DISPOSITIONAL FACTORS INFLUENCING CONFIDENCE IN AND BELIEFS ABOUT THE ACCURACY OF ONE'S OWN AND OTHERS' JUDGMENT

DISSERTATION

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By
Paul Greblo, B.S., M.A.

* * * * *

The Ohio State University
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Dissertation Committee:

Herbert L. Mirels, Ph.D., Advisor
Steven J. Beck, Ph.D.
Thomas E. Nygren, Ph.D.

Approved by

Advisor
Department of Psychology
ABSTRACT

The literature concerning confidence in decision-making consistently demonstrates that people exhibit a high degree of confidence in their abilities. Unfortunately, such confidence is typically not met with a correspondingly high degree of performance, often leading to a striking degree of overconfidence and poor calibration of confidence judgments. To date, attempts at curbing overconfidence through the manipulation of experimental instruction, incentives or task demands, have proven to be effective only in a limited number of studies.

The present research investigated the influence of generalized doubt about the adequacy of one's judgmental skills, as assessed by the Judgmental Self-Doubt Scale (JSDS; Mirels & Grebly, 1994), on the degree to which individuals were confident in the correctness of their own and others' answers to general knowledge questions and to social knowledge questions. The two studies reported here gave particular attention to how generalized judgmental self-doubt was related to the degree to which participants' confidence was calibrated with the correctness of their answers.

Consistent with previous findings, participants were less confident in their own than in others' answers to general knowledge questions. Contrary to expectation, the reverse findings were obtained for answers to questions about the co-endorsement of personality test items and to estimates of the occurrence of personality attitudes and behaviors in a sample population.

Overall, the present findings supported the expectation that higher generalized doubt about one's judgmental prowess would be associated with a) lower confidence in the
correctness of one's answers to specific questions and b) greater congruence between confidence in the correctness of one's answers and the extent to which they were, in fact, correct. Self-monitoring, need for cognition, and a separate sample of confidence ratings showed varying degrees of association with confidence and calibration.
Dedicated to my father, Zorislav, and the memory of my mother, Cornelia,
in appreciation for their faith, wisdom, and devoted care
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She has witnessed my struggles and endured a great deal of hardship over the years. Without her generous spirit and unfailing support, the fulfillment of this monumental task would not have been realized.
VITA

August, 1967 .................................................
Born - Madison, Wisconsin

December, 1988 .............................................
B.S., in Psychology with Distinction, University of Wisconsin, Madison, Wisconsin

September 1990 - June 1991 ............................... State of Ohio Trainee, OSU Nisonger Center, Columbus, Ohio

September 1991 - June 1992 ............................... Graduate Course Assistant, OSU Department of Psychology, Columbus, Ohio

September 1992 - June 1993 ............................... Clinic Coordinator, OSU Psychological Services Center, Columbus, Ohio

September 1993 - June 1995 ............................... Graduate Teaching Associate, OSU Department of Psychology, Columbus, Ohio

September 1993 - August 1996 ............................. Psychology Assistant, James C. Tanley, Ph.D. - Clinical Psychologist, Columbus, Ohio

September 1995 - August 1996 ............................. Coordinator, Research Experience Program, OSU Department of Psychology, Columbus, Ohio

September 1996 - August 1997 ............................. Psychology Intern, James A. Haley Veterans’ Hospital, Tampa, Florida

FIELDS OF STUDY

Major Field: Psychology

Studies in Clinical Psychology and Rehabilitation Psychology
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CHAPTER 1

INTRODUCTION

Decision-making constitutes a pervasive aspect of everyday life. Yates (1990) defined a decision as an "action taken with the intention of producing favorable outcomes" (p. 3). People make a great variety of decisions, from seemingly unimportant selections to crucial life-altering choices. Successful decisions may be expected to yield satisfying outcomes; unsuccessful decisions, or decisional failures, result in less than satisfying consequences. Individuals who make sound decisions may be expected to encounter success in their personal relationships and careers and consequently, feel greater contentment and experience lower levels of distress. On the other hand, people who do not make wise decisions may be expected to experience greater frustration in achieving personal and vocational goals and as a result, suffer an increased likelihood of emotional distress. Therefore, decision-making is not only a ubiquitous phenomenon, it also holds the potential to significantly impact numerous aspects of an individual's life.

The process of decision-making is a complex one, with a myriad of factors carrying the potential to affect the manner in which decisions are made. Cognitive, social and organizational psychologists have attempted to identify those factors which influence the decision-making process. The nature and quality of one's judgment is undoubtedly one such factor. Judgment is the "mental or intellectual process of forming an opinion or evaluation by
discerning and comparing" (Webster's Third International Dictionary of the English Language, p. 1223) and is considered to be the "cornerstone of most decisions" (Yates, 1990, p. 6). The extent to which judgment is useful in making a decision is likely to be, in part, a function of the confidence an individual holds in his or her judgment. An individual can be expected to make use of those judgments that are held with great confidence more frequently and more effectively than judgments held with limited confidence.

The degree to which individuals express confidence in their judgments is subject to the influence of a number of variables. Payne, Bettman, and Johnson (1993) delineated several categories of variables which affect judgment, with a focus on specific situational or task variables, such as task difficulty, time constraints, and response mode. In addition to these situational determinants of confidence, it seems reasonable to presume that motivation to make good decisions and beliefs about one's ability to make good decisions affect the confidence one holds in one's judgment.

The Overconfidence Effect

Are people aware of what they know and what they do not know? Research studying decision-making processes has often focused on this question, and it has generally been assumed that the quality of any given decision will be greater if there is a reasonable degree of correspondence between the confidence which one holds in one's judgment and the actual abilities of an individual for a given decision-making task (Paese & Sniezek, 1991). For instance, if an individual is unaware that his judgment is poor yet he relies greatly on his judgment when making decisions, he may be highly prone to making gross errors in his decisions. This potential to fall into decisional pitfalls makes the question of whether one's judgmental confidence is congruent with one's actual decision-making abilities of significant importance.
At present, the literature on judgmental confidence strongly suggests that people are typically overconfident in their judgments and decisions. In a groundbreaking series of experiments exploring lay judgments, Lichtenstein and Fischhoff (1977) engaged participants in a variety of decision-making tasks. In each experiment, the authors asked that participants make confidence ratings for each item in a series of judgments. The judgment tasks ranged from guessing the geographic origin of drawings and predicting future stock performance to answering questions tapping general knowledge (e.g., absinthe is (a) a precious stone, (b) a liquor.). Lichtenstein and Fischhoff found that participants were consistently more confident in their judgments than would be justified by the accuracy of those judgments. For instance, when asked to decide whether a set of drawings had been made by either European children or Asian children, participants were correct on 53.2% of the time. However, participants’ estimates of the probability that their responses were correct indicated that they believed they were correct an average of 68% of the time, and this difference between actual and perceived performance (i.e., 68% - 53.2%) was taken as evidence that participants demonstrated inappropriately high confidence in their answers.

The simplest method of measuring the accuracy of confidence ratings is to subtract the average of one’s confidence ratings across all of the items of a task from the proportion of correct responses, as in the example above. There are several other measures that index the relationship between perceived and actual performance. Frequently, the term "calibration" is used to describe these measures, even though such measures may have widely different computational formulas (Plous, 1993). The most prevalent measure of judgmental accuracy, and the one typically termed "calibration", is calculated in the following way: the estimates that an individual gives indicating the probability that their responses to a given set of items are correct (e.g., items with a given confidence level between 71%-80%) are matched with
the actual proportion of those same items which were answered correctly. All sets of items for a given range of confidence estimates (e.g., 50%-59%, 60%-70%) are calculated in this way.

Good calibration is demonstrated if an individual’s probability estimates for the given set of ranges correspond closely to the actual performance achieved on the items in those specified ranges. Calibration is linked to the overconfidence effect in that poor calibration is often, though not always, associated with overconfidence. For instance, in the Lichtenstein and Fischhoff (1977) experiments, the authors demonstrated that not only were participants overconfident in their judgments, they were also poorly calibrated. Since Lichtenstein and Fischhoff published their influential article, a number of studies have replicated their findings in similar laboratory tasks, supporting the view that people are very often both overconfident and poorly calibrated in their decisions (e.g., Koriat, et al., 1980; Ronis & Yates, 1987; see Lichtenstein, Fischhoff, & Phillips, 1982, for a review).

Other investigations have extended the overconfidence effect from decisions made by laypersons to decisions made by professionals. In an imaginative experiment concerning clinical judgment, Oskamp (1965) gave three groups of participants, clinical psychologists, graduate psychology students and undergraduate psychology students, a clinical case history of a young man named "Joseph Kidd". Four sets of information were presented sequentially. After reviewing each set, participants were required to complete a multiple-choice test about Mr. Kidd’s behavior patterns, attitudes, and responses. The same questions were administered to participants after each stage. After answering each item on the test, participants also indicated their confidence in each of their judgments. Oskamp demonstrated that although giving participants additional information about Mr. Kidd increased their confidence in the judgments they made about him, there was not an analogous increase in the
accuracy of these judgments. This confidence-accuracy differential (i.e., overconfidence) increased after each subsequent stage of information presentation, reaching a maximum differential by the end of the fourth and final stage. Surprisingly, this effect was of the same magnitude for all three groups of participants. Apparently, the greater education and experience of professional clinical psychologists did not lead to less overconfidence than that displayed by graduate and undergraduate students.

Clinical psychologists are not the only professionals who have been shown to succumb to the overconfidence effect: studies employing security analysts (Stael von Holstein, 1972), lawyers (Wagenaar & Keren, 1986), and medical doctors (Christensen-Szalanski and Busyhead, 1981) as participants have demonstrated that these professionals also display inappropriate confidence in judgments about material in their respective fields.

It should be noted that although overconfidence in professional judgments is pervasive, it is by no means universal. Murphy and Winkler (1977) found National Weather Service forecasters were almost perfectly calibrated in a prediction task involving probability estimates for precipitation in Chicago, Illinois. For example, across all forecasts of a 60% chance of rain in the Chicago-area, some measurable amount of rain did indeed fall about 60% of the time. However, the forecasters’ predictions were not flawless. Further analyses revealed a slight positive bias in their precipitation forecasts, indicating that forecasters’ probabilistic judgments of rain were slightly higher than actual rainfall frequency. This suggested that the weather forecasters were actually slightly overconfident in their predictions concerning rainfall (or conversely, that they were underconfident in their predictions of no rainfall in the Chicago-area).

Other studies have since revealed that laypersons are also not invariably overconfident in their judgment (Arkes, Christensen, & Blumer, 1987; Koriat et al., 1980; Tetlock and
Kim, 1987). These studies, undertaken with the express purpose of finding methods which would result in a reduction of confidence (and overconfidence), will be discussed later.

Validity of the Overconfidence Effect

There is considerable disagreement concerning theoretical interpretations of the overconfidence effect. Several investigators postulate that the overconfidence as documented in many studies is merely a methodological artifact produced by idiosyncracies in the selection of items (Gigerenzer, et al., 1991; Justlin, 1994). For instance, Justlin (1994) argued that the overconfidence effect can be eradicated if the items which people are asked to answer are randomly selected from the entire pool of possible questions for a domain. By this method, fewer questions which are extremely difficult or extremely easy will be chosen and therefore, the questions will more closely correspond to people’s knowledge of a domain. Justlin selected items based on this reasoning, which he termed an "ecological" approach, and found that this resulted in both the elimination of overconfidence and in improved calibration. In contrast, people answering items selected through traditional methods were shown to display overconfidence and poor calibration.

Others have contended that the overconfidence effect is a methodological artifact generated by methods for analyzing and demonstrating overconfidence (Dawes & Mulford, 1996; Erev, Wallsten, & Budescu, 1994). These investigators assert that a regression effect largely accounts for apparent overconfidence. For instance, for those items in which individuals express the greatest amount of confidence (e.g., 100% accuracy), it is not possible for an individual to be underconfident because they cannot obtain a performance score of greater than 100% correct. These questions may be considered to be relatively easy by participants but by simply missing one or more of these questions, an individual appears to be overconfident. Likewise, these authors argue that it is very difficult to be less than 50%
correct for items which are endorsed with 50% accuracy, "unless hunches, partial information, or even information beyond awareness is systematically wrong" (Dawes & Mulford, 1996; p. 204). Therefore, people often show underconfidence and poor calibration on these very difficult questions.

However, claims arguing against the validity of the overconfidence effect have been strongly rebutted. One study directly took issue with Juslin's (1994) claims that randomly chosen task items leads to the elimination of overconfidence, by demonstrating that even when items were selected randomly, individuals still demonstrated significant overconfidence in their judgment (Griffin & Tversky, 1992). This and other similar studies led Brenner, Koehler, Liberman, & Tversky (1996) to report that "the major (though not the sole) determinant of overconfidence is the difficulty of the questions, not the manner in which they are selected" (p. 213).

Furthermore, Griffin and Varey (1996) refuted the claims by Dawes and Mulford (1996) and Erev et al. (1994) that overconfidence is merely a product of the regression effect. Griffin and Varey acknowledged that people's judgments of being 100% accurate are constrained by the scale (i.e., people are not able to be more than 100% correct on a set of items) but they argued that it is still of great interest that performance on supposedly easy questions is often so remarkably worse when compared to people's judgments of complete confidence (i.e., confidence ratings of 100%). Interestingly, even those critical of the overconfidence literature, such as Dawes et al. (1996), Erev et al. (1994) and Juslin (1994), make the point that overconfidence may not simply be an artifact but rather, represents a phenomenon worthy of scientific investigation. Koehler (1994) stated that there is no shortage of factors which contain the potential to influence confidence judgments and consequently, no single theory may be capable of providing a comprehensive account for this phenomenon.
Investigators continue to explore influences on judgmental accuracy. Zakay and Tsal (1993) briefly outlined several factors that they believed may significantly contribute to overconfidence. Among these factors were the amount and quality of available information, degree of internal conflict (e.g., internal cues concerning doubt) within the decision maker, decision strategies employed, the amount of cognitive processing, level of motivation, and personality traits.

The present research focuses on the last of Zakay and Tsal’s suggested factors: personality traits. A review of the literature concerning the relationship between personality and confidence offers a conceptual framework from which to further investigate the role of personality variables in overconfidence.

**Individual Differences in Confidence and Decision-Making**

One of the first investigations linking personality to decision-making was conducted by Block and Peterson (1955). They asked participants to complete a line length discrimination task and to give a confidence rating for each judgment. Participants were then divided into three groups, designated as "overly confident", "overly cautious", and "warranted confidence", on the basis of the relationship between their judgments and their expressed confidence in those judgments. After participants completed a battery of personality measures, independent raters evaluated participants’ personality characteristics by means of Q-sorts and an adjective checklist. Block and Peterson found that individuals in the warranted confidence group, who showed moderate levels of confidence in their discrimination judgments, were characterized by greater maturity, self-reliance, and adaptivity than participants characterized by either extremely high (overconfident) or low (overcautious) levels of confidence. Surprisingly, participants in the overly confident group as well as those in the overly cautious group were identified as low in self-reliance and independence of
judgment.

Although these two groups shared similarities in the level of doubt they had in their judgment, Block and Peterson (1955) speculated that "the mechanisms of coping with this self-doubt are different for the two groups" (p. 36). Those in the overly confident group were believed to be "whistling in the dark" (p. 36), with their elevated confidence serving as a bold attempt to save themselves from acknowledging their shortcomings. In contrast, those in the overly cautious group were thought to be well-aware of their shortcomings but as choosing to cope with their self-doubt by disengaging themselves from situations requiring judgment. Block and Peterson concluded that these latter participants appeared indifferent and lacking in ambition.

Although Block and Peterson (1955) published their intriguing findings over 40 years ago, subsequent research relating personality variables to judgmental confidence has, until recently, been sparse. For the past several decades, the great majority of investigations relating confidence to decision-making focused upon situational determinants. For instance, an often cited book concerning decision-making by Janis and Mann (1977) enumerates many studies exploring the influence of situational variables on decisions and confidence in judgment but lacks in the specification of personality variables which influence decision-making. Olivares (1993) noted the discrepancy between situational and personality variables in decision-making research and posited that research on individual differences lagged because of an absence of psychological theory concerning confidence. He stated that "with few advances in theory, individual differences hypotheses are difficult to develop" (p. 5). Alternatively, he speculated that task features and situational determinants have received greater attention because these factors may explain a larger portion of the variance in confidence judgments.
Nonetheless, Olivares (1993) contended that "there still remains unexplained variance [in confidence judgments] that can be accounted for by individual differences" (p. 5). Indeed, it appears that a number of investigators have begun to research the relationship between dispositional variables and decision-making processes. Zakay (1985, 1990) tried to identify personality traits influencing the decision strategies which people choose to use, strategies believed to be a factor in post-decisional confidence. Wolfe and his colleagues have also sought to identify personality variables that influence confidence. Cutler and Wolfe (1989), employing a revised self-monitoring scale, showed that high self-monitors displayed greater confidence and worse calibration than low self-monitors. Wolfe and Grosch (1990) reported that a number of traditional personality variables tapping affective, cognitive/social, and intellectual domains were significantly correlated to confidence in several decision-making tasks. These variables included self-monitoring and need for cognition, variables best known in the personality and social psychology literature for their utility in experiments unrelated to confidence and decision-making (Cacioppo, Petty, Feinstein, & Jarvis, 1996; Lennox & Wolfe, 1984).

An alternative, more direct way to investigate the relationship between personality and confidence is to presume that people hold varying degrees of confidence in their judgmental prowess, to straightforwardly assess this sense of judgmental confidence, and to establish the relationship between this assessment and confidence in specific judgments. Following such an approach, several investigators have devised scales specifically aimed at measuring people's overall confidence in their judgmental and decision-making abilities. Briefly, Mann (1982) created two related scales which he termed Decisional Confidence and Decisional Procrastination. Shrauger and Kelly (1988) reported results of an experiment using an unpublished self-confidence measure called the Personal Evaluation Inventory. The scale was
comprised of self-confidence ratings in eight domains, such as relationships and personal attractiveness. Webster and Kruglanski (1994) recently developed a measure of an individual's motivation to achieve closure when faced with ambiguity. This measure, called the Need for Closure Scale, contains a subscale labeled decisiveness. Decisiveness appears to assess a person's sense of urgency to achieve closure, or conversely, avoid closure, when making judgments and choices. Thompson and her colleagues (Thompson, Naccarato, Parker, & Moskowitz, 1993) devised a measure labeled Personal Fear of Invalidity, which taps into anxiety and concern associated with the consequences of a decision. This anxiety has been related to lowered subjective confidence and greater hesitation in making decisions (see Thompson & Zanna, 1995). Frost and Shows (1993) reported that a measure of indecisiveness which they developed was related to psychopathological disorders (e.g., obsessive-compulsive disorder and obsessive-compulsive personality disorder). Most recently, researchers in Canada have developed an 18-item self-confidence scale in the French language (Garant, Charest, Alain, & Thomassin, 1995). The scale appears to tap two domains of self-confidence relating to self-perceptions as well as one's beliefs and abilities.¹

Although the recent proliferation of research relating dispositional scales measuring self-perceived judgmental confidence is encouraging, the area remains greatly underresearched. In fact, Zakay and Tsal (1993) recently contended that the "specific relation of overconfidence to personality traits is not yet clearly defined" (p. 54).

The Judgmental Self-Doubt Scale

The present research is an effort to relate an individual difference measure specifically

¹ At the time the present research was initially proposed, Mann's (1982) scales of Decisional Procrastination and Decisional Confidence, as well as Thompson's et al. (1993) measure of Personal Fear of Invalidity, had not been published. More recently, these scales have been published as part of research undertaken by these authors.
assessing judgmental confidence to confidence and measures of the correspondence between confidence and task performance. This measure is the Judgmental Self-Doubt Scale (JSDS; Mirels & Greblo, 1994). In its original form, the measure was a 30-item pencil and paper inventory designed to tap the degree to which individuals doubt their judgment and decision-making abilities. Typical items included "I have difficulty making decisions", "I often don’t trust myself to make the right decision", and "I have a great deal of confidence in my opinions". As described by Mirels and Greblo, self-doubt is conceptualized as a lack of confidence in one’s ability to use one’s judgment to make sound decisions. Persons characterized by a high degree of self-doubt are thought to be fearful of making choices and decisions because their poor judgment has caused them to experience negative consequences in the past. Moreover, their presumed history of poor decision-making may have created expectations that they will endure negative consequences as a result of their poor judgment in the future as well. As a result, they are assumed to hold a tenuous sense of self-worth and security when they are asked to use their judgment.

The 30-item JSDS showed good internal consistency (Cronbach’s alpha = .94) and test-retest reliability (.84 over a three- to five-week period). The JSDS also demonstrated convergent validity with the scales mentioned above, correlating -.86 and .77 with Mann’s Decisional Confidence and Decisional Procrastination scales, respectively; -.80 with Webster and Kruglanski’s Decisiveness subscale; and .81 with Thompson et al.’s Fear of Invalidity Scale. (All of the above correlations are significant at the p < .001 level). The relationship between Frost and Shows’ Indecisive Scale and the Judgmental Self-Doubt Scale has not yet been investigated but based upon the items in the former measure (e.g., "I try to put off making decisions" and "I often worry about making the wrong choice"), one might expect a significant positive correlation between the scales. Furthermore, in keeping with the notion
that self-doubt is connected to both a fear of making decisions as well as to expectations of negative outcomes, self-doubt has been shown to correlate positively with trait anxiety (.67) and depression (.47) (see Mirels and Grebloc, 1994).

Recently, we shortened the JSDS to 15 items (plus five filler items) for ease of administration. Using data from samples in which the 30-item Judgmental Self-Doubt Scale was administered, the 15-item JSDS shows strong internal consistency (Cronbach’s alpha = .89 - .95) and correlates highly with the original 30-item scale ($r = .97 - .98$). The 15-item Judgmental Self-Doubt Scale (JSDS-15) is used in both of the experiments described in this paper.

The initial goal in developing the Judgmental Self-Doubt Scale was to ascertain whether individual differences in avowed level of judgmental confidence are, in fact, associated with differences in confidence in specific judgments. In a study by Mirels and Grebloc (1994), participants were presented with several sets of social and moral dilemmas. In the first set of scenarios, participants were to choose between either agreeing or disagreeing with a given course of action by the protagonist in a story (e.g., should a doctor come to the aid of an injured man). In the second set, participants read six scenarios in which they were to think about the advice they would give the protagonist of a story regarding the level of risk for a specific course of action (e.g., the failure rate of surgery which, if unsuccessful, could lead to the permanent limb impairment). A final set of decisions involved reading arguments concerning questions of societal concern (e.g., should animals be used in scientific testing?). Participants characterized by high levels of judgmental self-doubt expressed significantly lower confidence in judgments made on these tasks than did participants with low levels of judgmental self-doubt.
Extending the Self-Doubt Construct

Not only have personality factors been relatively absent from the confidence literature, they have been even more rare in investigations concerning overconfidence and judgmental accuracy. The present work seeks to contribute to the literature in this area by extending the application of the judgmental self-doubt concept to investigations concerning the relationship between self-doubt and overconfidence.

Two considerations make overconfidence an important factor in decision-making. First, decisions made on the basis of unwarranted confidence carry significant risk because one's poor decisions hold potentially negative consequences for oneself and for others. Individuals who are unaware that their knowledge for a particular domain is deficient risk making decisions in good faith but without adequate information. Hosseini and Ferrell (1982) contend that distinguishing what one knows from what one doesn't know is vital to an individual's decision-making competency because such knowledge places essential limitations on the individual's capacity to make sound decisions. Moreover, they argue that the effort invested in a task is a function of the degree to which one is aware of what he does and does not know. For example, if a person believes he knows more than he actually does, he may subsequently reduce the effort he puts forth and suffer adverse consequences as a result.

Griffin and Tversky (1992) view the consequences of decision-making more globally, expressing great concern about the effects of overconfidence on society as a whole. These researchers strongly argue that "the significance of overconfidence to the conduct of human affairs can hardly be overemphasized" (p. 432). Although acknowledging overconfidence may hold some adaptive characteristics (e.g., less emotional distress), these authors maintain that the harm committed to society, in the form of brutal military battles, costly legal conflicts, and inappropriate, even dangerous, medical treatments, outstrip whatever benefits
overconfidence may hold for the individual.

A second consideration which makes overconfidence important to decision-making is the pervasive nature of the phenomenon. As previously reviewed, extensive research on overconfidence has consistently demonstrated that lay people and experts alike display inaccurately high levels of confidence. The tendency for a significant portion, perhaps even a large majority, of people to rely upon misplaced confidence when making decisions magnifies the potential for harm to individuals and society which is not insignificant.

