied across the six cells; therefore, the pooled error term was used in computing the planned contrasts ($MS_w = 622.05$). It is well known that planned contrasts can be tested directly under such conditions, whether or not the omnibus F is significant (e.g., Rosenthal & Rosnow, 1985). Nonetheless, we note that the omnibus test across the six treatment means was statistically significant, $F(5, 204) = 11.17, p < .001$.

The means of the probability estimates for the two sociability groups in the three experimental conditions are presented in Figure 1. The error bars are scaled so that they correspond to the tests of pairwise differences under the pooled error term ($\alpha = .05$). Therefore, overlapping error bars between any pair of means indicate a nonsignificant difference between the two means, whereas nonoverlapping error bars indicate a statisti-

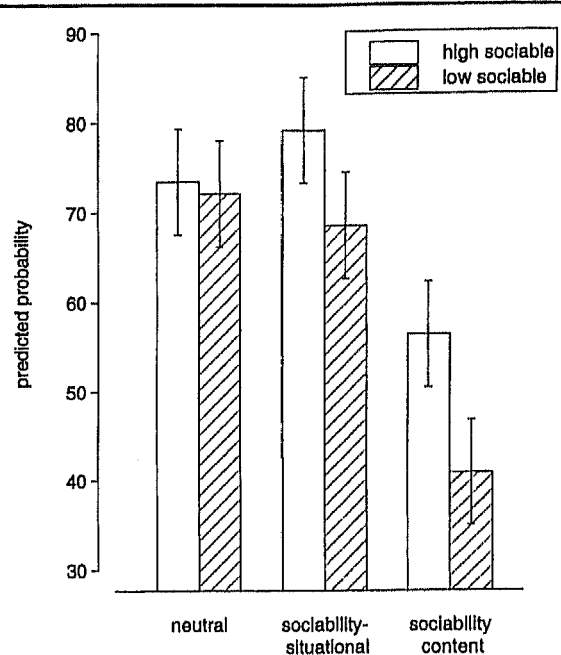


Figure 1 Mean likelihood estimate that the target person is a member of the relevant category as a function of subject group and experimental condition.

NOTE: Error bars are based on the pooled error term and are scaled so that nonoverlapping bars denote a statistically significant ($p < .05$) pairwise contrast.

cally significant difference between the two means. The pattern of significant differences remained identical when a Bonferroni correction was made for the three contrasts.

As is evident from an examination of Figure 1, the mean of the high-sociability participants ($M = 73.4$) did not differ from that of the low-sociability participants ($M = 72.1$) in the neutral condition ($p = .82$, Cohen's $f = 0.016$). Indeed, a power analysis revealed that approximately 5,200 participants per cell would be required to have sufficient power (at .80) to detect a true population difference of this magnitude (Cohen, 1977). Thus we conclude that there is neither statistical nor practical significance in this group difference.

In the situational condition, in which the neutral problem was administered in the presence of sociability-relevant situational cues, weak results were obtained, albeit in the predicted direction ($p = .076$, Cohen's $f = 0.125$, tested by the contrast comparing the high- and low-sociability group means). The high-sociability participants judged the target person as more likely to be an engineer ($M = 79.1$), but their likelihood estimate did not differ significantly from either the low-sociability participants in their condition ($M = 68.5$) or from the two groups in the neutral condition. Power analysis revealed that 80 participants per cell would have been

required for conventional power (.80) to detect a population magnitude of this size in this condition.

The scenario containing the sociability-content cues relating to rejection and abandonment yielded strong differences between the high- and low-sociability groups ($p = .01$, Cohen's $f = 0.182$). Participants scoring high in sociability were significantly more likely than low scorers to judge the target person as a member of the rejected group ($M_s = 56.3$ and 40.8 , respectively).

DISCUSSION

The null results in the neutral condition, together with the pattern of results found in the two experimental conditions, were consistent with the hypothesis that individual differences can affect the use of heuristic judgments when contextual cues activate concerns, motivational processes, and information-processing schemas that are specific to that individual difference factor. In this instance, a personality variable that involves concerns with themes of approval, attractiveness, and rejection apparently increased the salience of certain contextual cues for individuals who were high in that trait. Specifically, we suggest that in the sociability-content condition, the high scorers on the Sociable scale focused increased attention on the unattractive prototypic features ascribed to Amy, the target person, and subsequently judged her as more likely to have been rejected. In contrast, high scorers on the Sociable scale did not differ from low scorers in their probability estimates in the neutral condition. Indeed, the mean judgments of both groups in this condition were very similar to those reported by Kahneman and Tversky (1973) in unselected college-student samples.

It is important to point out that the present results cannot be used to make normative arguments about whether high- or low-sociability participants are more or less "Bayesian" (i.e., more or less rational) in their judgments or that one group used the base rate more than another because the base rate was not manipulated, as it was in the Kahneman and Tversky (1973) studies. Clearly, however, group differences were far greater in the condition that was designed to activate personality-relevant schemas that have been ascribed to the sociable personality pattern by various theorists. The pattern of results is indicative of a Person \times Situation interaction involving personality characteristics and contextual cues.