It is the ever present potential for overconfidence to result in faulty decisions which makes the identification of variables which reduce overconfidence of considerable interest. Dispositional judgmental self-doubt, which is the centerpiece of the present research, may represent just such a variable. Presently, the nature of the relationship between judgmental self-doubt and overconfidence is unknown. However, since self-doubt is believed to be associated with diminished confidence (Mirels & Grebko, 1994), a closer look at research focusing on situational factors which decrease confidence, and especially overconfidence, may provide clues to the relationship between dispositional self-doubt and confidence in the accuracy of one's judgments.

Curbing the Overconfidence Effect

Initial efforts to eliminate overconfidence in decision tasks proved less than successful. Fischhoff (1982) thoroughly reviewed the literature and concluded that although a number of studies had attempted to lessen the inappropriately high degree of confidence demonstrated by experiment participants, efforts to reduce it through such methods as delivering more lucid instructions about the experimental task to participants, offering external rewards for more appropriate confidence ratings, and even warning participants of the effect itself, were generally futile. He concluded that the inability to find evidence that researchers could
diminish overconfidence served only to confirm the robustness of the effect.

Subsequent attempts at inhibiting overconfidence proved somewhat more fruitful. Three methods of reducing overconfidence have received significant support: negative feedback (Adams & Adams, 1961; Arkes, Christensen, Lai, & Blumer, 1987), increased motivation (Arkes, et al., 1987; Tetlock & Kim, 1987), and greater cognitive processing (Ronis & Yates, 1987; Sniezek, Paese, & Switzer, 1990).

**Negative Feedback**

Arkes, Christensen, Lai, and Blumer (1987) had two groups of participants work on five general knowledge practice questions (i.e., questions drawing upon a variety of knowledge domains). Upon completing this set of rather difficult practice questions, one group of participants was informed of the correct answers. A control group did not receive any information concerning their performance on the practice questions. The performance difference between the two groups on the practice questions was not statistically different. However, on a subsequent test of general knowledge questions, overconfidence was diminished (though not extinguished) in the group given feedback concerning their performance on the difficult practice items. The authors interpreted this finding to mean that the experimental group used the negative feedback about their practice question performance to decrease their confidence ratings on the subsequent test questions.

These results are consistent with findings by Adams and Adams (1961), who determined that they could lower the degree to which participants exhibited overconfidence by repeatedly showing participants, across several trials of a task, that their confidence judgments were unrealistically high. Participants who received such feedback appeared to learn their confidence was not in agreement with their performance, and on subsequent tasks they reduced their confidence to more appropriate levels. Similar to the Arkes et al. (1987) study,
overconfidence was not completely eliminated, but rather, the degree of overconfidence was significantly lowered. Participants who did not receive the feedback pointing out the discrepancy between their confidence and their performance did not significantly lower their confidence on subsequent tasks. In fact, without such feedback, these participants actually raised their confidence in subsequent judgments.

Taken together, the Adams and Adams (1961) and Arkes et al. (1987) studies suggest that people receiving feedback indicating their confidence is misplaced may lower their confidence to levels which more closely coincided with evidence of their true abilities.

**Motivation**

In a second debiasing experiment, Arkes et al. (1987) revealed another factor influencing overconfidence in judgment. One group of participants were required to defend their responses to a general knowledge practice item and were also led to believe they would have to justify their answers to actual general knowledge test items before a group of their peers. A control group was not asked to justify their answers to practice items nor did they receive instructions which would have led them to believe they would have to justifying their answers. The experimental group, expecting to justify their answers publicly, showed less overconfidence compared to the control group.

Inducing the expectation that one would have to defend one’s responses, as employed by Arkes et al. (1987), is comparable to a manipulation used by Tetlock and Kim (1987). Tetlock and Kim gave participants the task of forming an impression of a target person who earlier had responded to personality test items. Participants were then asked to predict the target person’s responses to another set of personality items. The results revealed that participants who expected to be interviewed and audiotaped with regard to their impressions of the targets displayed less overconfidence and were better calibrated than participants who
received no such expectations.

The link between Arkes et al.'s (1987) second experiment and the Tetlock and Kim (1987) study is that in both experiments participants may have been motivated to take greater care when making their judgments because they were made to feel greater responsibility for their decisions. In fact, Tetlock and Kim concluded that their participants were motivated to process information in more complex ways, resulting in a reduction of the biases which typically lead to overconfidence. Such a reduction is implied in Kruglanski’s concept of epistemic unfreezing (Kruglanski & Freund, 1983, Kruglanski, 1989), in which specific situational and dispositional variables cause individuals to expend greater time and effort on a task, delaying judgments but resulting in better decisions.

It may be the case that the reduction in confidence found in both the Arkes et al. (1987) and Tetlock and Kim (1987) studies occurred for reasons unrelated to greater cognitive processing. Rather, participants in these studies may have been averse to risking judgments that might be found incorrect. Arkes et al. (1987) acknowledged that such impression management effects may have contributed to their findings of decreased confidence when participants believed they would have to defend their responses; nonetheless, the authors presumed that the corresponding increase in time participants took to complete the task indicated greater effort, not impression management, on the part of the experimental group.

It is worth noting that the proposition that holding individuals accountable for their judgments is an important factor in motivating people to make more accurate judgments may illuminate the findings regarding the good calibration of National Weather Service (NWS) forecasters mentioned earlier in this paper. Recall that NWS forecasters were found to be slightly biased toward overpredicting rainfall, which may also be thought of as an underconfidence in predictions regarding an absence of rainfall. Yates (1990) suggested NWS
forecasters had an incentive to err on the side of predicting precipitation more frequently than it actually occurred because presumably NWS forecasters wished to avoid the wrath of wet, angry citizens. If accurate, this supports the notion that when individuals believe they will be held accountable for their judgments, overconfidence is reduced and judgments may even reverse to the point of reflecting underconfidence.

However, it may also be argued that impression management concerns are responsible for the underconfidence seen in weather forecasters. Given the public nature of their decisions, a strong case could be made for the view that forecasters reduce their confidence estimates in an effort to reduce being caught in the wrath of angry citizens who encountered weather that was not predicted.

Cognitive Processing

A third and related factor influencing overconfidence concerns the cognitive processes involved in making a decision. Specifically, individuals may pay a great deal of attention to one hypothesis or alternative and disregard other potential alternatives. In their seminal work investigating the reasons underlying confidence, Kornat, Lichtenstein, and Fischhoff (1980) proposed that confidence judgments are governed by a three-stage cognitive process. In the first stage, individuals search for the correct answer to the given question. In the second stage, individuals review the evidence for the chosen answer and assessing their level of confidence in the answer. This may be thought of as one’s level of certainty (or conversely, one’s self-doubt). Finally, in the third stage, individuals translate this feeling into a quantitative entity (e.g., a percentage or a number on a Likert scale).

Kornat et al. (1980) suggested that two biases may occur during the confidence assessment process, one at each of the first two cognitive processing stages. The first bias occurs during the search for the correct alternative, where individuals display a tendency to
think of more reasons that support their chosen alternative than for reasons that challenge it. The second bias is displayed in the second stage and involves the failure to attend to evidence that is inconsistent with the chosen alternative. Alternatively, one may consider this bias as a failure to consider evidence for other viable alternatives.

Koriat et al. (1980) found evidence suggestive of both biases. First, participants asked to give reasons for and against the alternatives provided for them produced a greater number of reasons supporting their chosen alternative as compared to the number of reasons they came up with which ran counter to their chosen alternative, a result Koriat et al. interpreted as a search bias in favor of positive evidence. Second, participants’ calibration was not affected by listing reasons supporting their choice; rather, calibration was improved only when participants listed reasons which contradicted their choice. Koriat et al. regarded this finding as a demonstration of people’s tendency to disregard that which is inconsistent with the chosen answer. By this same logic, Koriat et al. were able to lower confidence levels to more appropriate (i.e., less overconfident) levels by instructing participants to think of evidence which supported the alternative responses to their chosen answers.

Judgmental Self-Doubt and Overconfidence

The three factors influencing confidence judgments mentioned above (i.e., negative feedback, motivation, and cognitive processing) need not be thought of as mutually exclusive. For example, it seems quite conceivable that a history of receiving feedback indicating that one’s judgment is poor may increase one’s motivation to make sound or valid judgments; similarly, one’s motivation to make the right decisions may positively influence the degree to which one expends one’s cognitive resources when making judgments and decisions. Each of these factors may, individually or in combination, result in a significant reduction in overconfidence (by decreasing confidence to more appropriate levels) and an improvement in
calibration.

In summarizing the above efforts to reduce overconfidence, Plous (1993) suggested that the best way to avoid overconfidence and improve calibration is to simply "stop to consider reasons why your judgment might be wrong" (p.228). This recommendation provides a valuable link between overconfidence and the judgmental self-doubt construct. Recall that Mirels and Grebbo (1994) conceptualized self-doubting individuals as holding heightened uncertainty and fear regarding their judgment. It seems quite likely that such individuals stop to consider the reasons why their judgment may be incorrect to a greater degree than those with low self-doubt. Therefore, a major assumption of the present research is that the same kind of decisional uncertainty produced by such factors as negative feedback, increased motivation to make accurate confidence estimates, and greater cognitive processing, will also be associated with a chronic uncertainty about one's judgmental abilities.

It is believed that persons with high self-doubt will display less confidence overall and greater judgmental accuracy (i.e., greater correspondence between confidence and performance) when expressing confidence in decisions requiring the use of their judgment. Ironically, if this is indeed the case, persons with self-doubt may be erroneous in their evaluation of their judgmental abilities, believing that they have poor judgment when, in fact, their judgmental confidence is better than those with lower self-doubt.

The two studies carried out in this dissertation seek to replicate and extend the work of several investigators studying overconfidence (Allwood, 1994; Koehler, 1994; Ronis and Yates, 1987; Sniezek, Paese, & Switzer, 1990). Ronis and Yates (1987) derived hypotheses from work by Bem (1967), who postulated that when people are able to independently choose a course of action, the action which they choose becomes more attractive and that which they reject become less attractive. Ronis and Yates speculated that the overconfidence which
people typically show when they are uncertain of their responses to difficult questions results from the very act of selecting those answers. That is, they reasoned that the act of choosing an answer may make that answer more attractive to a person, thereby raising confidence judgments to inappropriately high levels. These investigators employed a methodology in which one group of participants chose answers to a series of two-alternative general knowledge questions while another group assessed the probability that one of the two alternatives, randomly precircled, was the correct answer. Both groups were overconfident but contrary to expectation, it was the latter group which demonstrated greater confidence, greater overconfidence and a higher degree of inaccuracy in their confidence judgments. Ronis and Yates speculated that the precircled alternative may have drawn attention to itself and detracted from adequate consideration of the remaining alternative.

Sniezek, Paese, and Switzer (1990) independently discovered the same effect. In their study, participants who assessed the probability of alternatives which they were told were precircled in an alternating fashion (e.g., "A" on odd-numbered items and "B" on even-numbered items) expressed greater confidence (and subsequently, more overconfidence) than did participants who indicated which of the two alternatives they believed was correct.

Koehler (1994) employed a somewhat different methodology but found similar results. He asked participants to either answer open-ended questions or evaluate answers provided for them by participants in the former condition. He found that when participants generated their own answers to difficult general knowledge questions, they were less confident in the correctness of their answers than were participants who were asked to indicate their confidence in these same answers given to them to evaluate. As with the previously mentioned studies, the author concluded that the latter group of participants were more confident because they did not invest as much effort in considering other potentially correct
alternatives.

Purposes and Hypotheses

The studies conducted for this dissertation have several major aims. First, they attempt to determine whether success on a personality instrument specifically designed to measure belief in one's ability to use sound judgment, the Judgmental Self-Doubt Scale, can predict confidence and judgmental accuracy in decision-making tasks. It is anticipated that greater self-doubt will be associated with lower confidence and greater congruity between confidence and actual performance.

Second, the present research sought to replicate findings by decision-making researchers which show that people display more confidence and less judgmental accuracy in answers given to them than to answers which they produce themselves. This will be done employing two different methodologies, one being a forced-choice alternative format and the other employing open-ended questions. Furthermore, a task tapping social knowledge is employed in addition to one tapping general, factual knowledge. Therefore, the studies represent an extension of previous research, which to date has generally explored two-alternative, general knowledge tasks. Further description of these tasks is provided in the Methods sections of each experiment.

Third, given the two aims mentioned above, it seems likely that there may be a significant interaction between the personality variable in question (i.e., self-doubt) and experimental manipulations. Specifically, it is hypothesized that situationally-induced changes in confidence, such as assessing alternatives or answers provided to them as opposed to answering questions themselves, will be more pronounced for participants who avow little generalized confidence in their own judgmental skills (i.e., high self-doubt participants) than for their more confident counterparts (i.e., low self-doubt participants). This seems likely due
to high self-doubters expressed mistrust of their own judgment and their desire to rely on the judgment of others. Those with high levels of self-doubt should show an increased tendency to be confident of the answers provided to them by one of their peers.

Finally, the studies will compare the power of the Judgmental Self-Doubt Scale and several other measures as predictors of confidence and accuracy. One such measure is a sample of confidence judgments, the Confidence Index, which was constructed specifically for the present research. It is of particular interest because it will enable an estimate of the extent to which confidence in one task can predict confidence in significantly different judgements.

Two other dispositional measures, the Need for Cognition Scale and the Self-Monitoring Scale, will also be assessed for their predictive power. As mentioned earlier, Wolfe and Grosch (1990) revealed that both of these well-known psychological constructs were positively correlated with confidence ratings for several tasks, including a factual knowledge task, similar to the one used in the present research, and a social perception task. These authors reasoned that two aspects of self-monitoring, a confident self-presentation and an efficient use of social information, link this measure to greater expressed self-confidence. Need for cognition is believed to be a measure of one’s approach to intellectual tasks; therefore, those who enjoy thinking and intellectual activities may be more confident in their decision-making abilities.

On the basis that both the Judgmental Self-Doubt Scale and the Confidence Index are more directly related to confidence and accuracy in one’s judgments than are either the Need for Cognition Scale or the Self-Monitoring Scale, it is hypothesized that the former two scales will account for more of the variance in confidence and accuracy than will the latter scales.
CHAPTER 2

EXPERIMENT ONE

Methodology

Overview

To assess the relationship between dispositional self-doubt and ratings of judgmental confidence and accuracy, the present research asked participants to answer questions for which objective answers were known. Questions were presented in a two-alternative, forced-choice format. Such a format provides an opportunity for participants to answer many questions ranging in level of difficulty from easy to demanding. Experiment 1 asked participants to complete a set of questions concerning inferences about social behavior in addition to a set tapping general knowledge. A social knowledge task was included to determine if findings from the general knowledge portion of the study might generalize to the social domain as well.

The methodology of the first experiment provided the opportunity to replicate findings in the literature which demonstrate that persons who choose their own answers display lower confidence in their judgments compared to persons who do not. For example, Ronis and Yates (1987) showed that persons answering a series of two-alternative questions were less confident and better calibrated than persons evaluating questions in which one of the two alternatives was randomly precircled. Sniezek et al. (1990) discovered the same results in a separate study.
College students completed several instruments at the start of the academic quarter and a random sample of these individuals were contacted by telephone and scheduled to participate in an experimental session. Each participant was randomly assigned to one of three experimental conditions. One condition asked participants to answer a set of two-alternative questions and indicate the probability that their chosen alternative was correct; the other two conditions asked participants to indicate the likelihood that responses which had been precircled were correct. Participants in these latter conditions were told that responses had been precircled in one of two ways: (a) randomly via a computer generated program or (b) as the responses of a peer.

Participants

Participants in the study were part of a pool of introductory psychology students at the Ohio State University (N = 534), who completed a small packet of questionnaires at the beginning of the term as part of a prescreening procedure. A random sample of these students were later contacted by telephone and asked if they wished to participate in a study concerning decision-making in exchange for course credit. Eighty-three male and 102 female undergraduates participated in the second portion of the study, with an average age of 19.16 (SD = 2.45) and a range of 17-37.

Materials and Procedure

The prescreening packet contained three instruments. The first of these was the Judgmental Self-Doubt Scale (JSDS-15, Mirels & Greblo, 1994; see Appendix A). As described earlier, the JSDS-15 is the 15-item version of a previously developed self-report measure of judgmental confidence. The instrument demonstrates good reliability and internal consistency and correlates significantly with other measures of confidence. The second measure in the packet was a 15-item sample of confidence judgments, the Confidence Index

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(CI), developed specifically for the present research. The CI is comprised of 15 behavior and attitude statements, such as "I enjoy modern art" and "Most people can be trusted" (see Appendix A). Participants were asked to indicate whether they believed each of the statements would be answered by either "less than 50% of (college) students" or "more than 50% of (college) students". Then beside each response, participants indicated their confidence in each of their judgments using a scale ranging from 1 (not confident at all) to 5 (absolutely confident). The sum of these confidence ratings constituted the Confidence Index score. On the prescreening sample for the present experiment, Cronbach’s alpha for the CI was .82. The CI was intended as a sample of (rather than report about) confidence in one’s judgments.\(^2\)

Lastly, the packet included a 10-item short form of the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960) devised by (Strahan & Gerbasi, 1972) and recommended as the Marlowe-Crowne short form "scale of choice" (p. 423) by Fischer & Ficke (1993). This scale taps people’s proclivity to respond to questions in an unrealistically favorable manner. As this scale is not pertinent to the research reported in this document, it will not be mentioned in further sections.

As previously mentioned, students who completed the prescreening packets at the start of the academic term were randomly contacted by telephone four to nine weeks later in the term and offered an opportunity to participate in the study for course credit. Students were scheduled to participate in groups of four to 12 students at a time. At the outset of the experimental session, the experimenter read an introduction concerning the purpose of the study and the tasks participants would be asked to complete. Participants were informed that

\(^2\) Correlations between the Judgmental Self-Doubt Scale and the Confidence Index varied from -.23 to -.37 in the present research.
the experiment was concerned with "finding out how much college students know about a variety of subjects, as well as how confident they are about their knowledge". A sample sheet containing an example of the general knowledge task and an example of the social knowledge task was provided to participants.

Participants were randomly assigned to one of three conditions before the start of the experimental sessions. In the uncued condition participants answered questions by circling one of two alternatives provided for each question, then indicated the probability that their answer was correct. In the cued-random condition, participants were told that one of the two alternatives had been randomly circled and that their task was to indicate the probability that the circled alternative was the correct answer. Finally, participants in the cued-peer condition were told that one of the two alternatives had already been circled by one of their peers and that their task was to indicate the probability that the circled alternative was the correct answer. (In fact, booklets in the cued-peer condition were identical to those prepared for the cued-random condition; i.e., one of the two alternatives had been randomly circled).

The first booklet participants were asked to complete contained two tasks, a general knowledge questionnaire and a social knowledge questionnaire. The former consisted of 115 questions tapping a wide variety of topics, such as music, history, and geography, with the correct answer being one of the two alternatives provided.

The items comprising the general knowledge questionnaire (GKQ-1) were selected from a larger set of 191 items administered to a group of participants during a previous academic term for the purpose of acquiring estimates of item difficulty. The 115 items chosen for the present study consisted of items answered correctly by 40% to 100% of the

\[\text{3 The original 191-item inventory of general knowledge questions was constructed from material taken from several almanacs (e.g., Crystal (1993), Information Please Almanac (1995), and Wright (1995)), with questions designed to represent a wide range of difficulty.}\]
participants in the standardization sample. Items answered correctly by less than 40% of the sample were excluded in order to avoid the possibilities that either: (a) participants would be misled by items which appeared easy but were in fact quite difficult, leading to exceedingly poorly calibrated confidence estimates, or (b) participants would become overly discouraged when attempting to answer these difficult items. A sample question meeting the 40%-100% criteria is “Which country is larger: a. North Korea b. South Korea” (see Appendix B for GKQ-1 items).

After answering each item on the GKQ-1, participants in the uncued condition used a scale ranging from 50% to 100% to indicate his or her degree of confidence that the item designated as the answer was indeed correct. Participants received the following instructions (see Appendix D for complete instructions):

Please note that you will always have at least a 50% chance of answering correctly because there are only two alternatives given. So, do not give probability estimates below 50%. Giving 50% as your probability of being correct means that you are completely unsure, and that your answer is a pure guess. On the other hand, giving 100% as your probability of being correct means that you are completely sure that your answer is correct. An answer of 70% means that your answer has a 70% chance of being correct.

Participants in the cued-random and cued-peer conditions did not answer questions but were instructed to use the 0%-100% scale in the following manner:

Do not attempt to answer the item. Simply read each item and try to determine the probability that the circled alternative is the correct answer. Below each question, indicate the probability that the circled alternative answer is correct by circling a percentage between 0% and 100%. An answer of 0% means that the circled
alternative has absolutely no chance of being correct and an answer of 100% means that the circled answer has a 100% chance of being correct. Circling 50% means that the circled answer has an equal chance of being either correct or incorrect. An answer of 70% means that the circled alternative has a 70% chance of being correct.4

The social knowledge questionnaire (SKQ-1) was built on methodology originally devised by Mirels (1976), who asked participants to rate the likelihood of coendorsement for pairs of personality test-item pairs. Fifty-five pairs of social knowledge questions were given to participants, each consisting of a pair of personality test statements taken from Jackson’s (1967) Personality Research Form - Form A, such as the following:

A: "I am usually neat"
B: "I spend a lot of time visiting friends"

For each item pair, participants were to indicate whether they believed either a majority (i.e., "more than 50%") or a minority ("less than 50") of their peers answering "true" to the first statement (A) would also say "true" to the second statement (B) (see Appendix B for SKQ-1 items).

The criteria used to score participants’ performance on these items was taken from self-ratings obtained from a separate sample of 164 participants. These participants answered each of the statements used on the SKQ-1 in a "True-False" response format. Statements were presented as separate items, not as item pairs. Subsequent analyses computed the proportion of participants who answered "true" to both statements for items comprising the SKQ-1. This provided objective criteria by which participants in the present research could

4 In the two cued conditions, if a participant assigned one of the alternatives a probability greater than 50%, that alternative was considered to be the one that he or she would have given. If a participant assigned one of the alternatives a probability of less than 50%, the other alternative was be assumed to be the participant’s choice. Circled alternatives assigned probabilities of 50% were randomly divided between the precircled and uncircled alternatives.
receive a score for their knowledge of others.

Directions similar to those employed with the general knowledge questionnaire were used for the social knowledge questionnaire. Participants in the uncued condition answered 50%-100% scale. An individual’s estimate of having a 50% chance of being correct indicated the lowest level of confidence in their selection while an estimate of 100% indicated that they felt completely certain that their answer was correct. Those in either the cued-random or cued-peer conditions did not answer the question but simply indicated the probability that the circled alternative was correct by using a 0%-100% scale. For these participants, an estimate that the precircled alternative had a lower than 50% probability of being correct was taken to indicate that they felt more confident that the uncircled alternative was correct. For example, an estimate that a precircled alternative had a 30% probability of being correct was taken to signify a 70% probability estimate that the other alternative was correct.

Booklets given to participants in both of the cued conditions contained alternatives which had been precircled according to one of five randomly generated orders. Five orders of booklets were employed in an effort to control for the possibility that a lone randomly generated order might produce an abnormally high or low hit rate, potentially making the task unusually difficult or easy for participants in these two conditions.

After participants finished the SKQ-1, they completed a brief post-experimental questionnaire consisting of four questions concerning their overall performance on the two tasks (two questions per task). Specifically, participants in the uncued condition were asked to indicate the percentage of their answers they believed they had answered correctly and to indicate the percentage of students they believed they had outperformed. Participants answered each of these questions for both the GKQ-1 and the SKQ-1. For cued conditions, the task for participants was slightly different. Participants in these conditions were asked to:
estimate how many of the questions they believed they would have answered correctly and to estimate the percentage of their peers they believed they would have outperformed, if had they been asked for their own answers.

Upon finishing the first booklet, participants completed a second booklet consisting of the Need for Cognition Scale (Cacioppo, Petty, & Kao, 1984) and the Revised Self-Monitoring Scale (Lennox & Wolfe, 1984). The Need for Cognition Scale (NFCS) is an 18-item scale measuring the tendency for persons to enjoy engaging in tasks requiring cognitive effort (Cacioppo, Petty, & Kao, 1984; see Appendix A). A typical item is "The idea of relying on thought to make my way to the top appeals to me". It has demonstrated good internal consistency, reliability, and validity (Cacioppo, Petty, Feinstein & Jarvis, 1996). The Revised Self-Monitoring Scale (RSMS) was devised by Lennox and Wolfe (1984) as an improvement to a self-monitoring scale originated by Snyder (1974). The RSMS assesses the degree to which people are: (a) sensitive to the expressive behavior of others and (b) able to tailor their behavior to match situational cues. The scale consists of 13 items and has demonstrated good internal consistency and reliability (see Appendix A). A typical item is "In social situations, I have the ability to alter my behavior if I feel that something else is called for".

After participants completed the second booklet, they read an excerpt from a book concerning decision-making (Janis & Mann, 1977). This task was employed simply to occupy participants' time until everyone had finished both booklets. At that point, the experimenter could debrief all participants at the same time. A brief rationale for the experiment was

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5 Lennox and Wolfe (1984) wished to improve upon Snyder's (1974) self-monitoring scale, citing evidence that Snyder's hypothesized five-component structure was, in fact, untenable. The authors defined the construct more narrowly and demonstrated simpler factor structure and better internal consistency than the original measure.
provided to participants and afterwards, the experimenter supplied them with a written
debriefing statement which giving them a telephone number they could contact if they had
further questions concerning the experiment.
CHAPTER 3

RESULTS AND DISCUSSION

To answer the questions proposed in the present research, indices of judgmental confidence and accuracy were constructed. A measure of overall degree of confidence was computed by summing each participant's confidence ratings and dividing by the total number of ratings given. To assess the degree to which confidence ratings matched actual performance, measures of judgmental accuracy had to be computed. Although many such indices exist, for the purposes of the present research three accuracy indices were chosen: overconfidence, calibration, and the Brier score (see Liberman & Tversky, 1993; Lichtenstein, et al., 1982).

Overconfidence is the degree to which an individual's confidence exceeds his or her performance on a particular task. This measure is computed as the average or mean expressed confidence ratings minus the proportion of correct judgments (Arkes, et al., 1987; Tetlock & Kim, 1987). Positive scores are indicative of overconfidence while negative scores are indicative of underconfidence. For example, if an individual expressed an average degree of confidence in his decisions of 75%, but his performance on the questions indicated that he chose the correct answer 60% of the time, he would be considered to be 15% (i.e., 75-60) overconfident in his decisions.

Calibration assesses the discrepancy between the probability assigned to a group of
judgments and the average accuracy of those judgments. The calibration scale varies from 0 to 1, with lower scores indicating better calibration and higher scores signifying poorer calibration. For example, a score of 1 indicates extremely poor calibration because a person has indicated that they believe all of their judgments are correct when in fact, all of the judgments are incorrect.

The Brier score is a quadratic error measure that consists of three components: calibration (as described above), resolution (i.e., how well a person separates correct from incorrect answers) and knowledge (i.e., a person’s ability to pick the correct alternative). Murphy (1973) demonstrated that calibration, resolution, and knowledge make up the Brier score (Brier, 1950) in the following manner: Brier = knowledge + calibration - resolution. The lower the Brier score (with a range of 0 to 1), the better one’s judgmental accuracy. The Brier score has been considered to be "an overall measure of adequacy of performance in a probabilistic task" (Lichtenstein & Fischhoff, 1977, p. 163).

Lastly, the four post-experimental questions (two for each questionnaire) provide additional measures of overall confidence. These questions asked participants to rate their overall performance based on: (a) the percentage of questions they believed they answered correctly and (b) the percentage of their peers they believed they outperformed. Participants in the cued conditions were asked to estimate the percentage of questions they believed they would have answered correctly had they been asked to do so. Likewise, they also estimated the percentage of peers they believed they would have outperformed had they answered the

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6 Mathematically, the Brier score is represented as follows:

$$Brier = c(1 - c) + \frac{1}{N} \sum n_i (r_i - c_i)^2 - \frac{1}{N} n_i (c_i - c)^2,$$

where N is the total number of responses, n_i is the number of times the response r_i was used, c_i is the proportion for all of the items which were assigned probability r_i, c is the overall percentage correct, and T is the total number of different response categories used.
questions.

**General Knowledge Task**

Descriptive statistics for the entire sample revealed that mean proportion of correct responses for the GKQ-1 was 64.95% (SD = 6.41). Participants appeared to be both confident (M = 77.1, SD = 7.66) and overconfident (M = 12.07, SD = 9.04) in their decisions (see Table 1).\(^7\)

**Judgmental Self-Doubt, Confidence Index, and Confidence/Accuracy**

The first series of analyses focused upon relationships between the two primary individual differences measures of confidence, the Judgmental Self-Doubt Scale and the Confidence Index, and measures of judgmental confidence and accuracy (see Table 2). Zero-order correlations revealed that the Judgmental Self-Doubt Scale was negatively related to confidence (r = -.20, p < .01), but was not significantly related to either overconfidence (r = -.12, p > .10), calibration (r = -.10, p > .10), nor the Brier score (r = -.06, p > .10). Finally, correlations between self-doubt and the two post-experimental questions asking participants to estimate their overall performance in percentage of correct answers (r = -.10, p > .10) and in the percentage of participants they believed themselves to have outperformed (r = -.24, p ≤ .001) revealed that higher self-doubt was associated with lower estimates of the percentage of one's peers that participants thought they had outperformed.

To control for the possible influence of level of knowledge on the relationships reported above, several first-order correlations partiailling out the proportion of correct responses were conducted (see Olivares, 1993). These analyses not only confirmed that self-

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\(^7\) For instances in which a participant failed to complete all of the items of a measure, a random number generation program was employed to produce numbers to insert in place of the missing data points. Participants who failed to complete more than 10% of a measure were dropped from the analyses containing that measure.
<table>
<thead>
<tr>
<th>Measure</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personality Measures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Judgmental Self-Doubt Scale</td>
<td>48.70</td>
<td>15.71</td>
<td>16.00 - 88.00</td>
</tr>
<tr>
<td>Confidence Index</td>
<td>52.36</td>
<td>8.19</td>
<td>20.00 - 75.00</td>
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<tr>
<td>Performance Measure</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Proportion Correct</td>
<td>64.95</td>
<td>6.41</td>
<td>.31 - .79</td>
</tr>
<tr>
<td>Confidence/Accuracy Measures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confidence</td>
<td>77.05</td>
<td>7.66</td>
<td>53.48 - 97.74</td>
</tr>
<tr>
<td>Overconfidence</td>
<td>12.07</td>
<td>9.04</td>
<td>-8.96 - 57.48</td>
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<tr>
<td>Calibration</td>
<td>.037</td>
<td>.038</td>
<td>.00 - .39</td>
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<tr>
<td>Brier Score</td>
<td>.233</td>
<td>.053</td>
<td>.14 - .60</td>
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<tr>
<td>Post-Experimental Measures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predicted percentage of peers outperformed</td>
<td>56.84</td>
<td>19.97</td>
<td>10.00 - 90.00</td>
</tr>
<tr>
<td>Predicted percentage of correct answers</td>
<td>62.79</td>
<td>18.06</td>
<td>5.00 - 95.00</td>
</tr>
</tbody>
</table>

Table 1: Descriptive Statistics for Personality and Confidence/Accuracy Variables on the General Knowledge Questionnaire (GKQ-1) Employed in Experiment 1
### Judgmental Confidence and Accuracy Variables

<table>
<thead>
<tr>
<th>Confidence Measures</th>
<th>Conf</th>
<th>OC</th>
<th>Calib</th>
<th>Brier</th>
<th>PE-1</th>
<th>PE-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSDS-15</td>
<td>-.20&quot;/</td>
<td>-.12/</td>
<td>-.10/</td>
<td>-.06/</td>
<td>-.24&quot;&quot;/</td>
<td>-.10/</td>
</tr>
<tr>
<td></td>
<td>-.17&quot;</td>
<td>-.17&quot;</td>
<td>-.16&quot;</td>
<td>-.17&quot;</td>
<td>-.24&quot;&quot;</td>
<td>-.08</td>
</tr>
<tr>
<td>CI</td>
<td>.31&quot;&quot;</td>
<td>.19&quot;&quot;</td>
<td>.16&quot;/</td>
<td>.10/</td>
<td>.30&quot;&quot;/</td>
<td>.25&quot;&quot;</td>
</tr>
<tr>
<td></td>
<td>.30&quot;&quot;</td>
<td>.30&quot;&quot;</td>
<td>.24&quot;&quot;</td>
<td>.25&quot;&quot;</td>
<td>.31&quot;&quot;</td>
<td>.25&quot;&quot;</td>
</tr>
</tbody>
</table>

Table 2: Zero-order and First-order Correlations between Personality Measures and Indices of Judgmental Confidence and Accuracy for the General Knowledge Questionnaire (GKQ-1) in Experiment 1

**Note.** JSDS-15 = Judgmental Self-Doubt Scale, CI = Confidence Index, Conf = Confidence, OC = Overconfidence, Calib = Calibration, Brier = Brier Score, PE-1 = Post-Experimental Question #1 (Percentage of Peers Believed to have been Outperformed), PE-2 = Post-Experimental Question #2 (Percentage of Questions Estimated to be Answered Correctly).

Numbers in regular typeface are zero-order correlations. Numbers in **bold** typeface are first-order correlations.

* = $p \leq .05$

** = $p \leq .01$

*** = $p \leq .001$
doubt was significantly correlated with confidence ($r = -.17$, $p < .05$), they also revealed significant negative correlations with overconfidence ($r = -.17$, $p < .05$), calibration ($r = -.16$, $p < .05$), and the Brier score ($r = -.17$, $p < .05$). The results of first-order correlations between self-doubt and the two post-experimental measures did not change the significant results obtained by the zero-order correlational analyses. Like the zero-order correlations, these analyses showed that greater self-doubt scores were related to lower estimates of overall performance relative to one’s peers ($r = -.24$, $p < .001$).

Correlations between the Confidence Index and the confidence/accuracy measures demonstrated that the CI was positively correlated to confidence ($r = .31$, $p < .001$), overconfidence ($r = .19$, $p < .05$), and calibration ($r = .16$, $p < .05$). The only measure which did not significantly correlate with the CI was the Brier score ($r = .10$, $p > .10$). The CI was also significantly correlated with both post-experimental questions, indicating that the greater participants’ confidence on an unrelated task (i.e., the one employed for the Confidence Index), the higher they estimated their overall performance to be, both in terms of percentage of questions answered correctly as well as percentage of participants believed to be outperformed (see Table 1).

First-order partial correlations conducted between the CI and the confidence and accuracy variables, controlling for the percentage of correct responses, revealed significant correlations between the CI and all of the dependent variables: confidence ($r = .30$, $p < .001$), overconfidence ($r = .30$, $p < .001$), calibration ($r = .24$, $p \leq .001$), and the Brier score ($r = .25$, $p \leq .001$). The CI was also significantly positively related to both of the GKQ-1 post-experimental questions concerning estimates of outperformed peers ($r = .31$, $p < .001$) and percentage of questions answered correctly ($r = .25$, $p < .001$), indicating that higher CI scores were associated with higher estimates of overall performance.
These results lend support to the hypothesis that the stronger one's dispositional self-doubt, the less confidence one tends to display in decisions. Furthermore, judgmental self-doubt is also linked to greater congruity between confidence judgments and actual performance (i.e., better calibration and Brier scores). Confidence and accuracy were also related to the sample of confidence judgments which constitute the Confidence Index. The CI demonstrated significant first-order correlations with all of the dependent variables, indicating that it was strongly related to confidence and judgmental accuracy measures of this task.

**Effects of Cuing on Confidence/Accuracy**

Results reported in the literature suggested that participants in the cued conditions would show greater confidence and poorer judgmental accuracy, as measured by overconfidence, calibration, and Brier score, than those in the uncued condition (Ronis & Yates, 1987; Sniezek, et al., 1990). There was no prior data in the literature to suggest that the cued conditions would differ from each other. Univariate ANOVAs were conducted to assess the main effects of condition on the dependent variables. Analyses revealed significant effects for condition on proportion of correct answers, overconfidence, calibration, and the Brier score (see Table 3).\(^8\) Confidence ratings ($F = 1.32, p > .10$), estimates of outperformed students ($F = .53, p > .10$), and estimates of percentage of correct answers ($F = .73, p > .10$) all were not significantly affected by experimental condition.

Post-hoc analyses showed that participants in the uncued condition were less overconfident ($M = 8.94, SD = 7.95$) than those in the cued-random ($M = 13.56, SD = 9.18$) and the cued-peer ($M = 13.50, SD = 9.25$) conditions ($p < .05$). The cued-random

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\(^8\) Once again, ANOVAs of the five randomly generated orders of booklets used in the two cued conditions failed to show significant main or interaction order effects and will not be discussed further.
<table>
<thead>
<tr>
<th>Experimental Condition</th>
<th>Uncued</th>
<th>Cued-Random</th>
<th>Cued-Peer</th>
<th>ANOVA Results F (2, 182)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Performance Measure</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion Correct</td>
<td>66.85(^a) 64.60(^b) 63.56(^b)</td>
<td>(5.28) (6.01) (7.31)</td>
<td>4.381</td>
<td>.014</td>
<td></td>
</tr>
<tr>
<td><strong>Confidence/Accuracy Measures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Confidence</td>
<td>75.88 78.17 77.06</td>
<td>(8.12) (7.13) (7.66)</td>
<td>1.32</td>
<td>.27</td>
<td></td>
</tr>
<tr>
<td>Overconfidence</td>
<td>8.94(^a) 13.56(^a) 13.50(^b)</td>
<td>(7.95) (9.18) (9.25)</td>
<td>5.35</td>
<td>&lt; .01</td>
<td></td>
</tr>
<tr>
<td>Calibration</td>
<td>.028(^a) .043(^b) .041(^b)</td>
<td>(.021) (.035) (.050)</td>
<td>2.83</td>
<td>.06</td>
<td></td>
</tr>
<tr>
<td>Brier Score</td>
<td>.218(^a) .239(^b) .241(^b)</td>
<td>(.033) (.057) (.060)</td>
<td>3.64</td>
<td>.04</td>
<td></td>
</tr>
<tr>
<td><strong>Post-Experimental Measures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predicted percentage of outperformed students</td>
<td>57.67 54.67 58.09</td>
<td>(20.11) (21.74) (18.22)</td>
<td>.53</td>
<td>.59</td>
<td></td>
</tr>
<tr>
<td>Predicted percentage of correct answers</td>
<td>64.14 60.52 63.66</td>
<td>(17.86) (18.34) (18.06)</td>
<td>.73</td>
<td>.49</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: General Knowledge Questionnaire for Experiment 1: Means and ANOVA Results by Experimental Condition

**Note.** Standard deviations are shown in parentheses. For calibration and the Brier score, lower scores indicate greater judgmental accuracy.

\(^{ab}\) Entries within a row with differing letters are significantly different according to Bonferroni’s test at \(p < .05\).
(M = .043, SD = .035) and cued-peer (M = .041, SD = .050) conditions were associated with poorer calibration, compared to the uncued condition (M = .028, SD = .021), (p < .05). Additionally, uncued participants showed better Brier scores (M = .218, SD = .033) than either the cued-random (M = .239, SD = .057) or cued-peer (M = .241, SD = .060) participants. Therefore, it appears that while confidence may not have been affected by cueing participants, all three measures of judgmental accuracy were better in the uncued condition than in the cued conditions. Other measures of judgmental accuracy, calibration and the Brier score (see Table 3). Neither of the post-experimental questions assessing overall estimates of performance demonstrated condition effects.

With the ANOVA analyses supporting the hypothesis that the uncued condition resulted in lowered confidence and better judgmental accuracy, the question of whether self-doubt would be differentially related to confidence and accuracy measures across experimental condition remained to be answered. It was hypothesized that persons with a high degree of self-doubt would demonstrate a tendency to place greater confidence in responses provided for them by their peers because of their lack of trust in their own judgment. For these analyses, ANCOVAs were performed on each of the dependent variables of interest, with experimental condition (uncued vs. cued-random vs. cued-peer) entered as the factor of interest and judgmental self-doubt entered as a covariate (see Cohen & Cohen, 1983). If analyses revealed a significant interaction term, post-hoc analyses would be employed to shed light on the nature of the interaction. Proportion of correct answers was not used as a control variable (as it had been for the first-order partial correlations reported above) because the assumption that performance was unaffected by the treatment conditions could not be made (Kirk, 1995).

Analyses revealed that self-doubt was not differentially related to any of the confidence and accuracy variables. None of the interaction terms were significant at the p =
.05 level (see Table 4). Contrary to expectation, dispositional self-doubt did not serve to either heighten or diminish the effects of experimental condition (i.e., uncued vs. cued-random vs. cued-peer) on confidence and accuracy indices.

**Contributions of Other Personality Variables to the GKQ-1**

A final question addressed in Experiment 1 concerned the relationship between the main independent variable of interest, dispositional self-doubt, and the other three personality factors believed to be related to confidence and accuracy in judgments: a behavioral sample of confidence (the CI), need for cognition, and self-monitoring. Correlational analyses had already shown the CI to be related to confidence and accuracy but whether this direct measure of confidence or the two indirect measures (i.e., NFCS, RSMS) would add to variance already accounted for by self-doubt was not known.

Multiple regression analyses were performed in which the proportion of correct responses was entered into the regression equation as the first variable, in an effort to account for preexisting individual differences in knowledge. Self-doubt entered the regression equation as the second variable and the other three variables (CI, NFCS, RSMS) were then entered together as a "block" in a stepwise fashion; this allowed for analyses determining which variables would contribute to variance in the dependent variables while in direct competition with one another.

Both the Confidence Index and Revised Self Monitoring Scale made significant contributions to the variance in confidence ratings on the GKQ-1, above that of dispositional self-doubt. The CI contributed the most variance and was thus selected as the next variable in the equation (change in $R^2 = .64$, p < .01). The RSMS contributed significantly above and beyond both the Judgmental Self-Doubt Scale and the CI as the next variable in the regression
<table>
<thead>
<tr>
<th>Experimental Condition x Judgmental Self-Doubt Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>E (2, 179)</td>
</tr>
<tr>
<td>p</td>
</tr>
</tbody>
</table>

**Confidence/Accuracy Measures**
- Mean Confidence: 0.40, 0.67
- Overconfidence: 1.83, 0.16
- Calibration: 1.35, 0.26
- Brier Score: 1.71, 0.18

**Post-Experimental Measures**
- Predicted percentage of outperformed students: 0.84, 0.43
- Predicted percentage of correct answers: 2.29, 0.09

Table 4: ANCOVA Results Testing the Interaction between the Judgmental Self-Doubt Scale and Experimental Condition on the General Knowledge Questionnaire in Experiment 1

44
equation (change in $R^2 = .17$, p < .05). Need for cognition did not contribute significantly to the variance (see Table 5).

For measures of accuracy, the CI and the RSMS demonstrated significant relationships to overconfidence and the Brier score. Results for overconfidence were similar to those for mean confidence, with the CI and RSMS contributing significantly to the variance while NFCS did not contribute. Analyses on the Brier score showed both the RSMS (change in $R^2 = .23$, p < .01), entering the multiple regression equation after the JSDS-15, and the CI (change in $R^2 = .15$, p < .01), entering the equation next, significantly contributed to the variance explained. Another measure of accuracy, calibration, gained significant contributions only from the CI (change in $R^2 = .04$, p < .01). Therefore, for all three measure of accuracy, the CI was a significant predictor even after variance explained by judgmental self-doubt had been accounted for.

Finally, analyses on the post-experimental questions asking participants to rate their overall performance found that for estimates of the percentage of peers believed to be outperformed, only the NFCS significantly contributed to the variance explained (change in $R^2 = .02$, p < .05). For estimates of the percentage of questions answered correctly, only the CI contributed significantly to the variance (change in $R^2 = .05$, p < .01).

These results suggest that the CI is a strong predictor of both confidence and judgmental accuracy. It contributed significant variance to all six of the dependent variables even after the Judgmental Self-Doubt Scale had been entered into the regression equations. The RSMS performed well too, contributed to variance in confidence and two measures of accuracy.

Social Knowledge Task

Descriptive statistics for the entire sample (N = 185) revealed that the mean
### Dependent Variables

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Conf $\Delta R^2$</th>
<th>Conf $\beta$</th>
<th>OC $\Delta R^2$</th>
<th>OC $\beta$</th>
<th>Calib $\Delta R^2$</th>
<th>Calib $\beta$</th>
<th>Brier $\Delta R^2$</th>
<th>Brier $\beta$</th>
<th>PE-1 $\Delta R^2$</th>
<th>PE-1 $\beta$</th>
<th>PE-2 $\Delta R^2$</th>
<th>PE-2 $\beta$</th>
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<tbody>
<tr>
<td>Step 1</td>
<td></td>
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<tr>
<td>Proportion Correct</td>
<td>.04** .20</td>
<td>.31 -.55</td>
<td>.30*** -.55</td>
<td>.59*** -.77</td>
<td>.11 .33***</td>
<td>.11 .33***</td>
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<tr>
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</tr>
<tr>
<td>JSDS-15</td>
<td>.04* -.18</td>
<td>.02* -.15</td>
<td>.02* -.10</td>
<td>.01* -.11</td>
<td>.05** -.22</td>
<td>.07 -.08</td>
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<tr>
<td>CI</td>
<td>.07** .27</td>
<td>.01** .20</td>
<td>.04** .19</td>
<td>.02** .12</td>
<td>.02* .17</td>
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</tr>
<tr>
<td>NFCS</td>
<td>.02* .15</td>
<td>.02* .13</td>
<td>.02*** .13</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>RSMS</td>
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</tr>
</tbody>
</table>

Table 5: Summary of Stepwise Regression Analyses Predicting Judgmental Confidence and Accuracy for GKQ-1: Beta Weights and Changes in R-Squared of the Independent Variables

**Note.** JSDS-15 = Judgmental Self-Doubt Scale, CI = Confidence Index, NFCS = Need for Cognition Scale, RSMS = Revised Self-Monitoring Scale, Conf = Confidence, OC = Overconfidence, Calib = Calibration, Brier = Brier Score, PE-1 = Percentage of Peers Believed to have been Outperformed, PE-2 = Percentage of Questions Estimated to be Answered Correctly.

Probability values indicate that the predictor significantly contributed to the regression model's change in $R^2$ at the time it was entered into the regression equation. Empty cells in Step 3 indicate that the variable did not meet criteria for entry into the regression equation.

* $= p \leq .05$

** $= p \leq .01$

*** $= p \leq .001$
proportion of SKQ-1 questions answered correctly was 54.24% (SD = 8.19). Overall, participants expressed a high degree of confidence (M = 78.36, SD = 9.12) and therefore, they were greatly overconfident (M = 24.10, SD = 12.04) in their decisions (see Table 6).

**Judgmental Self-Doubt, Confidence Index, and Confidence/Accuracy**

Zero-order correlations focusing on the relationship between the JSDS-15 and the SKQ-1 revealed very different results from those obtained from the GKQ-1. Specifically, for the social knowledge questionnaire, judgmental self-doubt was not significantly related to confidence, overconfidence, calibration, nor the Brier score. The only measure demonstrating a significant relationship with the Judgmental Self-Doubt Scale was the post-experimental question regarding the percentage of students that participants believed they outperformed. Those higher in self-doubt rated themselves as outperforming fewer of their peers (r = -.17, p < .05) (see Table 7).

As with the analyses of the GQK-1, a series of analyses were conducted which controlled for the proportion of correct responses. These first-order correlational analyses confirmed that self-doubt was not significantly correlated with either confidence or overconfidence (r = -.07, p > .10 for both analyses). However, these analyses found that greater self-doubt was significantly related to lower calibration and Brier scores (r = -.17, p < .05, for both analyses) when the proportion of correct responses was removed from both of these dependent variables. Thus, the JSDS-15 demonstrated good predictive utility for judgmental accuracy indices, significantly correlating with two of the three accuracy measures. As with the zero-order correlations, self-doubt was found to significantly correlate with the percentage of students believed to have been outperformed (r = -.16, p < .05) but not with the percentage of questions believed to be answered correctly (r = -.06, p > .10).