We have chosen to interpret the results from a schema activation perspective because of the comparability of our results with other research showing selective schema activation by personally-salient cues (e.g., Bargh & Pratto, 1986) and because of the importance of the schema concept in current cognitive theories of personality functioning (e.g., Beck et al., 1990; Young, 1994).

The schema activation interpretation thus anchors our study and its findings to both the social cognition and the personality literatures. However, it is also possible to interpret these results in terms of capacity limitations in information processing without positing a schema activation mediator. Such an interpretation would focus on the potentially large number of cues available for processing and the selectivity required by capacity limitations. To the extent that personal salience influences the specific cues that are used in the judgment process, it is quite possible that the important information concerning base rates would become less "important" when attention is directed to other cues that are relevant to personal concerns.

We reasoned that personality-relevant cues could be produced by the nature of the relationship between the experimenter and the subject as well as by cues in the judgment problem itself, and we were interested in determining whether such contextual cues would increase the tendency of high-sociability participants to use representativeness when judging the neutral problem. The situational manipulation did not yield significant differences between the high- and low-sociability participants, although a trend was evident. One difference between the contextual cues in the situational and content sociability conditions was that the cues in the situational condition emphasized social acceptance and approval, whereas those in the content condition emphasized social rejection and abandonment. It may be that rejection cues are more potent elicitors of the sociability schema than are approval cues, perhaps because they are more likely to produce an anxiety-mediated narrowing of cue utilization (Easterbrook, 1959). The trends we detected in the situationally relevant condition suggest the possibility that a more potent manipulation of the subject-experimenter relationship might produce the hypothesized difference in heuristic usage. This possibility is an empirical question that warrants future attention. On the other hand, the large effect observed in the sociability-content condition may suggest that cues that are part of the judgment problem itself are more potent activators of personality-related cognitive responses than are cues that are part of the situation in which the judgment occurred.

The null results found in the standard lawyer-engineer problem may help account for the absence of published studies showing that personality variables affect such judgments. Such an absence might lead one to conclude that the use of heuristics is more or less a universal phenomenon that is relatively impervious to individual differences. On the other hand, a lack of evidence for the influence of personality variables is not altogether surprising, given that the standard scenarios used in research of this kind do not include elements

that would be expected to elicit schemas, motives, or personal agendas related to specific personality patterns. The important finding from our study emerged only when the problem was altered so as to contain cues relevant to the issues thought to be central to a specific personality variable. This finding suggests that important Personality \times Situation interactions may exist in the use of the representativeness heuristic, and perhaps other heuristics as well. Given the importance of heuristic processes in social perception, interpersonal functioning, and adjustment, the study of interactions between person and situation, as well as the specific processes that mediate such interactions, may be an important frontier for future personality research.

The logic underlying this study is consistent with Underwood's (1975) call for the use of individual differences to test theory. Underwood's notion was that when a theory posits a process and people differ in their use of that process, then the theory makes testable predictions about how responses across people should differ. In this manner, individual differences can play an important role in theory testing. From this perspective, the present study can be viewed as using an individual difference variable to test the "context-based" view of Kahneman and Tversky. That is, certain judgments of class membership are assumed to occur by a process of representativeness, and it is possible to use individual differences to differentially trigger representativeness within the context of personally relevant cues.

Using individual differences in this manner can also provide tests of theoretical propositions concerning the individual difference variable under consideration. For instance, some theorists have argued that the sociable personality is characterized by a global, impressionistic style of reasoning that leads to inattention to detail (e.g., Beck et al., 1990; Magaro, Smith, & Ashbrook, 1983; McMullen & Rogers, 1984; Millon, 1990; Shapiro, 1965). As a result, general knowledge is presumably compromised, and the person's concepts and models for action in the world tend to be shallow and oversimplified. Consequently, problem solving is hampered and complex situations can easily become overwhelming. This view predicts that group differences should emerge across all three conditions in this study, including the neutral condition, because the reasoning among the high-sociability participants should be global and impressionistic. The base-rate information would therefore be underused in the high-sociability groups. However, the failure to find an individual difference in the neutral condition suggests that the global view may be incorrect. Instead, it appears that under neutral conditions, the reasoning products of the high- and low-sociability participants do not differ. This finding suggests a reconsideration of whether the postulated global reasoning

processes thought to characterize sociable people occur across all reasoning domains or whether they are restricted to situations that activate the concerns that are specific to the sociable personality.

NOTES

1. Although these theorists have concerned themselves primarily with personality disorders, the constructs and processes posited by their theories are clearly intended to apply to normal-range personality functioning as well.

2. We restricted our sample to females for reasons relating to the measuring instrument used to select subjects. First, Strack's (1990) discriminant validity studies showed that the Sociable scale is minimally related to measures of social desirability for women but is significantly correlated for men. A female sample thus minimized extraneous social desirability variance in our selection measure. Second, test-retest reliability is substantially higher for females than for males (.90 vs. .69, respectively, over 1 month), indicating greater measurement stability for women. Finally, the college-student norms provided by Strack showed that appreciably more females than males score at the high end of the scale. Because we were working with a normal-population personality variable, we wanted to have as much scale separation as possible between high- and low-sociability groups so as to provide a more powerful test of the experimental hypothesis.

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