Correlations between the CI and the confidence/accuracy measures demonstrated that
<table>
<thead>
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<th>Measure</th>
<th>M</th>
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<tr>
<td><strong>Personality Measures</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Judgmental Self-Doubt Scale</td>
<td>48.70</td>
<td>15.71</td>
<td>16.00 - 88.00</td>
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<tr>
<td>Confidence Index</td>
<td>52.36</td>
<td>8.19</td>
<td>20.00 - 75.00</td>
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<td><strong>Performance Measure</strong></td>
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<tr>
<td>Proportion Correct</td>
<td>54.24</td>
<td>8.19</td>
<td>.00 - .75</td>
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<td><strong>Confidence/Accuracy Measures</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confidence</td>
<td>78.37</td>
<td>9.12</td>
<td>50.91 - 100.00</td>
</tr>
<tr>
<td>Overconfidence</td>
<td>24.10</td>
<td>12.04</td>
<td>7.82 - 76.36</td>
</tr>
<tr>
<td>Calibration</td>
<td>.107</td>
<td>.071</td>
<td>.01 - .61</td>
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<tr>
<td>Brier Score</td>
<td>.328</td>
<td>.068</td>
<td>.21 - .61</td>
</tr>
<tr>
<td><strong>Post-Experimental Measures</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predicted percentage of peers outperformed</td>
<td>54.79</td>
<td>17.31</td>
<td>0.00 - 95.00</td>
</tr>
<tr>
<td>Predicted percentage of correct answers</td>
<td>61.56</td>
<td>15.89</td>
<td>10.00 - 100.00</td>
</tr>
</tbody>
</table>

Table 6: Descriptive statistics for personality and confidence/accuracy variables on the Social Knowledge Questionnaire (SKQ-1) employed in Experiment 1
### Judgmental Confidence and Accuracy Variables

<table>
<thead>
<tr>
<th>Confidence Measures</th>
<th>Conf</th>
<th>OC</th>
<th>Calib</th>
<th>Brier</th>
<th>PE-1</th>
<th>PE-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSDS-15</td>
<td>-.09/</td>
<td>-.04/</td>
<td>-.11/</td>
<td>-.12/</td>
<td>-.17*/</td>
<td>-.08/</td>
</tr>
<tr>
<td></td>
<td>-.07</td>
<td>-.07</td>
<td>-.17*</td>
<td>-.17*</td>
<td>-.16*</td>
<td>-.06</td>
</tr>
<tr>
<td>CI</td>
<td>.27***/</td>
<td>.30***/</td>
<td>.28***/</td>
<td>.27***/</td>
<td>.24***/</td>
<td>.15*/</td>
</tr>
<tr>
<td></td>
<td>.28***</td>
<td>.28***</td>
<td>.24**</td>
<td>.22**</td>
<td>.25***</td>
<td>.15*</td>
</tr>
</tbody>
</table>

Table 7: Zero-order and First-order Correlations between Personality Measures and Indices of Judgmental Confidence and Accuracy for the Social Knowledge Questionnaire (SKQ-1) in Experiment 1

**Note.** JSDS-15 = Judgmental Self-Doubt Scale, CI = Confidence Index, Conf = Confidence, OC = Overconfidence, Calib = Calibration, Brier = Brier Score, PE-1 = Percentage of Peers Believed to have been Outperformed, PE-2 = Percentage of Questions Estimated to be Answered Correctly.

Numbers in regular typeface are zero-order correlations. Numbers in **bold** typeface are first-order correlations.

* = $p \leq .05$

** = $p \leq .01$

*** = $p \leq .001$
the Confidence Index was positively correlated with confidence ($r = .27$, $p < .001$), overconfidence ($r = .30$, $p < .001$), calibration ($r = .28$, $p < .001$), and the Brier score ($r = .27$, $p < .001$). Furthermore, the index significantly correlated with both post-experimental items (see Table 6). These results demonstrate that a sample of confidence judgments taken from one task show utility in establishing relationships with confidence judgments in other tasks.

First-order partial correlations controlling for the proportion of correct answers were conducted between the CI and confidence/accuracy variables. These results did not change the significant relationships found in the zero-order correlational analyses. The CI remained a significant predictor of confidence, overconfidence, calibration, and the Brier score as well as the two post-experimental questions, buttressing its strength as a predictor of judgmental confidence and accuracy.

**Effects of Cuing on Confidence/Accuracy**

Next, univariate ANOVA procedures addressing the question of whether experimental condition affected confidence and accuracy measures found significant main effects for only one dependent variable: confidence ratings (see Table 8). Post-hoc analyses found that participants in the uncued condition expressed more confidence ($M = 81.91$, $SD = 7.79$) in their own responses than participants in either the cued-random ($M = 77.21$, $SD = 9.14$) and cued-peer ($M = 76.29$, $SD = 9.41$) conditions, $F = 6.98$, $p \leq .001$. The two cued conditions did not significantly differ from each other on confidence ratings.

Results of the ANCOVAs failed to reveal significant interactions for any of the dependent variables (see Table 9). This is consistent with the ANCOVA results on the

---

9 As ANOVAs of the five randomly generated orders of booklets used in the two cued conditions failed to yield significant main effects or interactions, booklet order will not be commented on further. 

50
<table>
<thead>
<tr>
<th>Experimental Condition</th>
<th>Uncued</th>
<th>Cued-Random</th>
<th>Cued-Peer</th>
<th>ANOVA Results</th>
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<tr>
<td></td>
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<td>$F$ (2, 182)</td>
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<td><strong>Performance Measure</strong></td>
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<td>Proportion Correct</td>
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<td>52.84</td>
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<td></td>
<td>(10.00)</td>
<td>(6.76)</td>
<td>(7.42)</td>
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<td><strong>Confidence/Accuracy Measures</strong></td>
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</tr>
<tr>
<td>Mean Confidence</td>
<td>81.91$^a$</td>
<td>77.21$^b$</td>
<td>76.29$^b$</td>
<td>6.98</td>
</tr>
<tr>
<td></td>
<td>(7.79)</td>
<td>(9.14)</td>
<td>(9.41)</td>
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</tr>
<tr>
<td>Overconfidence</td>
<td>25.89</td>
<td>23.08</td>
<td>23.45</td>
<td>.95</td>
</tr>
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<td></td>
<td>(12.62)</td>
<td>(11.95)</td>
<td>(11.56)</td>
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<td>Calibration</td>
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<td>.104</td>
<td>.46</td>
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<td></td>
<td>(.086)</td>
<td>(.067)</td>
<td>(.059)</td>
<td></td>
</tr>
<tr>
<td>Brier Score</td>
<td>.333</td>
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<td>.326</td>
<td>.25</td>
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<tr>
<td></td>
<td>(.073)</td>
<td>(.070)</td>
<td>(.064)</td>
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<td><strong>Post-Experimental Measures</strong></td>
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<tr>
<td>Predicted percentage of outperformed students</td>
<td>55.52</td>
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<td></td>
<td>(16.16)</td>
<td>(18.70)</td>
<td>(16.72)</td>
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<td>Predicted percentage of correct answers</td>
<td>61.59</td>
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<td>62.52</td>
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<td></td>
<td>(14.64)</td>
<td>(18.38)</td>
<td>(14.63)</td>
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</tbody>
</table>

Table 8: Social Knowledge Questionnaire for Experiment 1: Means and ANOVA Results by Experimental Condition

**Note.** Standard deviations are shown in parentheses. For calibration and the Brier score, lower scores indicate greater judgmental accuracy.

a,b Entries within a row with differing letters are significantly different according to Bonferroni's test.
### Experimental Condition x Judgmental Self-Doubt Scale

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<th>F (2, 179)</th>
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<tr>
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<td>Calibration</td>
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<tr>
<td>Brier Score</td>
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<td>.15</td>
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<tr>
<td><strong>Post-Experimental Measures</strong></td>
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<tr>
<td>Predicted percentage of outperformed students</td>
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</tr>
<tr>
<td>Predicted percentage of correct answers</td>
<td>1.15</td>
<td>.32</td>
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Table 9: ANCOVA Results Testing the Interaction between the Judgmental Self-Doubt Scale and Experimental Condition on the Social Knowledge Questionnaire in Experiment 1
GKQ-1 which also did not uncover significant interactions between judgmental self-doubt and experimental manipulation. Taken together, these results clearly show that judgmental self-doubt was not differentially related to confidence ratings and judgmental accuracy as a function of the cuing (vs. not cuing) participants. It appears that self-doubt was not differentially related to confidence and judgmental accuracy across conditions.

*Contributions of Other Personality Variables to the SKQ-1*

As with the GKQ-1, analyses were conducted on the SKQ-1 in which three personality variables, the Confidence Index, Need for Cognition Scale, and the Revised Self-Monitoring Scale, were examined for their contributions to judgmental confidence and accuracy over and above the variance explained by proportion of correct answers and dispositional self-doubt. Proportion of correct responses was entered first into the multiple linear regression equation to control for the effects of prior knowledge, followed by the JSDS-15. Next, the other three variables were entered as a block to see which, if any, would account for additional variance.

Regression models revealed that for confidence on the SKQ-1, the RSMS contributed significantly to the explained variance (change in $R^2 = .08$, $p \leq .001$), followed by the CI (change in $R^2 = .05$, $p < .01$). The same two scales significantly contributed to overconfidence as well. The RSMS entered the equation first on Step 3 (change in $R^2 = .05$, $p < .001$), followed by the CI (change in $R^2 = .03$, $p < .01$). The RSMS was the only one of the three measures to be significantly related to the Brier score (change in $R^2 = .05$, $p < .001$) (see Table 10). These results indicate that the RSMS significantly contributed to all four of the confidence and accuracy variables, possibly due to its social awareness component, while the CI significantly contributed to three of the four same dependent variables.

The Need for Cognition Scale did not significantly contribute to the variance of any of
## Dependent Variables

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<tr>
<th>Predictor</th>
<th>Conf</th>
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<th>Calib</th>
<th>Brier</th>
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<tr>
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<td>ΔR²</td>
<td>β</td>
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<tr>
<td>Proportion Correct</td>
<td>.00</td>
<td>.04</td>
<td>.43***-.66</td>
<td>.45***-.67</td>
<td>.44***-.66</td>
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<tr>
<td>JSDS-15</td>
<td>.01</td>
<td>-.08</td>
<td>.01* -.06</td>
<td>.02**-.11</td>
<td>.02**-.15</td>
<td>.02**-.22</td>
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<td>RSMS</td>
<td>.05***</td>
<td>.30</td>
<td>.05***</td>
<td>.23</td>
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</table>

Table 10: Summary of Stepwise Regression Analyses Predicting Judgmental Confidence and Accuracy for SKQ-1: Beta Weights and Changes in R-Squared of the Independent Variables

**Note.** JSDS-15 = Judgmental Self-Doubt Scale, CI = Confidence Index, NFCS = Need for Cognition Scale, RSMS = Revised Self-Monitoring Scale, Conf = Confidence, OC = Overconfidence, Calib = Calibration, Brier = Brier Score, PE-1 = Percentage of Peers Believed to have been Outperformed, PE-2 = Percentage of Questions Estimated to be Answered Correctly.

Probability values indicate that the predictor significantly contributed to the regression model's change in $R²$ at the time it was entered into the regression equation. Empty cells in Step 3 indicate that the variable did not meet criteria for entry into the regression equation.

* $p \leq .05$

** $p \leq .01$

*** $p \leq .001$
the four main measures of confidence and judgmental accuracy. However, it was significantly related to the two post-experimental questions, after the proportion of correct answers and the Judgmental Self-Doubt Scale had been entered into the regression equation. The CI was related to ratings of performance relative to others (chance in $R^2 = .0\%$, $p < .01$) but not to estimates of the number of questions correctly answered. The RSMS, which showed good utility as a predictor of confidence and judgmental accuracy, was not significantly correlated with either of the post-experimental questions.

The results of Experiment 1 indicate that both the Judgmental Self-Doubt Scale and the Confidence Index exhibit significant utility in predicting judgmental confidence and accuracy ratings. In particular, the Confidence Index showed itself to bear relationships with almost every one of the confidence and accuracy variables, both independently in the zero-order and first-order correlational analyses, and it contributed to the variance over and above the Judgmental Self-Doubt Scale. The JSQS-15 was better at relating to confidence and accuracy measures on the GKQ-1 than for the SKQ-1. Its inability to tap into confidence concerning social knowledge is difficult to explain, particularly given the significant relationships between self-doubt and social judgments reported by Mirels and Grebbo (1994). On the other hand, the Revised Self-Monitoring Scale demonstrated very good predictive power on the SKQ-1, not surprising given the scale orientation to social perception matters.

Additionally, hypotheses concerning the nature of judgments made on cued versus uncued instructions were supported, but only for the general knowledge questionnaire. For this task, participants asked to answer questions themselves showed less confidence and greater correspondence between their confidence and actual performance than did participants asked to evaluate precircled alternatives which they believed had either been randomly circled or already answered by a peer. Unexpectedly, the social knowledge tasks showed no such
effects and in fact, persons asked to answer these questions were actually more confident in their decisions than those evaluating the precircled responses in the two cued conditions.

Finally, no significant interactions between self-doubt and experimental condition were found for either task. It appears that judgmental self-doubt is not related to confidence and accuracy measures differentially as a function of cuing participants to a particular answer but rather, is generally associated with lessened confidence and better judgmental accuracy.
CHAPTER 4

EXPERIMENT TWO

Methodology

Overview

It was the goal of Experiment 2 to further test the hypotheses of the present research. Namely, it was anticipated that judgmental self-doubt would be related to lower confidence and improved accuracy in confidence estimates, that persons generating their own responses to questions would be less confident and show improved accuracy in confidence estimates compared to those evaluating responses, and that self-doubt would demonstrate a significant interaction with experimental manipulation (i.e., generating answers vs. evaluating answers). Therefore, Experiment 2 addressed the same basic issues as Experiment 1. However, it differs from that experiment in two important ways. First, both tasks used in Experiment 2 posed questions in an open-ended, free-response format, replacing the two-alternative, forced-choice format used in Experiment 1. Such questions are similar to those typically used in "feeling of knowing" studies (e.g., Nelson & Narens, 1980) and represent a deviation from items employed in traditional decision-making tasks. Second, the social knowledge questionnaire used in this study was substantially different than in the previous study, for it asked participants to estimate the prevalence of an attitude or behavior in the population, as opposed to Experiment 1 which asked participants to estimate the co-occurrence of two attitudes or behaviors in the population.
As in Experiment 1, college students completed several instruments at the start of the academic term and a random sample of these students participated in the second portion of the study. Participants were assigned to one of two conditions: some were asked to derive their own answers to questions and subsequently indicate their confidence in their answers while others were asked to indicate their confidence in the answers given by participants in the former condition, responses which had been transcribed onto new booklets for their evaluation. The study was designed to test the hypotheses that: (a) greater judgmental self-doubt would be related to lower confidence ratings and better judgmental accuracy, (b) participants who generate their own answers to a set of general knowledge questions will be less confident in the correctness of those answers than will participants presented with the answers of others (see Koehler, 1994), and (c) this differential will be greater for high than for low self-doubt participants. Experiment 2, as well as Experiment 1, extends previous research efforts by including a social knowledge task in addition to a general knowledge task. As in Experiment 1, Experiment 2 included the Confidence Index, Need for Cognition Scale and Revised Self-Monitoring Scale so that comparisons to the Judgmental Self-Doubt Scale could be made.

Participants

Ohio State University students (N = 372) enrolled in an introductory psychology course completed a small packet of questionnaires at the beginning of the term as part of a prescreening procedure. A random sample of these students were contacted by telephone later in the academic term and asked if they wished to participate in a study concerning decision-making in exchange for course credit. Sixty-five male and 75 female undergraduates participated, with a mean age of 19.39 (SD = 1.94) and a range of 17-29.
Materials and Procedure

The prescreening packet administered to students at the beginning of the academic term contained the same three dispositional instruments that were used in the first study: the Judgmental Self-Doubt Scale (JSDS-15, Mirels & Greblo, 1994), the Confidence Index, and a short form of the Marlowe-Crowne Social Desirability Scale (Strahan & Gerbasi, 1972). As in Experiment 1, findings involving the Marlowe-Crowne instrument are not pertinent to the present research and will not be reported on further.

A random sample of students who completed the prescreening packet were contacted by telephone later in the term and offered an opportunity to participate in the present study in exchange for course credit. Students were scheduled to participate in groups from two to ten. The experimental sessions began with an oral introduction to the purpose of the study and to the tasks participants would be working on. A sample sheet with examples of each of the two experimental tasks was provided to participants.

Participants were assigned to one of two conditions modeled after work originally devised by Koehler (1994). In the generate condition, participants were instructed to answer each of the items on both the general knowledge and social knowledge questionnaires. Items in this condition contained a free-response format, so that participants received responses to choose from as they had in Experiment 1. Participants were also asked to indicate the probability that each of their answers was correct. The experimenter cautioned participants to the fact that some of the questions were quite difficult to answer but that they should still attempt to answer each question, even if it meant writing in a pure guess (see Appendix C for complete instructions).

The answers supplied by participants in the generate condition were copied onto new booklets and given to another sample of participants. These participants formed an evaluate
condition. Their task was not to answer the questions but rather, to estimate the probability that the responses presented in the booklet were correct. In the event that judgmental self-doubt was related to degree of knowledge concerning either of the tasks employed in Experiment 2, the experimental design of this study took steps to avoid giving booklets from participants with high self-doubt scores in the generate condition to participants with low self-doubt scores in the evaluate condition (and vice versa). To this end, students from the initial prescreening group were split into five groups based on their Judgmental Self-Doubt Scale scores. Each grouping of students contained a range of 16 points on the Judgmental Self-Doubt Scale (e.g., 15-31, 32-48, ..., 83-99). Participants in the evaluate condition were given booklets from participants in the generate condition who shared a self-doubt score in the same range as their own self-doubt score.

As in the first study, participants were asked to complete a general knowledge task and a social knowledge task. The general knowledge questionnaire (GKQ-2) for this study consisted of 77 questions, tapping knowledge about a variety of topics, such as popular culture, music, and geography. However, instead of presenting participants with two alternatives from which to select their answer, the questions were presented in an open-ended format and participants in the generate condition were left to give their own responses. Sample questions include "What is the last name of the man who assassinated President John F. Kennedy?" and "In what city is Michelangelo's statue of David located?". These questions were randomly selected from 300 questions assembled by Nelson and Narens (1980) for use in feeling-of-knowing studies and mirrors the methodology employed by Koehler (1994, Experiment 4) in his decision-making studies (see Appendix C for the GKQ-2 items).

For each question, participants using a scale ranging from 0%-100%, were asked to rate the probability that the answer they gave was correct. Participants were instructed to use
the scale in the following manner (see Appendix E for complete instructions):

You should circle 0 if you are completely certain that your answer is incorrect. You should circle 100 if you are completely certain that your answer is correct. Circling 50 indicates that you think your answer is equally likely to be right as it is wrong. If you circle 30, you are indicating that your answer has a 30 percent chance of being correct.

Participants in the evaluate condition were to estimate the probability that the answer provided by a peer was correct. They were instructed to use the scale in the following manner:

Do not attempt to write an answer to the question. Circle 0 if you are completely certain that the answer is incorrect. Circle 100 if you are completely certain that the answer is correct. Circling 50 indicates that you think the answer is equally likely to be right as it is wrong. If you circle 30, you are indicating that the answer has a 30 percent chance of being correct. Misspelled answers that are correct should be considered correct. Please note that if the participant did not provide an answer, we crossed out the item and you can go on to the next item.

Like the GKQ-2, the social knowledge questionnaire (SKQ-2) employed in Experiment 2 was comprised of 77 items. Personality and attitude statements were selected from Jackson’s Personality Research Form (Jackson, 1967) and each item asked participants to estimate how many of their peers would answer "true" to the personality or attitude statement (e.g., "I spend a lot of time visiting friends"; see Appendix C for the SKQ-2 task).

The criteria used to score participants’ performance on these items was taken from the same set of self-ratings, completed by a separate sample of 164 participants, used for criteria for the social knowledge task in Experiment 1. In Experiment 2, the proportion of these participants who answered the items as being true of themselves was calculated, providing the
present experiment with objective criteria by which participants could receive a score concerning their knowledge of the prevalence of persons’ attitudes and behaviors.

In an attempt to mirror the open-response format of the general knowledge questionnaire without making the items too difficult to answer, the response format for the SKQ-2 consisted of 11 category ranges (e.g., 0-10%, 11-20%, ..., 91-100%) and participants in the generate condition were required to check the range that they believed contained the correct percentage of peers answering "true" to that item. After each item, participants were to indicate the probability that their answer was correct by using the 0%-100% scale. Those in the evaluate condition did not answer questions but using the 0%-100% scale, indicated the probability that the answer provided by a peer was correct.

After participants completed the SKQ-2, they answered four post-experimental questions (two for each knowledge task) concerning their overall performance on the two tasks. For participants in the generate condition, one of these questions asked them to indicate the percentage of answers they believed they answered correctly. The other question asked them to indicate the percentage of students they believed they had outperformed. Participants in the evaluate condition were instructed to estimate how many of the questions they believed they would have answered correctly and to estimate the percentage of students they believe they would have outperformed, if they had been asked to answer the questions.

Upon completion of the first booklet, participants completed a second booklet containing the same two personality measures given to participants in Experiment 1: the Need for Cognition Scale (Cacioppo, Petty, & Kao, 1984) and the Revised Self-Monitoring Scale (Lennox & Wolfe, 1984) (see Appendix A for both measures).

After participants completed the second booklet, they read an excerpt from a book concerning decision-making (Janis & Mann, 1977). This task was employed simply to occupy
participants’ time until everyone had finished both booklets. At that point, the experimenter could debrief all participants at the same time. A brief rationale for the experiment was provided to participants and afterwards, the experimenter supplied participants with a written debriefing statement which they were to take home with them in case they had further questions concerning the experiment.
CHAPTER 5

RESULTS AND DISCUSSION

General Knowledge Task

Participants in the evaluate condition did not indicate their own answers to the questions. As a result, analyses of participants’ performance on the general knowledge task was performed upon only the responses of the 70 participants in the generate condition. These participants were able to answer roughly one-half of the questions correctly ($M = 49.11$, $SD = 12.26$). Across both conditions, participants appeared to be confident ($M = 59.19$, $SD = 14.07$) and overconfident ($M = 10.08$, $SD = 9.52$) in their decisions (see Table 11).

Judgmental Self-Doubt, Confidence Index, and Confidence/Accuracy

Correlational analyses were conducted to test the relationships between the Judgmental Self-Doubt Scale and confidence/accuracy measures as well as between the Confidence Index and confidence/accuracy measures. The same indices of confidence and accuracy used in Experiment 1 were used in the present analyses: overconfidence, calibration, and the Brier score. Zero-order correlations revealed that the Judgmental Self-Doubt Scale was negatively

10 Unlike the two-alternative, forced-choice format of Experiment 1, which allowed for analyses of "answers" provided by participants of the cued conditions via extrapolation (e.g., a 30% level of expressed confidence in precircled alternative A equaled a 70% level of confidence in alternative B), the open-ended format of Experiment 2 questions did not allow for such inferences to be made.
<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personality Measures</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Judgmental Self-Doubt Scale</td>
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<td>15.80</td>
<td>22.00 - 91.00</td>
</tr>
<tr>
<td>Confidence Index</td>
<td>51.94</td>
<td>8.69</td>
<td>25.00 - 72.00</td>
</tr>
<tr>
<td><strong>Performance Measure</strong></td>
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</tr>
<tr>
<td>Proportion Correct</td>
<td>49.11</td>
<td>12.26</td>
<td>20.00 - 81.40</td>
</tr>
<tr>
<td><strong>Confidence/Accuracy Measures</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Confidence</td>
<td>59.19</td>
<td>14.07</td>
<td>20.80 - 91.10</td>
</tr>
<tr>
<td>Overconfidence</td>
<td>10.08</td>
<td>9.53</td>
<td>-11.05 - 34.18</td>
</tr>
<tr>
<td>Calibration</td>
<td>.051</td>
<td>.033</td>
<td>.01 - .17</td>
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<tr>
<td>Brier Score</td>
<td>.143</td>
<td>.056</td>
<td>.05 - .30</td>
</tr>
<tr>
<td><strong>Post-Experimental Measures</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predicted percentage of peers outperformed</td>
<td>50.39</td>
<td>25.73</td>
<td>0.00 - 95.00</td>
</tr>
<tr>
<td>Predicted percentage of correct answers</td>
<td>59.14</td>
<td>23.89</td>
<td>3.00 - 97.00</td>
</tr>
</tbody>
</table>

Table 11: Descriptive statistics for personality and confidence/accuracy variables on the General Knowledge Questionnaire (GKQ-2) employed in Experiment 2
correlated with confidence (r = -.23, p < .01) but was not significantly correlated with any of the accuracy variables: overconfidence, calibration, and the Brier score (see Table 10). It seems that the higher one’s degree of self-doubt, the less confidence one placed in the decisions made on the GKQ-2. However, the lower confidence associated with higher self-doubt was not paralleled by better congruity between confidence and actual performance. Although lowered confidence is typically associated with improved judgmental accuracy, the present results illustrate that this is not always the case. The JSDS-15 also failed to show a significant relationship with either post-experimental question concerning overall performance.

With proportion of correct responses partialed out, judgmental self-doubt was not significantly related to any of the four measures of confidence and judgmental accuracy nor to the two post-experimental questions concerning performance (see Table 12). First-order correlational analyses in Experiment 1 had revealed significant relationships between self-doubt and accuracy variables not detected without the partialling participants’ performance. In contrast, the present first-order analyses failed to find statistically significant relationships between self-doubt and any of the accuracy indices and even nullified the lone significant zero-order correlation between self-doubt and confidence (r = -.12, p > .10).

The Confidence Index fared slightly better than the JSDS-15 in analyses exploring its relationship to the dependent variables. In zero-order correlational analyses, confidence was found to be significantly correlated with the CI (r = .34, p < .001), as were the two post-experimental questions regarding percentage of peers which were felt to be outperformed (r = .18, p < .05) and the percentage of questions believed to be answered correctly (r = .19, p < .05). First-order correlational analyses found the relationship with confidence (r = .29, p ≤ .001) to be significant after partialling the proportion of correct answers from the dependent variables. These analyses also revealed a marginally significant relationship
### Judgmental Confidence and Accuracy Variables

<table>
<thead>
<tr>
<th>Confidence Measures</th>
<th>Conf</th>
<th>OC</th>
<th>Calib</th>
<th>Brier</th>
<th>PE-1</th>
<th>PE-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSDS-15</td>
<td>-.23**/</td>
<td>-.02/</td>
<td>.04/</td>
<td>-.10/</td>
<td>-.10/</td>
<td>-.12/</td>
</tr>
<tr>
<td></td>
<td>-.12</td>
<td>-.06</td>
<td>-.02</td>
<td>-.11</td>
<td>-.07</td>
<td>-.04</td>
</tr>
<tr>
<td>CI</td>
<td>.34***/</td>
<td>.12/</td>
<td>.02/</td>
<td>.10/</td>
<td>.18*/</td>
<td>.19*/</td>
</tr>
<tr>
<td></td>
<td>.29***</td>
<td>.16</td>
<td>.07</td>
<td>.11</td>
<td>.15</td>
<td>.13</td>
</tr>
</tbody>
</table>

Table 12: Zero-order and First-order Correlations between Personality Measures and Indices of Judgmental Confidence and Accuracy for the General Knowledge Questionnaire (GKQ-2) in Experiment 2

**Note.** JSDS-15 = Judgmental Self-Doubt Scale, CI = Confidence Index, Conf = Confidence, OC = Overconfidence, Calib = Calibration, Brier = Brier Score, PE-1 = Percentage of Peers Believed to have been Outperformed, PE-2 = Percentage of Questions Estimated to be Answered Correctly.

Numbers in regular typeface are zero-order correlations. Numbers in **bold** typeface are first-order correlations.

* = $p \leq .05$

** = $p \leq .01$

*** = $p \leq .001$
with overconfidence ($r = .16, p = .067$). Neither calibration nor the Brier score were significantly related to the Confidence Index.

**Effects of Answer Source (Self vs. Other) on Confidence/Accuracy**

As predicted, participants who generated their own responses expressed an average confidence rating ($M = 53.73, SD = 14.30$) that was lower than those evaluating responses ($M = 64.65, SD = 11.56$), $t(138) = -4.97, p < .001$. In addition, the participants who gave their own answers were much less overconfident ($M = 4.76, SD = 7.19$) than those in the evaluate condition ($M = 15.41, SD = 8.58$), $t(138) = -7.96, p < .001$ (see Table 13).

The other measures of judgmental accuracy also showed the effects of experimental manipulation. Calibration for those generating their own answers ($M = .036, SD = .019$) was better than for those evaluating answers ($M = .067, SD = .036$), $t(138) = -6.19, p < .001$ and accuracy as measured by the Brier score was also superior for those generating ($M = .116, SD = .036$) as compared to those evaluating ($M = .169, SD = .06$), responses, $t(138) = -6.33, p < .001$.

Finally, estimates of performance taken from the two post-experimental questions also showed source of answer effects. Participants in the generate condition gave substantially lower estimates of the percentage of their peers that they believed they outperformed ($M = 40.81, SD = 23.57$) than did participants in the evaluate condition did ($M = 60.00, SD = 24.32$), $t(138) = -4.73, p < .001$. Furthermore, participants producing their own answers believed that they had answered fewer questions correctly ($M = 47.60, SD = 22.68$) than participants in the evaluate condition believed that they would have answered correctly had they been asked to do so ($M = 70.69, SD = 19.09$), $t(138) = -6.52, p < .001$.

Overall, the analyses reported above provide strong support for the proposition that generating one’s own answers to questions results in reduced confidence and improved
<table>
<thead>
<tr>
<th>Experimental Condition</th>
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<th>Evaluate</th>
<th>$T$ (1, 138)</th>
<th>$p$</th>
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<tbody>
<tr>
<td><strong>Confidence/Accuracy Measures</strong></td>
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<td></td>
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<tr>
<td>Mean Confidence</td>
<td>53.73</td>
<td>64.66</td>
<td>-4.97</td>
<td>&lt; .001</td>
</tr>
<tr>
<td></td>
<td>(14.30)</td>
<td>(11.56)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overconfidence</td>
<td>4.76</td>
<td>15.41</td>
<td>-7.96</td>
<td>&lt; .001</td>
</tr>
<tr>
<td></td>
<td>(7.19)</td>
<td>(8.58)</td>
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</tr>
<tr>
<td>Calibration</td>
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<td>.066</td>
<td>-6.19</td>
<td>&lt; .001</td>
</tr>
<tr>
<td></td>
<td>(.019)</td>
<td>(.036)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brier Score</td>
<td>.116</td>
<td>.169</td>
<td>-6.33</td>
<td>&lt; .001</td>
</tr>
<tr>
<td></td>
<td>(.036)</td>
<td>(.060)</td>
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<tr>
<td><strong>Post-Experimental Measures</strong></td>
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<tr>
<td>Predicted percentage of outperformed students</td>
<td>40.81</td>
<td>59.96</td>
<td>-6.52</td>
<td>&lt; .001</td>
</tr>
<tr>
<td></td>
<td>(23.57)</td>
<td>(24.32)</td>
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</tr>
<tr>
<td>Predicted percentage of correct answers</td>
<td>47.60</td>
<td>70.69</td>
<td>-4.73</td>
<td>&lt; .001</td>
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<tr>
<td></td>
<td>(22.68)</td>
<td>(17.09)</td>
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</tbody>
</table>

Table 13: General Knowledge Questionnaire for Experiment 2: Means and T-Test Results

**Note.** Standard deviations are shown in parentheses. For calibration and the Brier score, lower scores indicate greater judgmental accuracy.
correspondence between confidence and actual performance.

Subsequent analyses were conducted testing the hypothesis that self-doubt would be differentially related to confidence and accuracy measures as a function of treatment condition. One-way ANCOVAs were conducted evaluating the interaction between the JSDS-15 and experimental condition but none of these interaction terms were found to be significant (see Table 14). Therefore, contrary to expectations, these results indicate that judgmental self-doubt's relationship to confidence and accuracy measures was not dependent on the source of answer (i.e., self vs. other).

**Contributions of Other Personality Variables to the GKQ-2**

A final question concerned the relationship between the Judgmental Self-Doubt Scale, the Confidence Index and the other measures of personality functioning: the Need for Cognition Scale and the Revised Self-Monitoring Scale. As in the first experiment, the present study wished to delineate what contribution, if any, these instruments offered to confidence and accuracy measures above and beyond that explained by self-doubt. Once again, multiple regression procedures were used with the proportion of correct responses entered as the first variable into the equation in an attempt to control for differences in knowledge between participants. The Judgmental Self-Doubt Scale was entered next and then the other three measures were entered in as a block to see which of these variables, competing against each other, might explain additional variance in the dependent variables.

Stepwise multiple regression analyses demonstrated that none of the three variables significantly contributed to the variance in confidence above that already accounted for by proportion of correct responses and judgmental self-doubt. Likewise, calibration and Brier scores did not receive significant contributions (see Table 15). Overconfidence was the only dependent variable to receive a contribution which approached significance (p = .069), which
<table>
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<tr>
<td>F (1, 134)</td>
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<td>--------------</td>
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<td><strong>Confidence/Accuracy Measures</strong></td>
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<td>Mean Confidence</td>
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<td>Overconfidence</td>
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<tr>
<td>Calibration</td>
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<td>Brier Score</td>
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<td>Predicted percentage of outperformed students</td>
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<tr>
<td>Predicted percentage of correct answers</td>
</tr>
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Table 14: ANCOVA Results Testing the Interaction between the Judgmental Self-Doubt Scale and Experimental Condition on the General Knowledge Questionnaire in Experiment 2
<table>
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<tr>
<th>Predictor</th>
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<th>PE-2</th>
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<tr>
<td></td>
<td>(\Delta R^2)</td>
<td>(\beta)</td>
<td>(\Delta R^2)</td>
<td>(\beta)</td>
<td>(\Delta R^2)</td>
<td>(\beta)</td>
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<tr>
<td>Correct</td>
<td>.56***</td>
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<td>.02</td>
<td>-.15</td>
<td>.06**</td>
<td>-.24</td>
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<td>Step 2</td>
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<td>JSDS-15</td>
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<td>-.08</td>
<td>.00</td>
<td>-.05</td>
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Table 15: Summary of Stepwise Regression Analyses Predicting Judgmental Confidence and Accuracy for GKQ-2: Beta Weights and Changes in R-Squared of the Independent Variables

**Note.** JSDS-15 = Self-Doubt Scale, CI = Confidence Index, NFCS = Need for Cognition Scale, RSMS = Revised Self-Monitoring Scale, Conf = Confidence, OC = Overconfidence, Calib = Calibration, Brier = Brier Score, PE-1 = Percentage of Peers Believed to have been Outperformed, PE-2 = Percentage of Questions Estimated to be Answered Correctly.

Probability values indicate that the predictor significantly contributed to the regression model's change in \(R^2\) at the time it was entered into the regression equation. Empty cells in Step 3 indicate that the variable did not meet criteria for entry into the regression equation.

* = \(p \leq .05\)

** = \(p \leq .01\)

*** = \(p \leq .001\)
came from the Confidence Index.

Analyses of the two post-experimental questions revealed that participants' beliefs about their performance relative to their peers received a significant contribution from one of the three measures, namely, the Need for Cognition Scale (change in $R^2 = .29, p < .05$). Estimates of the percentage of questions believed to be answered correctly did not receive significant contributions from any of the independent variables. In summary, it appears that on the open-ended general knowledge questionnaire, neither the CI, NFCS, and RSMS consistently contributed to the variance after proportion of correct responses and self-doubt had been entered.

**Social Knowledge Task**

As with the GKQ-2, analyses of performance for the social knowledge task had to be based upon the answers given by the 70 participants in the generate condition as participants in the evaluate condition did not give answers to the questions. Participants appeared to have a significant degree of difficulty answering these questions correctly, as the mean percentage of correct responses reached only 15.51%. Nonetheless, even in the face of such difficult questions, participants indicated that they were confident ($M = 61.45, SD = 11.92$) in their decisions, resulting in extreme overconfidence for the group as a whole ($M = 45.94, SD = 13.28$) (see Table 16).

**Judgmental Self-Doubt, Confidence Index, and Confidence/Accuracy**

Correlational analyses were carried out aimed at elucidating the relationships between confidence/accuracy measures and the Judgmental Self-Doubt Scale and the Confidence Index. Zero-order correlations showed the JSDS-15 to be correlated with overconfidence ($r = -.19, p < .05$), calibration ($r = -.25, p < .01$), and the Brier score ($r = -.23, p < .01$). The
<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>Range</th>
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</thead>
<tbody>
<tr>
<td><strong>Personality Measures</strong></td>
<td></td>
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<tr>
<td>Self-Doubt Scale</td>
<td>51.75</td>
<td>15.80</td>
<td>22.00 - 91.00</td>
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<td>Confidence Index</td>
<td>51.94</td>
<td>8.69</td>
<td>25.00 - 72.00</td>
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<td><strong>Performance Measure</strong></td>
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<tr>
<td>Proportion Correct</td>
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<td>4.47</td>
<td>.06 - .26</td>
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<tr>
<td><strong>Confidence/Accuracy Measures</strong></td>
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<tr>
<td>Confidence</td>
<td>61.45</td>
<td>11.92</td>
<td>22.34 - 92.47</td>
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<tr>
<td>Overconfidence</td>
<td>45.94</td>
<td>13.28</td>
<td>2.86 - 84.68</td>
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<td>Calibration</td>
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<td>.111</td>
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</tr>
<tr>
<td>Predicted percentage of peers</td>
<td>49.10</td>
<td>20.51</td>
<td>0.00 - 90.00</td>
</tr>
<tr>
<td>outperformed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predicted percentage of correct</td>
<td>60.39</td>
<td>22.63</td>
<td>0.00 - 100.00</td>
</tr>
<tr>
<td>answers</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 16: Descriptive statistics for personality and confidence/accuracy variables on the Social Knowledge Questionnaire (SKQ-2) used in Experiment 2
JSQS-15 was also marginally correlated with confidence ($r = -.15, p = .085$). These results indicate that greater judgmental self-doubt was related to lower confidence and better accuracy. As for the two post-experimental questions concerning overall performance, the JSQS-15 was significantly correlated with participants estimates of the percentage of their peers they believed outperformed ($r = -.18, p < .05$) but was not correlated with the percentage of questions believed to be correctly answered ($r = -.11, p > .05$) (see Table 17).

Correlational analyses controlling for the proportion of correct responses revealed that self-doubt was not significantly correlated with confidence or overconfidence but did correlate with calibration ($r = -.20, p < .05$) and the Brier score ($r = -.20, p < .05$). It seems that when participants’ performance was controlled for, higher self-doubt lost its significant relationships with lower confidence and lower overconfidence. Results from the first-order correlations between self-doubt and the post-experimental questionnaire demonstrated that the JSQS-15 was marginally related to lower estimates of the percentage of peers believed to be outperformed ($r = -.16, p = .058$) but was not related to estimates of the percentage of questions answered correctly ($r = -.11, p > .10$).

The Confidence Index was significantly related to indices of confidence and accuracy on the SKQ-2. It was positively correlated with confidence ($r = .21, p < .05$), overconfidence ($r = .20, p < .05$), calibration ($r = .27, p < .001$), and the Brier score ($r = .28, p < .001$). It was also correlated with participants estimates for the percentage of their peers they believed they outperformed ($r = .24, p < .01$) (see Table 14). First-order analyses partialling out the proportion of correct answers supported these relationships for confidence ($r = .21, p < .05$), overconfidence ($r = .21, p < .05$), calibration ($r = .29, p \leq .001$), and the Brier score ($r = .28, p \leq .001$).
### Judgmental Confidence and Accuracy Variables

<table>
<thead>
<tr>
<th>Confidence Measures</th>
<th>Conf</th>
<th>OC</th>
<th>Calib</th>
<th>Brier</th>
<th>PE-1</th>
<th>PE-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSDS-15</td>
<td>-.15/</td>
<td>-.19'</td>
<td>-.25&quot;/</td>
<td>-.23&quot;/</td>
<td>-.18'/</td>
<td>-.11/</td>
</tr>
<tr>
<td></td>
<td>-.13</td>
<td>-.13</td>
<td>-.20&quot;</td>
<td>-.20'</td>
<td>-.16</td>
<td>-.11</td>
</tr>
<tr>
<td>CI</td>
<td>.21'/</td>
<td>.20'</td>
<td>.27&quot;/</td>
<td>.28&quot;/</td>
<td>.24&quot;/</td>
<td>.14/</td>
</tr>
<tr>
<td></td>
<td>.21'</td>
<td>.21'</td>
<td>.29&quot;/</td>
<td>.28&quot;/</td>
<td>.24&quot;</td>
<td>.14</td>
</tr>
</tbody>
</table>

Table 17: Zero-order and First-order Correlations between Personality Measures and Indices of Judgmental Confidence and Accuracy for the Social Knowledge Questionnaire (SKQ-2) in Experiment 2

**Note.** JSDS-15 = Judgmental Self-Doubt Scale, CI = Confidence Index, Conf = Confidence, OC = Overconfidence, Calib = Calibration, Brier = Brier Score, PE-1 = Percentage of Peers Believed to have been Outperformed, PE-2 = Percentage of Questions Estimated to be Answered Correctly.

Numbers in regular typeface are zero-order correlations. Numbers in **bold** typeface are first-order correlations.

* = $p \leq .05$

** = $p \leq .01$

*** = $p \leq .001$
Effects of Answer Source (Self vs. Other) on Confidence/Accuracy

The effects of generating versus evaluating responses on confidence and accuracy ratings were examined next. Contrary to expectation, participants generating their own responses expressed significantly greater confidence ($M = 64.77$, $SD = 13.17$) in their responses than did participants evaluating the responses of others ($M = 58.14$, $SD = 9.51$), $t(138) = 3.413$, $p \leq .001$. Participants in the generate condition were also more overconfident ($M = 49.26$, $SD = 14.74$) than participants in the evaluate condition ($M = 42.63$, $SD = 10.76$), $t = 3.040$, $p < .01$. This equally surprisingly result was supported by results from the other two indices of judgmental accuracy, calibration and the Brier score. These variables showed better accuracy was demonstrated by participants evaluating responses than by participants generating responses (see Table 18).

The two post-experimental questions also showed condition effects. Curiously, these results were in keeping with predicted hypotheses. Participants generating their own answers indicated that they felt they had outperformed fewer of their colleagues ($M = 40.81$, $SD = 23.57$) than did participants who estimated the percentage of their colleagues they would have outperformed had they answered the questions ($M = 60.00$, $SD = 24.32$), $t = -4.728$, $p < .001$. Furthermore, participants producing their own answers believed that they had answered fewer questions correctly ($M = 47.60$, $SD = 22.68$) than participants in the evaluate condition, who were asked to guess the number of questions they would have answered correctly ($M = 70.69$, $SD = 19.09$), $t = -6.515$, $p < .001$.

Next, analyses were conducted testing the hypothesis that self-doubt would be differentially related to confidence and accuracy measures as a function of treatment condition. Specifically, it had been predicted that differences in confidence and accuracy due to the source of the answer would be more pronounced for those with greater self-doubt.
<table>
<thead>
<tr>
<th>Experimental Condition</th>
<th>Generate</th>
<th>Evaluate</th>
<th>( T (1, 138) )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Confidence/Accuracy Measures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Confidence</td>
<td>64.77</td>
<td>58.14</td>
<td>3.413</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>(13.18)</td>
<td>(9.51)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overconfidence</td>
<td>49.26</td>
<td>42.63</td>
<td>3.04</td>
<td>&lt; .01</td>
</tr>
<tr>
<td></td>
<td>(14.74)</td>
<td>(10.76)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calibration</td>
<td>.299</td>
<td>.270</td>
<td>1.43</td>
<td>.16</td>
</tr>
<tr>
<td></td>
<td>(.141)</td>
<td>(.098)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brier Score</td>
<td>.418</td>
<td>.382</td>
<td>1.89</td>
<td>.06</td>
</tr>
<tr>
<td></td>
<td>(.129)</td>
<td>(.087)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Post-Experimental Measures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predicted percentage of outperformed students</td>
<td>41.80</td>
<td>56.40</td>
<td>-4.49</td>
<td>&lt; .001</td>
</tr>
<tr>
<td></td>
<td>(19.51)</td>
<td>(18.94)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predicted percentage of correct answers</td>
<td>44.31</td>
<td>60.46</td>
<td>-4.50</td>
<td>&lt; .001</td>
</tr>
<tr>
<td></td>
<td>(21.36)</td>
<td>(21.06)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 18: Social Knowledge Questionnaire for Experiment 2: Means and T-Test Results

**Note.** Standard deviations are shown in parentheses. For calibration and the Brier score, lower scores indicate greater judgmental accuracy.
way ANCOVAs were conducted evaluating the interaction between the JSDS-15 and experimental condition revealed none of the interaction terms to be significant. Once again, it appeared that self-doubt was not differentially related to confidence ratings as a function of answering versus evaluating responses to the questions (see Table 19).

Contributions of Other Personality Variables to the SKQ-2

Finally, the present study addressed the relationship of three other measures of personality functioning (the Confidence Index, the Need for Cognition Scale, and the Revised Self-Monitoring Scale) to confidence/accuracy. Specifically, would any of these measures contribute to variance in confidence and accuracy measures above and beyond that accounted for by self-doubt? Once again, multiple regression procedures were used with the proportion of correct responses entered as the first variable in an attempt to control for differences in knowledge among participants. The Judgmental Self-Doubt Scale was entered next, followed by the other three measures in a stepwise fashion to discern which of these variables, competing against each other, might explain additional variance in the dependent variables.

Multiple regression analyses demonstrated that for confidence, the Confidence Index’s contribution to the variance was significant (change in $R^2 = .23, p < .05$). Likewise, the CI accounted for a significant amount of the variance in overconfidence (change in $R^2 = .18, p < .05$), calibration (change in $R^2 = .28, p \leq .005$), and the Brier score (change in $R^2 = .41, p < .01$). Neither the NFCS nor the RSMS provided statistically significant contributions to any of the four main dependent variables (see Table 20).

Analyses performed on the two post-experimental questions demonstrated that only one of the three measures, the Revised Self-Monitoring Scale, significantly contributed to the variance accounted for in each question. It contributed to estimates of the percentage of peers believed to be outperformed (change in $R^2 = .05, p < .01$) and to estimates of percentage of
Experimental Condition x Judgmental Self-Doubt Scale

<table>
<thead>
<tr>
<th>Measure</th>
<th>F (1, 134)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Confidence/Accuracy Measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Confidence</td>
<td>2.77</td>
<td>.10</td>
</tr>
<tr>
<td>Overconfidence</td>
<td>2.41</td>
<td>.12</td>
</tr>
<tr>
<td>Calibration</td>
<td>1.67</td>
<td>.20</td>
</tr>
<tr>
<td>Brier Score</td>
<td>1.64</td>
<td>.20</td>
</tr>
<tr>
<td><strong>Post-Experimental Measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predicted percentage</td>
<td>.03</td>
<td>.87</td>
</tr>
<tr>
<td>of outperformed students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predicted percentage</td>
<td>.27</td>
<td>.60</td>
</tr>
<tr>
<td>of correct answers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 19: ANCOVA Results Testing the Interaction between the Judgmental Self-Doubt Scale and Experimental Condition on the Social Knowledge Questionnaire in Experiment 2
## Dependent Variables

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Conf</th>
<th>OC</th>
<th>Calib</th>
<th>Brier</th>
<th>PE-1</th>
<th>PE-2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\Delta R^2$</td>
<td>$\beta$</td>
<td>$\Delta R^2$</td>
<td>$\beta$</td>
<td>$\Delta R^2$</td>
<td>$\beta$</td>
</tr>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion Correct</td>
<td>.02</td>
<td>-.14</td>
<td>.21***-.49</td>
<td>.24***-.49</td>
<td>.08***-.29</td>
<td>.01</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JSDS-15</td>
<td>.02</td>
<td>-.13</td>
<td>.01</td>
<td>-.12</td>
<td>.03*</td>
<td>-.18</td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CI</td>
<td>.03*</td>
<td>.19</td>
<td>.02*</td>
<td>.17</td>
<td>.04**</td>
<td>.22</td>
</tr>
<tr>
<td>NFCS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RSMS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 20: Summary of Stepwise Regression Analyses Predicting Judgmental Confidence and Accuracy for SKQ-2: Beta Weights and Changes in R-Squared of the Independent Variables

*Note:* JSDS-15 = Self-Doubt Scale, CI = Confidence Index, NFCS = Need for Cognition Scale, RSMS = Revised Self-Monitoring Scale, Conf = Confidence, OC = Overconfidence, Calib = Calibration, Brier = Brier Score, PE-1 = Percentage of Peers Believed to have been Outperformed, PE-2 = Percentage of Questions Estimated to be Answered Correctly.

Probability values indicate that the predictor significantly contributed to the regression model’s change in $R^2$ at the time it was entered into the regression equation. Empty cells in Step 3 indicate that the variable did not meet criteria for entry into the regression equation.

* = $p \leq .05$  
** = $p \leq .01$  
*** = $p \leq .001$
questions believed to be answered correctly (change in $R^2 = .061$, p < .01). The NFCS did not add to the explained variance for any of the confidence and accuracy variables.

In Experiment 2 the Judgmental Self-Doubt Scale did not show the same strength in its relationship to judgmental confidence and accuracy which it had in Experiment 1. It failed to demonstrate significant relationships with any of the dependent variables on the general knowledge questionnaire used in this study after proportion of correct answers had been accounted for in the analyses. Additionally, it was not correlated with confidence ratings for the SKQ-2. Its failure to relate to confidence ratings for either task is surprising, particularly given its construction as a measure of judgmental self-confidence. However, The JSOS-15 was related to greater accuracy, as measured by calibration and the Brier score, in the social knowledge task. It may be the case that for some tasks, the instrument has better utility in measuring the degree of accuracy of people's judgments as opposed to their degree of expressed confidence.

The Confidence Index fared somewhat better, showing significant relationships with confidence and overconfidence (marginally so) on the GKQ-2 and with five of the six dependent variables employed for the SKQ-2. The Confidence Index also contributed a significant amount of variance to variables on the GKQ-2 (overconfidence) and SKQ-2 (confidence, overconfidence, calibration, and the Brier score), above that already accounted for by individual differences in performance and self-doubt. This sample of confidence estimates taken from another task showed strong relationships with confidence and judgmental accuracy scores in Experiment 2 but it is worth noting that the CI bears a significant similarity to the social knowledge task employed in Experiment 2. Therefore, although it appears that confidence in one set of judgments may be a good predictor of confidence in other sets of judgments, such a conclusion can only be tentatively made based on the present
data. Further exploration in this domain using other confidence measures is surely warranted.

Neither the Need for Cognition Scale nor the Revised Self-Monitoring Scale contributed frequently or consistently to variance in the dependent variables above that of self-doubt. However, the RSMS was found to contribute to explained variance in the two post-experimental questions on the SKQ-2, but not on the GKQ-2, possibly because the social content of the task more closely matched the confidence held by high self-monitors in social decision tasks.

The effects of answer source were found for both tasks used in Experiment 2. Predicted hypotheses that those generating their own answers would show less confidence and greater congruity between their confidence and actual performance were confirmed but only for the general knowledge questionnaire. Paradoxically, analyses of the social knowledge questionnaire revealed just the opposite. Participants asked to answer questions concerning the prevalence of social attitudes and behaviors were more confident and evidenced greater discrepancies between their confidence and their actual performance than did participants asked to evaluate the answers of their peers and indicate their belief that such answers were correct.

The reason for this marked disconfirmation of predicted hypotheses is not readily apparent. It may be the case that some feature or features of the open-ended task made it different from the forced-choice social knowledge questionnaire used in Experiment 1, such that those generating answers became more, not less, confident. For instance, of the four knowledge tasks employed in the two experiments, the SKQ-2 had, by far, the lowest average performance score, \( M = 15.51\% \), far lower than the performance score for the SKQ-1 (\( M = 54.24\% \)). It may be the case that when completing such a difficult task, those generating their own responses were so overwhelmed with the task and consequently that they did not
think of as many alternatives as did those who had the luxury of evaluating the responses of others. Participants in this latter group may not have known the correct answer to the questions but they may have been able to more easily discern the incorrectness of answers placed in front of them compared to participants who had to scan their memories for the correct answer to a blank space on a page (e.g., "I don't know what the answer is but I know it's not that."). Whatever the reason, this result is surprising and worthy of further investigation.
CHAPTER 6

GENERAL DISCUSSION

*Individual Differences in Confidence*

The studies conducted for the present research tested the hypothesis that scores on a scale designed to measure the degree to which people doubt their own judgment would be associated with level of confidence in decision-making tasks and with greater congruity between expressed confidence and actual performance. The results of the two experiments provide limited support for the utility of the Judgmental Self-Doubt Scale in accounting for variance in judgmental confidence. JSDS-15 scores were negatively related to confidence ratings for the two general knowledge tasks. That is, participants who indicated greater generalized self-doubt in their judgmental ability expressed less confidence in their answers to questions tapping general knowledge. However, it should be noted that the relationship between self-doubt and confidence on the general knowledge questionnaire in Experiment 2 was no longer significant after proportion of correct responses was statistically removed, suggesting that high self-doubt participants had reason to lower their confidence ratings of their performance. Furthermore, judgmental self-doubt was not associated with confidence concerning social knowledge in either Experiment 1 or Experiment 2. This stands in contrast to findings of Mirels and Greblo (1994), who reported a significant negative relationship between judgmental self-doubt and confidence ratings on a social judgment questionnaire.
In three of four instances, judgmental self-doubt scores were significantly related to estimates concerning the percentage of one’s peers that participants believed they had (or would have) outperformed. These results are consistent with the conceptualization of judgmental self-doubt, which posited that persons high in self-doubt believe that their ability to make sound judgments is poor. In fact, persons with greater self-doubt do consider their abilities to be below that of their peers. As these estimates may be thought of as an alternative index of confidence, the current findings suggest that greater self-doubt is generally associated with a lower degree of confidence in one’s judgment.

However, self-doubt did not significantly correlate with the post-experimental question regarding the percentage of questions participants believed they had (or would have) answered correctly. It has been noted by other researchers that questions such as this, which target estimates of overall performance, are often qualitatively different than aggregate confidence or probability measures (Brenner et al., 1996; Dawes & Mulford, 1996). Specifically, these estimates, usually referred to as relative frequency estimates, are significantly lower than aggregate confidence ratings. In fact, the present research found that participants’ estimates of the relative frequency of their correct responses, given at the end of the experimental tasks, were much lower than aggregate confidence scores. Sniezek and Buckley (1991) suggested that while aggregate confidence ratings are likely to be a function of information processing and one’s use of available information, relative frequency scores are probably based upon other factors, such as judgments about one’s own ability or knowledge about a particular topic. This seems to suggest that judgmental self-doubt would be negatively related to estimates of overall performance as assessed by percentage of questions believed to be answered correctly. The fact that self-doubt was related to estimates concerning performance relative to others but not to percentage of items answered correctly suggests that judgmental
self-doubt is derived, at least in part, from comparisons to others. Individuals confident in their judgment (i.e., those with low self-doubt), compare themselves favorably to others while individuals lacking confidence believe themselves to be poor decision-makers relative to their peers.

In contrast to the Judgmental Self-Doubt Scale, the Confidence Index represented an attempt to take a sample of people’s confidence ratings in one judgment task and relate them to confidence judgments in the tasks used in the present research. As such, the Confidence Index more directly measures confidence because it is based upon actual ratings of one’s expressed judgmental confidence rather than reports about what one thinks of his or her judgmental abilities. The index showed strong relationships with confidence on all four tasks employed in the present research. Higher confidence as measured by the Confidence Index was associated with greater confidence on all of the confidence indices in Experiments 1 and 2, regardless of whether or not proportion of correct responses was partialled out of the analyses. Furthermore, it contributed to variance in confidence ratings over and above self-doubt and was positively correlated with the majority of the post-experimental questions.

These findings are likely attributable to the nature of the Confidence Index’s construction. Because the Confidence Index is an actual sample of one’s judgmental confidence, it is not susceptible to the same distortions or biases to which self-report scales such as the JSDS-15 are subject. For example, individuals may believe that they have poor judgment when, in fact, they do not. Or people may have difficulty admitting to being confident when questioned by pencil-and-paper personality instruments but may execute a task with substantial confidence when presented with the opportunity to do so. Because the Confidence Index directly measures one’s actual confidence in a task, it does not encounter such problems in its measurement.
In the present studies, the Need for Cognition Scale failed to contribute to confidence ratings on any of the four tasks. However, in three of four instances the NFCS did add to the explained variance in the prediction of estimates regarding the percentage of one's peers that participants believed they had outperformed. Wolfe and Grosch (1990) reported similar results. They found that need for cognition was associated with better performance and greater confidence on judgment tasks. However, it was also related to a significant degree of overconfidence even after partialling out individual differences in levels of performance. These authors posited that those high in need for cognition may, for certain tasks, be more proficient at certain tasks and that an awareness of this proficiency leads to increased confidence. This interpretation seems appropriate in light of factor analytic studies which indicate that cognitive confidence is one of three factors comprising the Need for Cognition Scale (Tanaka, Panter, & Winborne, 1988).

The Revised Self-Monitoring Scale fared better than the Need for Cognition Scale in predicting confidence ratings. In Experiment 1, it significantly contributed to variance in confidence for both experimental tasks. Results from Experiment 2 were less strong, with self-monitoring failing to contribute to confidence on the GKQ-2 but making a significant contribution to confidence ratings on the SKQ-2. These findings are consistent with studies by Culter and Wolfe (1989) and Wolfe and Grosch (1990), that demonstrated that self-monitoring was positively related to confidence in person perception tasks as well as in factual knowledge tasks. The present results also indicate that self-monitoring contributes to the variance in confidence variables over and above confidence accounted for by self-doubt. Wolfe and Grosch suggest that the high degree of confidence associated with self-monitoring is based upon self-monitors' interests in promoting a positive presentation of themselves in social situations and more generally, to concerns about self-enhancement. If true, self-
monitoring would appear to tap basic needs for mastery and competence, as proposed by Wolfe et al. (1986).

*Individual Differences in Judgmental Accuracy*

On indices measuring the correspondence between confidence ratings and actual performance, results strongly support the hypothesis that greater self-doubt is associated with superior correspondence in judgmental accuracy. The Judgmental Self-Doubt Scale correlated with at least two of the three accuracy indices (i.e., overconfidence, calibration, and the Brier score) for three of the four experimental tasks. On only one task, the general knowledge task of Experiment 2, did self-doubt fail to show a significant relationship with any of the judgmental accuracy variables. These findings suggest that for the most part, self-doubtful individuals are characterized by a greater correspondence between their degree of expressed confidence and their actual performance on decision-making tasks than are their self-confident counterparts.

It is important to note that the greater congruity between expressed confidence and performance associated with higher self-doubt was not solely a function of lowered confidence scores which, in turn, resulted in lowered overconfidence. In fact, after controlling for proportion of correct responses, self-doubt was significantly correlated with overconfidence on only one task: the general knowledge questionnaire of Experiment 1. Rather, the association between high levels of self-doubt and greater judgmental accuracy was reflected primarily in calibration and Brier scores. For three of the four tasks, self-doubt displayed significant negative correlations with these two indices of judgmental accuracy. Given that people typically display poor judgmental accuracy, as evidenced by high calibration and Brier scores (Fischhoff, 1982; Plous, 1993), these findings offer support for the idea that, as assessed by the judgmental self-doubt construct, some people may be better able to associate their
confidence in a task with their actual performance on that task. Interestingly, the present findings also suggest that although those with high self-doubt may believe their judgment is poor, their judgmental confidence is in fact more closely in keeping with their actual abilities than those with high self-confidence.

The Confidence Index was also a strong predictor of judgmental accuracy. In Experiment 1, it was related to greater overconfidence, worse calibration and Brier scores in both zero-order and first-order correlational analyses. Furthermore, it predicted variance in judgmental accuracy variables over and above that explained by judgmental self-doubt. In Experiment 2, relationships between the Confidence Index and accuracy measures were not quite as consistent but nonetheless, were still impressive. The index was not related to accuracy on the general knowledge questionnaire but was related to all of the accuracy indices for the social knowledge questionnaire. Again, the direct nature of this measure, with its scores taken from another task tapping inferences regarding people’s attitudes, may have lent itself to predicting confidence and accuracy on the social knowledge questionnaires used in the present studies.

Self-monitoring did not show much in the way of consistency in predicting judgmental accuracy. It was related to more extreme overconfidence and poorer Brier scores for both tasks in Experiment 1 but was not related to any of the judgmental accuracy indices in Experiment 2. This is surprising because in light of its strongly social component, it was believed that the RSMS would have contributed to the variance of accuracy scores on the social knowledge task used in Experiment 2 over and above that explained by self-doubt. However, it may be the case that the strong showing of the Confidence Index in predicting SKQ-2 accuracy indices overshadowed whatever relationships existed between self-monitoring and these indices.
Effects of Answer Source on Confidence and Accuracy

Another purpose of the present research was to replicate findings cited in the decision-making literature which have established that people who choose or generate their own answers to questions tend to display less confidence/overconfidence and better calibration in their answers than do people who are presented with the same alternatives and asked to evaluate the likelihood that these alternatives are correct (Allwood, 1994; Ronis & Yates, 1987; Sniezek et al., 1987). For the general knowledge tasks employed in the present research, these findings received substantial support. Participants in the uncued condition of Experiment 1 were asked to choose an answer from two possible alternatives and indicate their confidence in their chosen alternative. These participants were found to be more accurate in their judgments, as demonstrated by a lower degree of overconfidence than participants who were "cued" to an alternative (i.e., presented with one of the two alternatives precircled). In addition, uncued participants also exhibited better calibration and better Brier scores. No differences in confidence or accuracy were found to exist between the cued conditions, indicating that the method by which participants believed alternatives had been precircled, either randomly or by a peer, was inconsequential.

Similarly, Experiment 2 demonstrated that persons who generated their own answers to open-ended general knowledge questions displayed greater judgmental accuracy in their answers than did persons who evaluated answers given to them. Specifically, those generating their own responses were less overconfident, better calibrated, and gave lower estimates of their overall performance on the post-experimental questions. In addition, generating one's own answers also led to lower confidence in one's answers than did evaluating another person's responses. The fact that two different experimental methodologies, the forced-choice, two-alternative format and the open-ended, free-response format, resulted in similar
outcomes speaks to the robustness of the effect when the task involved knowledge of general information.

The reasons behind the lower degree of confidence and better judgmental accuracy in conditions asking participants to come up with their own answers is likely to lie in the manner in which participants were engaged in the task. Specifically, it has been suggested that the process of choosing or generating an answer causes individuals to engage in increased consideration about the correctness of their choice as well as other possible alternatives. For instance, in explaining their finding that cued participants were more confident and overconfident of their decisions than were uncued participants, Sniezek et al. (1990) argued that "cueing reduced the amount of processing devoted to each judgment, thereby contributing to overconfidence" (p. 280). Similarly, Ronis and Yates (1987) explained the comparable findings of their research by postulating that "seeing an answer circled focused subjects' attention on one alternative so they tended not to consider the pros and cons of the other answer" (p. 214).

In short, people presumably expend more time and effort in considering responses to questions when they themselves must choose or come up with an answer. Persons who merely evaluate another’s answers (or randomly precircled answers as well) appear to take the easy way out, engaging in less complex or less effortful cognitive processing and placing greater confidence in the judgment of others (or in the randomly cued alternatives). Faced with responses which were cued for them, participants in the cued and evaluate conditions may simply have placed their faith in the fact someone else (or something else, as in the case of the randomly-cued condition of Experiment 1) knows better than they do.

Analyses of the experimental manipulations on social knowledge tasks revealed altogether different results from those obtained on the general knowledge tasks. In
Experiment 1, persons asked to determine whether a cued alternative was the correct answer expressed less confidence in their decisions than did persons who were asked to answer each item by circling one of the two alternatives. Likewise, participants in Experiment 2 who were asked to evaluate responses given to them expressed a lower degree of confidence than did individuals who actually generated answers to the items. In addition, the SKQ-2 data of Experiment 2 also indicated that persons evaluating answers given by others displayed a greater degree of accuracy than person who actually answered the questions themselves, as shown by less overconfidence and more appropriate Brier scores.

The findings obtained from the social knowledge tasks are quite puzzling as they are the antithesis of both predicted hypotheses and previous findings in the literature. One possible explanation for these results may lie in the nature of the task. Social knowledge questions require a different type of judgment than general knowledge questions, as the social nature of the items comprising the social tasks may lead people to believe that the correct answers are more apparent than they truly are. As pointed out by Mirels (1976), making social inferences is often a deceptively difficult enterprise. Individuals tend to believe that they know a great deal about others when, in fact, they often do not. This may be the case because making judgments about other people is such a ubiquitous part of everyday life. People spend much of their time in social activities and come to rely on their social judgment when making decisions. As a consequence, people are likely to have a great degree of confidence in their judgments when such confidence is actually misplaced.

Further, the items comprising the social knowledge tasks are likely to have been interpreted as calling on participants' opinions or intuitions, as opposed to their factual knowledge. Thus, as compared with answers to the general knowledge questions, answers to social knowledge questions are likely to have been seen as less vulnerable to disconfirmation.
Regarded in this way, participants' answers to the social knowledge questions would be correspondingly more susceptible to exaggerated confidence. If participants had been clearly instructed that their responses would be compared to objective criteria or if participants were told that they were to be held publicly accountable for their answers, those generating their own answers to social knowledge questions may not have expressed such a high degree of confidence in their answers.

It is worthy to note that other researchers using social tasks have not encountered problems of this nature (Kochler, 1994; Wolfe & Grosch, 1990), but the tasks used in these studies differed in significant ways from the present social knowledge questionnaires. The contradictory findings regarding condition effects found here suggest that more work must be done to delineate the nature of social knowledge/inference tasks on confidence and judgmental accuracy.

*Judgmental Self-Doubt and Effects of Answer Source*

It is noteworthy that no significant interactions were found between judgmental self-doubt and experimental manipulations on any of the confidence and accuracy variables employed in either experiment. It was expected that if cueing participants resulted in increased confidence and worse judgmental accuracy, high levels of self-doubt would be related to an exaggeration of this effect while low levels of self-doubt would attenuate the effect. For the general knowledge tasks which produced the anticipated condition effects of greater confidence and poorer accuracy as a result of cueing, (i.e., the general knowledge questionnaires), self-doubt was not found to be related to confidence or accuracy measures differentially across experimental group. This suggests that while both judgmental self-doubt and situational determinants have an effect on heightening (or conversely, diminishing) the confidence and accuracy of judgments, the degree to which each has its effect is additive.
In the social knowledge tasks, experimental manipulations produced effects which ran
counter to expectations. Persons generating their own responses to questions were more
certain (Experiments 1 & 2) and showed worse scores on accuracy indices (Experiment 2)
compared to persons evaluating cued responses. Additionally, judgmental self-doubt was not
shown to relate to confidence ratings on either of the social knowledge tasks. Given that the
condition effects were contrary to stated hypotheses and that self-doubt failed to demonstrate
its hypothesized effects on confidence ratings, a priori hypotheses concerning the interaction
between individual differences in confidence and experimental condition would appear to have
been misplaced.

*Judgmental Self-Doubt and the Appropriateness of Confidence Ratings*

Self-doubt was hypothesized to be associated with lowered confidence and better
judgmental accuracy because, following Plous (1993), those on the high end of this
personality dimension were thought to be more likely to consider reasons why their judgments
might be incorrect. There are several possible reasons behind this proclivity to doubt one's
judgment. As stated in the Introduction, the same situational factors which appear to be
beneficial in making confidence judgments less extreme and more in keeping with
performance, such as negative feedback, increased motivation, and greater cognitive
processing, may also be characteristics associated with high levels of self-doubt. That is,
those who doubt their own judgment may have suffered a history of negative feedback (or
fear receiving negative feedback), feel a heightened motivation to make accurate judgments,
and/or engage in greater cognitive processing when making judgments.

Recent work by several investigators provides indirect support for the idea that self-
doubt is linked to judgmental accuracy through increased motivation and processing effort.
Sinclair and Mark (1992, 1995) revealed that people characterized by happy moods engage in
less effortful and less systematic processing of information compared with people characterized by negative (e.g., sad) moods. Along a similar vein, Stone (1994) found that participants induced to believe they had low self-efficacy for a particular task showed a reduction in overconfidence and better calibration on the task supposedly because they were more motivated to perform the task. These studies are consistent with Sniezek et al.'s (1990) assumption that "confidence becomes more appropriate as the amount of cognitive processing on a choice problem increases" (p. 279) and would also be in keeping with Koriat et al.'s (1980) belief that overconfidence is produced both by paying too close attention to one alternative and by not giving sufficient thought to alternative responses.

Judgmental self-doubt appears to share similarities to the factors influencing judgment recounted in the studies above. Recall that Mirels and Greblo (1994) found moderately positive correlations between judgmental self-doubt and depression and between judgmental self-doubt and anxiety, indicating that self-doubt is associated with negative mood states. Furthermore, the original conceptualization of judgmental self-doubt posited that highly self-doubting persons believe that they do not have good decision-making abilities (i.e., low self-efficacy in the decision-making domain). Thus, the Sinclair and Mark (1992, 1995) and Stone (1994) studies suggest that high self-doubters may indeed be more motivated to take greater time and effort when completing tasks requiring the use of their judgment, resulting in more appropriate confidence ratings.

The present findings regarding the relationship between judgmental self-doubt and judgmental accuracy may be understood in terms of Kruglanski's notions of epistemic knowledge and need for cognitive closure (Kruglanski, 1989; Kruglanski & Webster, 1996; Webster & Kruglanski, 1994). Webster and Kruglanski (1994) argued that people characterized by a high need for closure wish to reduce ambiguity and confusion by adopting
an answer to a question or dilemma as quickly possible. Kruglanski and Webster (1996)
proposed that closure is manifested in two ways, first through "seizing" upon an answer or
decision quickly, then by "freezing" out other information that would cause one to open
oneself to new knowledge. On the other hand, there are people who hold a heightened desire
to avoid closure, possibly because of the perceived costs of making decisions, which may
result in negative consequences.

A relationship between need for closure and judgmental self-doubt is suggested by
research findings described by Kruglanski and Webster (1996). These authors reported that a
number of studies demonstrated that people who were either induced to avoid closure or who
had a high dispositional need to avoid closure, generated more hypotheses, sought more
information, and exhibited lower subjective confidence across a variety of tasks. Persons high
in dispositional self-doubt would appear to hold characteristics similar to these high in the
need to avoid closure. High self-doubters are believed to be fearful of making decisions and
do not trust their judgment. As a consequence, they may benefit from avoiding closure when
faced with decisions so as avoid criticism or not be troubled by the consequences of a poor
decision. Therefore, it may be the case that greater self-doubt is related to the tendency not
to "seize" upon an answer or decision quickly while also lessening the tendency to "freeze"
out new information which may change one's mind.

Limitations and Future Directions

The findings of the present research are limited by the somewhat artificial nature of
the experimental tasks. For instance, general knowledge questions, such as the ones used for
these studies, are not highly representative of decision tasks people engage in on a daily basis.
Results of investigations concerning the accuracy of real-world decision-making are varied.
Murphy and Winkler (1977) demonstrated that National Weather Service forecasters were
relatively well-calibrated in their precipitation forecasts. Solomon, Ariyo, and Tomassini (1985) found that a group of practicing auditors were overconfident on a general knowledge task but were more appropriately calibrated, and even underconfident, on an auditing task. Auditors, like National Weather Service forecasters mentioned previously, are held accountable for their judgments and as a result, may have taken more care in completing the auditing task.

However, others have noted the prevalence of overconfidence in professional groups making judgments within their field of expertise, such as medical doctors and lawyers (Christensen-Szalanski & Busyhead, 1981; Wagenaar & Keren, 1986). These conflicting results suggest more work needs to be conducted specifying the conditions under which real-world decisions are made with inappropriate levels of confidence.

The social knowledge tasks used for the present research may be considered similar to situations in which people make inferences about another’s character based on relatively little information. In such circumstances, people may not only make poorly informed decisions but they may be quite confident of these decisions and in fact, as noted by Kruglanski and Webster (1996), the fewer hypotheses about an issue or judgment that an individual generates, the greater the confidence that is exhibited.

Although higher dispositional self-doubt may be associated with greater congruence between confidence in one’s performance and the objectively assessed quality of that performance, the cost of a high degree of generalized self-doubt should not be overlooked. Previous research has indicated that as doubt about one’s judgment increases, the greater the likelihood that one will report anxious and depressive symptomatology. As in research demonstrating that sad people engage in more effortful processing compared to happy people (Sinclair & Mark, 1992, 1995) and that chronic mild-to-moderate depression is associated
with increased accuracy of perception of control tasks (Alloy & Abramson, 1982), the present research also suggests that some degree of overconfidence may indeed have generally beneficial effects. In commenting on the less realistic performance assessments of non-depressed, as compared with depressed, persons, Taylor and Brown (1988) suggested that a self-enhancing view of oneself, even if illusory, is a useful and possibly necessary, tool for achieving good psychological adjustment. They cited numerous studies demonstrating that happy people are generally optimistic, confident, and have high opinions of themselves; oftentimes these beliefs have little basis in reality but they do appear to serve a functional purpose: keeping people feeling good about themselves. So although highly doubtful individuals may display confidence levels which are more in keeping with their actual performance abilities than their highly confident counterparts, they may also spend much of their time feeling tense and unhappy as well as show an unwillingness to engage in activities which require the use of their judgment.

The present investigation makes is clear that the relationship between dispositional variables and confidence in one’s judgment is complex and is contingent on the content domain and type of information provided. The studies reported here suggest that judgmental self-doubt is a dispositional variable that holds promise for clarifying the ways in which our enduring characteristics are implicated in the confidence we have in our judgments.
REFERENCES


Lichtenstein, S., & Fischhoff, B. (1977). Do those who know more also know more about how much they know? *Organizational Behavior and Human Performance, 20*, 159-183.


APPENDIX A

Dispositional Instruments
For each item, circle the phrase which best indicates your degree of agreement or disagreement.

1. I usually think most clearly when I am alone.

<table>
<thead>
<tr>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

2. I have difficulty making decisions.

<table>
<thead>
<tr>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

3. Oftentimes, I feel "stuck" because of being uncertain about what to believe.

<table>
<thead>
<tr>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

4. I tend to think a great deal about the future.

<table>
<thead>
<tr>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

5. Once I make a decision, I don't stew on the matter any longer.

<table>
<thead>
<tr>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

6. I often have the sense that others know better than I do.

<table>
<thead>
<tr>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

7. It is easy for me to persuade others of my views.

<table>
<thead>
<tr>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

107
8. I often find myself changing my opinion several times after hearing the various opinions of others.

<table>
<thead>
<tr>
<th></th>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

9. In almost all situations I am confident of my ability to make the right choices.

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<thead>
<tr>
<th></th>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

10. Many times I don’t know what to do next.

<table>
<thead>
<tr>
<th></th>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

11. When making a decision, I often feel confused because I have trouble keeping all the relevant factors in mind.

<table>
<thead>
<tr>
<th></th>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

12. I have an active imagination.

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<tr>
<th></th>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

13. I often don’t know what to feel or believe.

<table>
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<tr>
<th></th>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

14. I often trust the judgment of others more than my own.

<table>
<thead>
<tr>
<th></th>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

15. I have a great deal of confidence in my opinions.

<table>
<thead>
<tr>
<th></th>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

108
16. I often worry about whether a decision I made will have bad consequences.

<table>
<thead>
<tr>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

17. I feel I know myself well.

<table>
<thead>
<tr>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

18. I often don’t trust myself to make the right decision.

<table>
<thead>
<tr>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

19. I rarely switch back and forth from one conclusion to another; I make a decision and stick with it.

<table>
<thead>
<tr>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>

20. Frequently, I doubt my ability to make sound judgments.

<table>
<thead>
<tr>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>slightly disagree</th>
<th>slightly agree</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
</table>
Confidence Index

Each item on the following pages is of the following type:
Sample:

I believe in astrology.

Answered True by:

_____ Less than 50% of students  _____ More than 50% of students

[  ]

For each item, check the space which indicates whether you think it was answered True by less than 50% or by more than 50% of a random sample of U.S. college students.

As soon as you have checked the space, use the following code to indicate how confident you are that your judgment for that item is correct:

1: I am not confident at all in this judgment.

2: I am slightly confident in this judgment.

3: I am moderately confident in this judgment.

4: I am very confident in this judgment.

5: I am absolutely confident in this judgment.

Right after you have made each judgment, indicate in the brackets, your degree of confidence in that judgment.

1. I enjoy modern art.

Answered True by:

_____ Less than 50% of students  _____ More than 50% of students

[  ]

2. People don’t give enough respect to their parents.

Answered True by:

_____ Less than 50% of students  _____ More than 50% of students

[  ]
3. I feel sorry for lonely people.
Answered True by:
_____ Less than 50% of students  _____ More than 50% of students  [  ]

4. I very often think about the threat of nuclear war.
Answered True by:
_____ Less than 50% of students  _____ More than 50% of students  [  ]

5. I think it is better to be quiet than assertive.
Answered True by:
_____ Less than 50% of students  _____ More than 50% of students  [  ]

6. My parents are responsible for a lot of my problems.
Answered True by:
_____ Less than 50% of students  _____ More than 50% of students  [  ]

7. Living in a small town is better than living in a large city.
Answered True by:
_____ Less than 50% of students  _____ More than 50% of students  [  ]

8. I very much enjoy being complimented.
Answered True by:
_____ Less than 50% of students  _____ More than 50% of students  [  ]

9. When someone cuts in front of me in line, I will say something to them.
Answered True by:
_____ Less than 50% of students  _____ More than 50% of students  [  ]
10. I enjoy work more than play.
Answered True by:
____ Less than 50% of students      ____ More than 50% of students

11. I would enjoy the feeling of riding to the top of an unfinished skyscraper in an open elevator.
Answered True by:
____ Less than 50% of students      ____ More than 50% of students

12. Most people can be trusted.
Answered True by:
____ Less than 50% of students      ____ More than 50% of students

13. If someone hurts me, I just try to forget about it.
Answered True by:
____ Less than 50% of students      ____ More than 50% of students

14. What happens in life is largely a matter of chance.
Answered True by:
____ Less than 50% of students      ____ More than 50% of students

15. Most people who don’t succeed in life are simply lazy.
Answered True by:
____ Less than 50% of students      ____ More than 50% of students
Need for Cognition Scale

Please indicate your degree of agreement or disagreement with each of the statements below. There are no "right" or "wrong" answers.

Mark each statement, at the right, according to how much you agree or disagree with it. Use the following code:

+1 slight agreement -1 slight disagreement
+2 moderate agreement -2 moderate disagreement
+3 strong agreement -3 strong disagreement

0 = neither agreement nor disagreement

1. I would prefer complex to simple problems..............................................

2. I like to have the responsibility of handling a situation that require a lot of thinking.................................................................

3. Thinking is not my idea of fun............................................................

4. I would rather do something that requires little thought than something this is sure to challenge my thinking abilities...........................................

5. I try to anticipate and avoid situations where there is likely chance I will have to think in depth about something........................................

6. I find satisfaction in deliberating hard and long for hours...........................

7. I only think as hard as I have to...........................................................

8. I prefer to think about small, daily projects to long-term ones....................

9. I like tasks that require little thought once I’ve learned them....................

10. The idea of relying on thought to make my way to the top appeals to me......

11. I really enjoy a task that involves coming up with new solutions to problems...

12. Learning new ways to think doesn’t excite me much..............................

13. I prefer my life to be filled with puzzles that I must solve........................

14. The notion of thinking abstractly is appealing to me..............................

15. I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought..........................

16. I feel relief rather than satisfaction after completing a task that required a lot of mental effort..................................................
17. It's enough for me that something gets the job done: I don't care how or why it works.

18. I usually end up deliberating about issues even when they do not affect me personally.
Revised Self-Monitoring Scale

Instructions: Please read each statement and using the scale below, indicate to what degree each statement describes you.

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certainly always false</td>
<td>Generally false</td>
<td>Somewhat false but with exception</td>
<td>Somewhat true but with exception</td>
<td>Generally true</td>
<td>Certainly always true</td>
</tr>
</tbody>
</table>

1. In social situations, I have the ability to alter my behavior if I feel that something else is called for.__________________________

2. I am often able to read people’s true emotions correctly through their eyes._______

3. I have the ability to control the way I come across to people, depending on the impression I wish to give them.__________________________

4. In conversations, I am sensitive to even the slightest change in the facial expression of the person I’m conversing with.__________________________

5. My powers of intuition are quite good when it comes to understanding others’ emotions and motives.__________________________

6. I can usually tell when others consider a joke to be in bad taste, even though they may laugh convincingly.__________________________

7. When I feel that the image I am portraying isn’t working, I can readily change it to something that does.__________________________

8. I can usually tell when I’ve said something inappropriate by reading it in the listener’s eyes.__________________________

9. I have trouble changing my behavior to suit different people and different situations.__________________________

10. I have found that I can adjust my behavior to meet the requirements of any situation I find myself in.__________________________

11. If someone is lying to me, I usually know it at once from that person’s manner of expression.__________________________

12. Even when it might be to my advantage, I have difficulty putting up a good front.__________________________

13. Once I know what the situation calls for, it’s easy for me to regulate my actions accordingly.__________________________

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APPENDIX B

Experiment 1 - Task Materials
General Knowledge Questionnaire (GKQ-1)  
(Uncued Condition)

1. One pound in weight, equals how many ounces?  
a. 16oz.  b. 32oz.

The probability that the answer you circled is correct is:
50%  60%  70%  80%  90%  100%

2. What is the name for the medical doctor who specializes in diseases of the skin?  
a. dermatologist  b. proctologist

The probability that the answer you circled is correct is:
50%  60%  70%  80%  90%  100%

3. Which state has the greater number of citizens?  
a. New Hampshire  b. Nevada

The probability that the answer you circled is correct is:
50%  60%  70%  80%  90%  100%

4. What male actor starred in "Casablanca"?  
a. Cary Grant  b. Humphrey Bogart

The probability that the answer you circled is correct is:
50%  60%  70%  80%  90%  100%

5. Which country is larger in area?  
a. North Korea  b. South Korea

The probability that the answer you circled is correct is:
50%  60%  70%  80%  90%  100%

6. John F. Kennedy was born in?  
a. Massachusetts  b. Virginia

The probability that the answer you circled is correct is:
50%  60%  70%  80%  90%  100%

7. The third planet from the sun is?  
a. Saturn  b. Earth

The probability that the answer you circled is correct is:
50%  60%  70%  80%  90%  100%

8. Who succeeded Abraham Lincoln as President?  
a. Ulysses Grant  b. Andrew Johnson

The probability that the answer you circled is correct is:
50%  60%  70%  80%  90%  100%

9. The most common surname (last name) in the world is?  
a. Chang  b. Chen

The probability that the answer you circled is correct is:
50%  60%  70%  80%  90%  100%

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

11. The process of drawing general conclusions from particular instances is called?
   a. induction*  b. deduction

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

12. The Greek god of dreams is?  a. Ares  b. Morpheus*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

13. The chemical symbol for ozone is?  a. O2  b. O3*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

14. How many sides does a pentagon consist of?  a. 5*  b. 8

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

15. The state flower of Mississippi is the?  a. magnolia*  b. lilac

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

16. Vitamin E is a?  a. fat soluble vitamin*  b. water soluble vitamin

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

17. A trumpet call signaling entrance on or exit from a stage is called a?
   a. semin  b. sennet*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

18. Picasso was born in?  a. Jamaica  b. Spain*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%
19. The body of electors that elects the President of the United States is called?  
a. the Presidential College   b. the Electoral College  
The probability that the answer you circled is correct is:  
50% 60% 70% 80% 90% 100%  

20. The oldest zoo in the world is located in?   a. Tokyo   b. Vienna  
The probability that the answer you circled is correct is:  
50% 60% 70% 80% 90% 100%  

The probability that the answer you circled is correct is:  
50% 60% 70% 80% 90% 100%  

22. Which is larger in diameter?   a. Earth   b. Jupiter  
The probability that the answer you circled is correct is:  
50% 60% 70% 80% 90% 100%  

The probability that the answer you circled is correct is:  
50% 60% 70% 80% 90% 100%  

24. The wheel was invented by the?   a. Sumerians   b. Egyptians  
The probability that the answer you circled is correct is:  
50% 60% 70% 80% 90% 100%  

25. A fortnight is considered to be how many weeks?   a. three   b. two  
The probability that the answer you circled is correct is:  
50% 60% 70% 80% 90% 100%  

26. Which precious gem is red in color?   a. ruby   b. emerald  
The probability that the answer you circled is correct is:  
50% 60% 70% 80% 90% 100%  

27. Brazil’s "Carnival" festival is held in?   a. Rio de Janeiro   b. Brasilia  
The probability that the answer you circled is correct is:  
50% 60% 70% 80% 90% 100%  

The probability that the answer you circled is correct is:  
50% 60% 70% 80% 90% 100%  

119
29. What is the largest desert in the world?  a. Mojave  b. Sahara*

   The probability that the answer you circled is correct is:
   50% 60% 70% 80% 90% 100%

30. Abraham Lincoln was elected President in?  a. 1870  b. 1860*

   The probability that the answer you circled is correct is:
   50% 60% 70% 80% 90% 100%

31. The largest living mammal is the?  a. sperm whale  b. blue whale*

   The probability that the answer you circled is correct is:
   50% 60% 70% 80% 90% 100%

32. The Eiffel Tower is located in?  a. Munich  b. Paris*

   The probability that the answer you circled is correct is:
   50% 60% 70% 80% 90% 100%

33. Silk is considered to be a?  a. strong fiber*  b. weak fiber

   The probability that the answer you circled is correct is:
   50% 60% 70% 80% 90% 100%

34. Genghis Khan was from?  a. Mongolia*  b. India

   The probability that the answer you circled is correct is:
   50% 60% 70% 80% 90% 100%

35. Samuel Clemens was wrote under which name?  a. Mark Twain*  b. Herman Melville

   The probability that the answer you circled is correct is:
   50% 60% 70% 80% 90% 100%

36. The world’s leading producer of wine is?  a. France  b. Italy*

   The probability that the answer you circled is correct is:
   50% 60% 70% 80% 90% 100%


   The probability that the answer you circled is correct is:
   50% 60% 70% 80% 90% 100%

38. What is the name of the organ that produces insulin?  a. liver  b. pancreas*

   The probability that the answer you circled is correct is:
   50% 60% 70% 80% 90% 100%
39. The country with the largest gross national product is?
   a. Japan*  b. United States

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

40. What is the capital of Russia?  a. Moscow*  b. St. Petersburg

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

41. Which country is larger in area?  a. United States  b. Canada*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

42. A fear of floods is called?  a. kopophobia  b. antophobia*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

43. What is the most popular religious affiliation in the United States?
   a. Roman Catholic*  b. Methodist

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

44. Which pole is the coldest?  a. South Pole*  b. North Pole

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

45. Which of these Great Lakes is deepest?  a. Lake Michigan  b. Lake Superior*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

46. The inventor of the typewriter was?  a. William Burt*  b. Michael Faraday

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

47. World War II ended in?  a. 1955  b. 1945*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

121
48. The First Amendment (in the Bill of Rights) pertains to?
   a. freedom of speech and the press*  b. right to a trial by jury

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

49. Rickets is a disease resulting from a deficiency in?
   a. vitamin C  b. vitamin D*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

50. What kind of metal is associated with a 50th wedding anniversary?
   a. gold*  b. silver

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

51. The most poisonous element is?  a. uranium  b. plutonium*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

52. Which of these is the most popular airline route (total number of passengers)?

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

53. Who played Rhett Butler in "Gone With The Wind"?
   a. Douglas Fairbanks  b. Clark Gable*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

54. The American who was a member of the French Impressionist school was?
   a. Cassatt*  b. Bly

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

55. The mechanical adding machine was invented by?  a. George Book  b. Blaise Pascal*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

56. Which magazine has a larger circulation?  a. Time*  b. Newsweek

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%
57. Who was the first person to sign the Declaration of Independence?
   a. John Hancock*     b. James Madison

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

58. The Wright brothers flew their first plane in?
   a. North Carolina*     b. Delaware

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

59. The process of splitting an atom, thereby producing energy, is called?
   a. fusion     b. fission*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

60. The Russian novelist who wrote The Brothers Karamazov was?
   a. Tolstoy     b. Dostoyevsky*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

61. Erythrocytes are also known as?
   a. white blood cells     b. red blood cells*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

62. The founder of the Academy in Athens was?
   a. Plato*     b. Socrates

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

63. The world's most popular cigarette is?
   a. Marlboro*     b. Camel

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

64. What country is the leading producer of natural gas?
   a. U.S.     b. Russia*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

65. What is the name of an inability to sleep?
   a. asphyxia     b. insomnia*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%
66. The first radio station in the U.S. began broadcasting in?
   a. Boston, MA  b. Pittsburgh, PA*

   The probability that the answer you circled is correct is:
   50%   60%   70%   80%   90%   100%

67. The sixth Nobel Prize which was added in 1968 was for?
   a. Natural Science  b. Economic Science*

   The probability that the answer you circled is correct is:
   50%   60%   70%   80%   90%   100%

68. What state is known as the "Palmetto State"?
   a. South Carolina  b. Alabama

   The probability that the answer you circled is correct is:
   50%   60%   70%   80%   90%   100%

69. What is the name of the man who rode horseback in 1775 to warn that the British were coming?
   a. Paul Revere*  b. Benedict Arnold

   The probability that the answer you circled is correct is:
   50%   60%   70%   80%   90%   100%

70. Harvard University is located in?
   a. Durham, NC  b. Boston, MA*

   The probability that the answer you circled is correct is:
   50%   60%   70%   80%   90%   100%

71. Which actor never won an Oscar award?
   a. Jack Lemmon  b. Richard Burton*

   The probability that the answer you circled is correct is:
   50%   60%   70%   80%   90%   100%

72. The longest river in the world is the?  a. Nile*  b. Amazon

   The probability that the answer you circled is correct is:
   50%   60%   70%   80%   90%   100%


   The probability that the answer you circled is correct is:
   50%   60%   70%   80%   90%   100%

74. The city that has the oldest rapid transit system is?
   a. London*  b. Paris

   The probability that the answer you circled is correct is:
   50%   60%   70%   80%   90%   100%
75. The fruit containing the greater percentage of glucose (i.e., sugar) is?
a. grapefruit  b. papaya

The probability that the answer you circled is correct is:
50%  60%  70%  80%  90%  100%

76. The annual Cannes film festival is held in?
a. Norway  b. France

The probability that the answer you circled is correct is:
50%  60%  70%  80%  90%  100%

77. Bauxite is the principal ore of?
a. magnesium  b. aluminum

The probability that the answer you circled is correct is:
50%  60%  70%  80%  90%  100%

78. The gnathic index is a measurement taken on which part of the human body?
a. pelvis  b. jaw

The probability that the answer you circled is correct is:
50%  60%  70%  80%  90%  100%

79. The deepest ocean in the world is the?
a. Atlantic  b. Pacific

The probability that the answer you circled is correct is:
50%  60%  70%  80%  90%  100%

80. Who showed that lightning is electricity?
a. Ben Franklin  b. Eli Whitney

The probability that the answer you circled is correct is:
50%  60%  70%  80%  90%  100%

81. What is the name of river on which the city of Bonn is located?
a. Danube  b. Rhine

The probability that the answer you circled is correct is:
50%  60%  70%  80%  90%  100%

82. In what sport did American Eric Heiden win five gold medals in the 1980 Olympics?
a. speed skating  b. swimming

The probability that the answer you circled is correct is:
50%  60%  70%  80%  90%  100%

83. Which rock group "conquered" America in 1964?
a. Led Zeppelin  b. The Beatles

The probability that the answer you circled is correct is:
50%  60%  70%  80%  90%  100%
84. Who is known as the "father of history"?  
   a. Herodotus*  b. Pericles

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

85. Which country has the longest life expectancy?  
   a. Sweden  b. Japan*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

86. Whose name is associated with the theory of relativity?  
   a. Newton  b. Einstein*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

87. Which state is larger in area?  
   a. Vermont  b. Georgia*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

88. The first diesel locomotive was built in?  
   a. Germany*  b. England

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

89. Who painted the Sistine Chapel?  
   a. Botticelli  b. Michelangelo*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

90. England's Peasants' Revolt occurred in?  
   a. 1381*  b. 1373

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

91. The "Spirit of St. Louis" was the name of a plane made famous by?  
   a. Amelia Earhart  b. Charles Lindbergh*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

92. More medical doctors specialize in which field?  
   a. radiology  b. anesthesiology*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%
93. Who is the first person to set foot on the moon?  
   a. Neil Armstrong*  
   b. John Glenn  
   
   The probability that the answer you circled is correct is:  
   50%  60%  70%  80%  90%  100%  

94. What company is ranked higher on the Fortune 500 list of the largest businesses?  
   a. Proctor and Gamble  
   b. General Motors*  
   
   The probability that the answer you circled is correct is:  
   50%  60%  70%  80%  90%  100%  

95. The capital of Indiana is?  
   a. Indianapolis*  
   b. Terre Haute  
   
   The probability that the answer you circled is correct is:  
   50%  60%  70%  80%  90%  100%  

96. Which newspaper has the largest circulation in the U.S.?  
   a. New York Times  
   b. Wall Street Journal*  
   
   The probability that the answer you circled is correct is:  
   50%  60%  70%  80%  90%  100%  

97. What explorer thought he had discovered the "Fountain of Youth"?  
   a. Ponce de Leon*  
   b. Jacques Cartier  
   
   The probability that the answer you circled is correct is:  
   50%  60%  70%  80%  90%  100%  

98. Sudan has a border with the?  
   a. Persian Gulf  
   b. Red Sea*  
   
   The probability that the answer you circled is correct is:  
   50%  60%  70%  80%  90%  100%  

99. The youngest women's U.S. Open tennis champion was?  
   a. Tracy Austin*  
   b. Chris Evert  
   
   The probability that the answer you circled is correct is:  
   50%  60%  70%  80%  90%  100%  

100. Who wrote the novel Of Human Bondage?  
    a. Edward Bellamy  
    b. W. Somerset Maugham*  
    
    The probability that the answer you circled is correct is:  
    50%  60%  70%  80%  90%  100%  

101. Oncology is the study of?  
    a. viruses  
    b. cancer*  
    
    The probability that the answer you circled is correct is:  
    50%  60%  70%  80%  90%  100%  

127
102. Which king served as King of England for less than a year in 1483?
   a. Henry IV    b. Edward V*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

103. The blood vessels that take blood away from the heart are the?
   a. veins    b. arteries*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

104. Robert Capa was a famous 20th Century?    a. photographer*    b. film maker

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%


   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

106. The center of a tennis net is how high?    a. three feet*    b. four feet

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

107. The name "Craig" is Celtic for?    a. rock*    b. leader

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

108. Former President Jimmy Carter was from which state?
   a. Tennessee    b. Georgia*

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

109. Which geologic period occurred more recently?    a. devonian*    b. silurian

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%

110. Which country uses the rupee as its currency?    a. India*    b. Thailand

   The probability that the answer you circled is correct is:
   50%  60%  70%  80%  90%  100%
111. What woman has the most monuments erected in her honor?  a. the Virgin Mary  
b. Venus

The probability that the answer you circled is correct is:
50% 60% 70% 80% 90% 100%

112. What will be the first day of the 21st Century?  a. Jan 1, 2000  
b. Jan 1, 2001

The probability that the answer you circled is correct is:
50% 60% 70% 80% 90% 100%

113. The "rumba" dance originated in?  a. Cuba  
b. Argentina

The probability that the answer you circled is correct is:
50% 60% 70% 80% 90% 100%

114. Which gem has the simplest chemical composition?  a. diamond  
b. garnet

The probability that the answer you circled is correct is:
50% 60% 70% 80% 90% 100%

115. The starboard side of a ship is the?  a. left side  
b. right side

The probability that the answer you circled is correct is:
50% 60% 70% 80% 90% 100%

Note. The * indicates which of the two alternatives, a or b, is the correct response.

Participants in the cued conditions viewed the same items in the same order as participants in the uncued condition. For each item, one of the two alternatives had been randomly precircled. Cued participants received booklets containing alternatives which had been precircled in one of five randomly generated orders.

Participants in the cued conditions were given the following response format for each item:

The probability that the circled alternative is correct is:
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
### Social Knowledge Questionnaire (SKQ-1)

(Uncued Condition)

1. **A** -- I seldom let a critical comment pass without saying something in my defense. -- True  
   **B** -- I love the feeling of mist and fog.  
   
   A person who answers Item A as True would be likely to answer Item B as:  
   **True**  
   **False**  
   
   The probability that you are correct is:  
   50%  
   60%  
   70%  
   80%  
   90%  
   100%  

2. **A** -- When I am irritated, I let it be known. -- True  
   **B** -- I seldom let a critical comment pass without saying something in my defense.  
   
   A person who answers Item A as True would be likely to answer Item B as:  
   **True**  
   **False**  
   
   The probability that you are correct is:  
   50%  
   60%  
   70%  
   80%  
   90%  
   100%  

3. **A** -- Rarely, if ever, do I turn down a chance to have a good time. -- True  
   **B** -- I often say the first thing that comes into my head.  
   
   A person who answers Item A as True would be likely to answer Item B as:  
   **True**  
   **False**  
   
   The probability that you are correct is:  
   50%  
   60%  
   70%  
   80%  
   90%  
   100%  

4. **A** -- I would like to be alone and my own boss. -- True  
   **B** -- I spend a lot of time visiting friends.  
   
   A person who answers Item A as True would be likely to answer Item B as:  
   **True**  
   **False**  
   
   The probability that you are correct is:  
   50%  
   60%  
   70%  
   80%  
   90%  
   100%  

5. **A** -- I am more concerned with finishing what I start than the average person is. -- True  
   **B** -- People have always said that I was a hard worker.  
   
   A person who answers Item A as True would be likely to answer Item B as:  
   **True**  
   **False**  
   
   The probability that you are correct is:  
   50%  
   60%  
   70%  
   80%  
   90%  
   100%  

6. **A** -- I would like to be alone and my own boss. -- True  
   **B** -- I am more concerned with finishing what I start than the average person is.  
   
   A person who answers Item A as True would be likely to answer Item B as:  
   **True**  
   **False**  
   
   The probability that you are correct is:  
   50%  
   60%  
   70%  
   80%  
   90%  
   100%
7. A — To me, crossing the ocean in a sailboat would be a wonderful adventure. — True
B — Others think I am lively and witty.

A person who answers Item A as True would be likely to answer Item B as: True* False

The probability that you are correct is:

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8. A — I feel more worthwhile when I am helping someone who is disabled. — True
B — People have always said that I was a hard worker.

A person who answers Item A as True would be likely to answer Item B as: True False*

The probability that you are correct is:

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</table>

9. A — I’d like to be able to study the evolution of human knowledge. — True
B — I am always prepared to do what is expected of me.

A person who answers Item A as True would be likely to answer Item B as: True False*

The probability that you are correct is:

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10. A — My papers are always neat. — True
B — I am more concerned with finishing what I start than the average person is.

A person who answers Item A as True would be likely to answer Item B as: True False*

The probability that you are correct is:

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11. A — I’d like to be able to study the evolution of human knowledge. — True
B — I would like the type of work which would keep me constantly on the move.

A person who answers Item A as True would be likely to answer Item B as: True False*

The probability that you are correct is:

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12. A — I am quite good at keeping others in line. — True
B — I have often let others take credit for something I have done rather than be impolite about it.

A person who answers Item A as True would be likely to answer Item B as: True False*

The probability that you are correct is:

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13. A -- When I am irritated, I let it be known. -- True  
B -- I would like the type of work which would keep me constantly on the move.

A person who answers Item A as True would be likely to answer Item B as: True False

The probability that you are correct is:
50% 60% 70% 80% 90% 100%

14. A -- When I'm doing something, I often worry about what other people will think. -- True  
B -- I love the feeling of mist and fog.

A person who answers Item A as True would be likely to answer Item B as: True False

The probability that you are correct is:
50% 60% 70% 80% 90% 100%

15. A -- I seldom feel shy when I am the center of attention. -- True  
B -- I prefer to face problems with a friend at my side.

A person who answers Item A as True would be likely to answer Item B as: True False

The probability that you are correct is:
50% 60% 70% 80% 90% 100%

16. A -- I seldom feel shy when I am the center of attention. -- True  
B -- People have always said that I am a hard worker.

A person who answers Item A as True would be likely to answer Item B as: True False

The probability that you are correct is:
50% 60% 70% 80% 90% 100%

17. A -- My work is carefully planned and organized before it is begun. -- True  
B -- My papers are always neat.

A person who answers Item A as True would be likely to answer Item B as: True False

The probability that you are correct is:
50% 60% 70% 80% 90% 100%

18. A -- I feel most worthwhile when I am helping someone who is disabled. -- True  
B -- I would enjoy the feeling of riding to the top of an unfinished skyscraper in an open elevator.

A person who answers Item A as True would be likely to answer Item B as: True False

The probability that you are correct is:
50% 60% 70% 80% 90% 100%
19. A -- When I'm doing something, I often worry about what other people will think. -- True
   B -- Rarely, if ever, do I turn down a chance to have a good time.

   A person who answers Item A as True would be likely to answer Item B as: True   False*

   The probability that you are correct is:
   \[\begin{array}{cccccc}
   50\% & 60\% & 70\% & 80\% & 90\% & 100\% \\
   \end{array}\]

20. A -- My work is carefully planned and organized before it is begun. -- True
    B -- I would enjoy the feeling of riding to the top of an unfinished skyscraper in an open
elevator.

   A person who answers Item A as True would be likely to answer Item B as: True   False*

   The probability that you are correct is:
   \[\begin{array}{cccccc}
   50\% & 60\% & 70\% & 80\% & 90\% & 100\% \\
   \end{array}\]

21. A -- When I'm doing something I often worry about what other people will think. -- True
    B -- I am quite good at keeping other in line.

   A person who answers Item A as True would be likely to answer Item B as: True   False*

   The probability that you are correct is:
   \[\begin{array}{cccccc}
   50\% & 60\% & 70\% & 80\% & 90\% & 100\% \\
   \end{array}\]

22. A -- I prefer to face problems with a friend at my side. -- True
    B -- I spend a lot of time visiting friends.

   A person who answers Item A as True would be likely to answer Item B as: True*   False

   The probability that you are correct is:
   \[\begin{array}{cccccc}
   50\% & 60\% & 70\% & 80\% & 90\% & 100\% \\
   \end{array}\]

23. A -- I am always prepared to do what is expected of me. -- True
    B -- I am quite good at keeping others in line.

   A person who answers Item A as True would be likely to answer Item B as: True*   False

   The probability that you are correct is:
   \[\begin{array}{cccccc}
   50\% & 60\% & 70\% & 80\% & 90\% & 100\% \\
   \end{array}\]

24. A -- I often say the first thing that comes into my head. -- True
    B -- I have often let others take credit for something I have done rather than be impolite about it.

   A person who answers Item A as True would be likely to answer Item B as: True   False*

   The probability that you are correct is:
   \[\begin{array}{cccccc}
   50\% & 60\% & 70\% & 80\% & 90\% & 100\% \\
   \end{array}\]
25. A -- I enjoy doing things which challenge me.  -- True  
    B -- I am not very insistent in an argument.

A person who answers Item A as True would be likely to answer Item B as:  True  False

The probability that you are correct is:
50%  60%  70%  80%  90%  100%

26. A -- I feel very sorry for lonely people.  -- True  
    B -- I often get bored at having to concentrate on one thing at a time.

A person who answers Item A as True would be likely to answer Item B as:  True  False

The probability that you are correct is:
50%  60%  70%  80%  90%  100%

27. A -- I almost always accept a dare.  -- True  
    B -- I am quite good at keeping others in line.

A person who answers Item A as True would be likely to answer Item B as:  True  False

The probability that you are correct is:
50%  60%  70%  80%  90%  100%

28. A -- I am quite soft-spoken.  -- True  
    B -- Rarely, if ever, do I do anything reckless.

A person who answers Item A as True would be likely to answer Item B as:  True  False

The probability that you are correct is:
50%  60%  70%  80%  90%  100%

29. A -- I keep all of my important documents in one safe place.  -- True  
    B -- Practical jokes aren't funny to me at all.

A person who answers Item A as True would be likely to answer Item B as:  True  False

The probability that you are correct is:
50%  60%  70%  80%  90%  100%

30. A -- I give little thought to the impression I make on others.  -- True  
    B -- I have unlimited curiosity about many things.

A person who answers Item A as True would be likely to answer Item B as:  True  False

The probability that you are correct is:
50%  60%  70%  80%  90%  100%
31. A -- I like to read several books on one topic at a time. -- True
   B -- I spend a good deal of my time just having fun.

   A person who answers Item A as True would be likely to answer Item B as: True False

   The probability that you are correct is:
   50%  60%  70%  80%  90%  100%

32. A -- My greatest desire is to be independent. -- True
   B -- I admire free, spontaneous people.

   A person who answers Item A as True would be likely to answer Item B as: True False

   The probability that you are correct is:
   50%  60%  70%  80%  90%  100%

33. A -- If someone is in trouble, I try not to become involved. -- True
   B -- Inner satisfaction, rather than fame, is my goal in life.

   A person who answers Item A as True would be likely to answer Item B as: True False

   The probability that you are correct is:
   50%  60%  70%  80%  90%  100%

34. A -- I work hard because I have to, and for that reason only. -- True
   B -- I don’t like to leave anything unfinished.

   A person who answers Item A as True would be likely to answer Item B as: True False

   The probability that you are correct is:
   50%  60%  70%  80%  90%  100%

35. A -- I would rather be an accountant than a theoretical mathematician. -- True
   B -- I try to convince others to accept my political principles.

   A person who answers Item A as True would be likely to answer Item B as: True False

   The probability that you are correct is:
   50%  60%  70%  80%  90%  100%

36. A -- I don’t mind working while other people are having fun. -- True
   B -- I find that I sometimes forget to “look before I leap”.

   A person who answers Item A as True would be likely to answer Item B as: True False

   The probability that you are correct is:
   50%  60%  70%  80%  90%  100%
37. A -- I don’t especially care how I look when I go out. -- True
B -- Most people feel I act spontaneously.

A person who answers Item A as True would be likely to answer Item B as: True  False

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38. A -- I believe in giving friends lots of help and advice. -- True
B -- If I didn’t have to earn a living, I would spend most of my time just having fun.

A person who answers Item A as True would be likely to answer Item B as: True* False

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39. A -- I’d like to be able to study the evolution of human knowledge. -- True
B -- I spend a lot of time visiting friends.

A person who answers Item A as True would be likely to answer Item B as: True False*

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40. A -- I would never want to be a forest fighter. -- True
B -- With a little effort, I can "wrap most people around my little finger”.

A person who answers Item A as True would be likely to answer Item B as: True False*

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41. A -- I respect rules because they guide me. -- True
B -- I often quarrel with others.

A person who answers Item A as True would be likely to answer Item B as: True False*

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42. A -- Trying to please people is a waste of time. -- True
B -- I very much enjoy being complimented.

A person who answers Item A as True would be likely to answer Item B as: True False*

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136
43. A -- People’s tears tend to irritate me more than to arouse my sympathy. -- True  
     B -- Stupidity makes me angry.  

A person who answers Item A as True would be likely to answer Item B as: True*  False

The probability that you are correct is:
50%  60%  70%  80%  90%  100%

44. A -- I enjoy being neighborly. -- True  
     B -- I am usually the first to offer a helping hand when it is needed.  

A person who answers Item A as True would be likely to answer Item B as: True*  False

The probability that you are correct is:
50%  60%  70%  80%  90%  100%

45. A -- Most of my friends are curious-minded people. -- True  
     B -- It seems foolish of me to worry about my public image.  

A person who answers Item A as True would be likely to answer Item B as: True*  False

The probability that you are correct is:
50%  60%  70%  80%  90%  100%

46. A -- I seldom let a critical comment pass without saying something in my defense. -- True  
     B -- I have often let others take credit for something I have done rather than be impolite about it.  

A person who answers Item A as True would be likely to answer Item B as: True*  False

The probability that you are correct is:
50%  60%  70%  80%  90%  100%

47. A -- I only celebrate very special events. -- True  
     B -- I feel comfortable in a somewhat disorganized room.  

A person who answers Item A as True would be likely to answer Item B as: True*  False

The probability that you are correct is:
50%  60%  70%  80%  90%  100%

48. A -- I feel incapable of handling many situations. -- True  
     B -- I would not consider myself a success unless other people viewed me as such.  

A person who answers Item A as True would be likely to answer Item B as: True*  False

The probability that you are correct is:
50%  60%  70%  80%  90%  100%
49. A -- I am easily distracted when I am tired. -- True
    B -- If I have a problem, I like to work it out alone.

A person who answers Item A as True would be likely to answer Item B as: True False

The probability that you are correct is:
50% 60% 70% 80% 90% 100%

50. A -- When I am irritated, I let it be known. -- True
    B -- I have often let others take credit for something I have done rather than be impolite about it.

A person who answers Item A as True would be likely to answer Item B as: True False

The probability that you are correct is:
50% 60% 70% 80% 90% 100%

51. A -- I am sure people think that I don’t have a great deal of drive. -- True
    B -- I often make people angry by teasing them.

A person who answers Item A as True would be likely to answer Item B as: True False

The probability that you are correct is:
50% 60% 70% 80% 90% 100%

52. A -- I would prefer a quiet evening with friends to a loud party. -- True
    B -- Social approval is unimportant to me.

A person who answers Item A as True would be likely to answer Item B as: True False

The probability that you are correct is:
50% 60% 70% 80% 90% 100%

53. A -- Philosophical discussions are a waste of time. -- True
    B -- It seems that emotion has more influence over me than does calm meditation.

A person who answers Item A as True would be likely to answer Item B as: True False

The probability that you are correct is:
50% 60% 70% 80% 90% 100%

54. A -- I think it would be enjoyable and rather exciting to feel an earthquake. -- True
    B -- I like to be in the spotlight.

A person who answers Item A as True would be likely to answer Item B as: True False

The probability that you are correct is:
50% 60% 70% 80% 90% 100%
55. A -- I seek out positions of authority. -- True
B -- I often make people angry by teasing them.

A person who answers Item A as True would be likely to answer Item B as: True * False

The probability that you are correct is:
50% 60% 70% 80% 90% 100%

Note. The * indicates which of the two alternatives, True or False, is the correct response.

Participants in the cued conditions viewed the same items in the same order as participants in the uncued condition. For each item, one of the two alternatives had been randomly precircled. Cued participants received booklets containing alternatives which had been precircled in one of five randomly generated orders.

Participants in the cued conditions were given the following response format for each item:

The probability that the circled alternative is correct is:
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
APPENDIX C

Experiment 2 - Task Materials
General Knowledge Questionnaire - GKQ-2
(Generate Condition)

1. What is the last name of the man who assassinated President John F. Kennedy?  (Oswald)

The probability that the answer given above is correct is: (circle one)
0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

2. What is the last name of the man who invented the phonograph?  (Edison)

The probability that the answer given above is correct is: (circle one)
0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

3. In which city is Michelangelo’s statue of David located?  (Florence)

The probability that the answer given above is correct is: (circle one)
0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

4. In which sport does a rider on horseback hit a ball with his mallet?  (Polo)

The probability that the answer given above is correct is: (circle one)
0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

5. What island is the largest in the world, excluding Australia?  (Greenland)

The probability that the answer given above is correct is: (circle one)
0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

6. What is the last name of the European author who wrote "The Trial"?  (Kafka)

The probability that the answer given above is correct is: (circle one)
0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

7. What singer gained fame by singing hits such as "Lucky Star" and "Like A Virgin"?  (Madonna)

The probability that the answer given above is correct is: (circle one)
0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

8. What was the name of the supposedly unsinkable ship that sunk on its maiden voyage in 1912?  (Titanic)

The probability that the answer given above is correct is: (circle one)
0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

9. What is the name of the horse-like animal with black and white stripes?  (zebra)

The probability that the answer given above is correct is: (circle one)
0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%
10. In what European city is the Parthenon located? **(Athens)**

The probability that the answer given above is correct is: (circle one)

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11. Over which river is the George Washington Bridge? **(Hudson)**

The probability that the answer given above is correct is: (circle one)

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12. Which game uses a doubling cube? **(Backgammon)**

The probability that the answer given above is correct is: (circle one)

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13. What is the last name of the brothers who flew the first plane at Kitty Hawk? **(Wright)**

The probability that the answer given above is correct is: (circle one)

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14. What is the name of constellation that looks like a flying horse? **(Pegasus)**

The probability that the answer given above is correct is: (circle one)

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15. What actor played Superman for three movies in the 1980s? **(Chris Reeve)**

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16. What is the last name of second president of the United States? **(Adams)**

The probability that the answer given above is correct is: (circle one)

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17. What is the last name of the discoverer of the vaccination for smallpox? **(Jenner)**

The probability that the answer given above is correct is: (circle one)

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18. What is the longest river in South America? **(Amazon)**

The probability that the answer given above is correct is: (circle one)

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19. What is the name of the island-city believed since antiquity to have sunk into the ocean? 
   (Atlantis)

   The probability that the answer given above is correct is: (circle one)
   0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%

20. In which city does the Cotton Bowl take place? (Dallas)

   The probability that the answer given above is correct is: (circle one)
   0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%

21. Andy Griffith was the sheriff of what town on television's "Andy Griffith Show"? 
   (Mayberry)

   The probability that the answer given above is correct is: (circle one)
   0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%

22. What is the last name of the man who supposedly killed Jesse James? (Ford)

   The probability that the answer given above is correct is: (circle one)
   0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%

23. What is the word that means a nautical mile per hour? (knot)

   The probability that the answer given above is correct is: (circle one)
   0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%

24. What animal runs the fastest? (cheetah)

   The probability that the answer given above is correct is: (circle one)
   0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%

25. What is the name of the severe headache that returns periodically and often is accompanied by 
    nausea? (migraine)

   The probability that the answer given above is correct is: (circle one)
   0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%

26. What is the name of the desert people who wander instead of living in one place? 
    (nomads)

   The probability that the answer given above is correct is: (circle one)
   0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%

27. What is the last name of the most popular pin-up girl of World War II? 
    (Grable)

   The probability that the answer given above is correct is: (circle one)
   0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%
28. What is the name of Tarzan’s girlfriend? (Jane)

The probability that the answer given above is correct is: (circle one)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

29. In which type of ski race does the downhill skier make sharp turns around poles?
(slalom)

The probability that the answer given above is correct is: (circle one)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

30. What is the name of the actor who received the Best Actor award for the movie "On the Waterfront"? (Brando)

The probability that the answer given above is correct is: (circle one)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

31. What is the name for a cyclone that occurs over land? (tornado)

The probability that the answer given above is correct is: (circle one)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

32. What is the last name of the man who wrote the "Star Spangled Banner"?
(Key)

The probability that the answer given above is correct is: (circle one)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

33. Who hosted NBC’s Tonight Show for 30 years? (Carson)

The probability that the answer given above is correct is: (circle one)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

34. What is the name of the ship that carried Pilgrims to America in 1620?
(Mayflower)

The probability that the answer given above is correct is: (circle one)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

35. What was the name of the Union ironclad ship that fought the Confederate ironclad Merrimack? (Monitor)

The probability that the answer given above is correct is: (circle one)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

36. What is the last name of the man who showed lightning is electricity? (Franklin)

The probability that the answer given above is correct is: (circle one)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
37. What is the name of the singer who popularized a dance known as the "Twist"? (Chubby Checker)

   The probability that the answer given above is correct is: (circle one)
   0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

38. What is the name of the short pleated skirt worn by men in Scotland? (kilt)

   The probability that the answer given above is correct is: (circle one)
   0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

39. What is the last name of the first signer of the Declaration of Independence? (Hancock)

   The probability that the answer given above is correct is: (circle one)
   0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

40. What is the last name of the boxer who won the boxing title from John L. Sullivan? (Corbett)

   The probability that the answer given above is correct is: (circle one)
   0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

41. What is the capital of France? (Paris)

   The probability that the answer given above is correct is: (circle one)
   0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

42. What is the last name of the man who first studied genetic inheritance in plants? (Mendel)

   The probability that the answer given above is correct is: (circle one)
   0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

43. What is the last name of the singer who recorded "Heartbreak Hotel" and "All Shook Up"? (Presley)

   The probability that the answer given above is correct is: (circle one)
   0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

44. What is the last name of the actor known as "the man of a thousand faces"? (Chaney)

   The probability that the answer given above is correct is: (circle one)
   0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

45. What Italian city was destroyed when Mount Vesuvius erupted in 79 A.D.? (Pompeii)

   The probability that the answer given above is correct is: (circle one)
   0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%
46. What is the last name of the actor in the role of Perry Mason on television? 
   (Burr)

   The probability that the answer given above is correct is: (circle one)
   0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

47. What is the only liquid metal at room temperature? (mercury)

   The probability that the answer given above is correct is: (circle one)
   0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

48. What was the last name of the captain of the British ship "Bounty" when the mutiny occurred? 
   (Bligh)

   The probability that the answer given above is correct is: (circle one)
   0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

49. What is the longest river in Asia? (Yangtze)

   The probability that the answer given above is correct is: (circle one)
   0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

50. What is the name of the Chapel whose ceiling was painted by Michelangelo? 
   (Sistine)

   The probability that the answer given above is correct is: (circle one)
   0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

51. In addition to the Kentucky Derby and the Belmont Stakes, what horse race comprises the Triple Crown? (Preakness)

   The probability that the answer given above is correct is: (circle one)
   0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

52. For which country in the yen the monetary unit? (Japan)

   The probability that the answer given above is correct is: (circle one)
   0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

53. What is the name of the furry animal that attack cobra snakes? (mongoose)

   The probability that the answer given above is correct is: (circle one)
   0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

54. What is the last name of the Cuban leader that Fidel Castro overthrew? 
   (Batista)

   The probability that the answer given above is correct is: (circle one)
   0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
55. What is the name of the palace in London in which the monarch of England resides? (Buckingham)

The probability that the answer given above is correct is: (circle one)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

56. Of which country is Budapest the capital? (Hungary)

The probability that the answer given above is correct is: (circle one)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

57. What is the name of the large hairy spider that lives near bananas? (tarantula)

The probability that the answer given above is correct is: (circle one)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

58. What is the last name of the author who wrote "Brave New World"? (Huxley)

The probability that the answer given above is correct is: (circle one)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

59. In what ancient city were the "Hanging Gardens" located? (Babylon)

The probability that the answer given above is correct is: (circle one)
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60. What is the name of the Chinese religion founded by Lao Tse? (Taoism)

The probability that the answer given above is correct is: (circle one)
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61. What is the last name of the author who wrote "Romeo and Juliet"? (Shakespeare)

The probability that the answer given above is correct is: (circle one)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

62. Which precious gem is red in color? (ruby)

The probability that the answer given above is correct is: (circle one)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

63. What is the capital of Finland? (Helsinki)

The probability that the answer given above is correct is: (circle one)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

64. Who played Alex P. Keaton on TV's "Family Ties" series? (Michael J. Fox)

The probability that the answer given above is correct is: (circle one)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
65. Who is known as the "Father of Geometry"? (Euclid)____

The probability that the answer given above is correct is: (circle one)
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66. What kind of metal is associated with a 50th wedding anniversary? (gold)____

The probability that the answer given above is correct is: (circle one)
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67. What was the name of the Apollo lunar module that landed the first man on the moon? (Eagle)____

The probability that the answer given above is correct is: (circle one)
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

68. In what park is "Old Faithful" located? (Yellowstone)____

The probability that the answer given above is correct is: (circle one)
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69. Which sport is associated with Wimbledon? (tennis)____

The probability that the answer given above is correct is: (circle one)
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70. What is the capitol of Russia? (Moscow)____

The probability that the answer given above is correct is: (circle one)
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71. What was the name of King Arthur's sword? (Excaliber)____

The probability that the answer given above is correct is: (circle one)
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72. What is the name of the brightest star in the sky excluding the sun? (Sirius)____

The probability that the answer given above is correct is: (circle one)
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73. What is the name of the space shuttle that was tragically destroyed in a 1986 launch? (Challenger)____

The probability that the answer given above is correct is: (circle one)
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74. What is the last name of the composer who wrote the opera "Don Giovanni"?
   ___(Mozart)___

   The probability that the answer given above is correct is: (circle one)
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75. What is the name of Dorothy's dog in "The Wizard of Oz"? ___(Toto)___

   The probability that the answer given above is correct is: (circle one)
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76. What is the name of Socrates' most famous student? ___(Plato)___

   The probability that the answer given above is correct is: (circle one)
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77. What is the name of the largest desert on earth? ___(Sahara)___

   The probability that the answer given above is correct is: (circle one)
   0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

Note. Correct answers are presented in parentheses.

Participants in the evaluate condition were given the following response format after each question:

   The probability that the answer given above is correct is: (circle one)
   0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%
Social Knowledge Questionnaire - SKQ-2
(Generate Condition)

1. I don't especially care how I look when I go out.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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2. I am quite good at keeping others in line.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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3. I think it would be enjoyable and rather exciting to feel an earthquake.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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4. I believe in giving friends lots of help and advice.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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5. It seems that emotion has more influence over me than does calm meditation.

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6. Most people feel I act spontaneously.

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7. I would never want to be a forest fighter.

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8. I don’t mind working while other people are having fun.

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9. I seek out positions of authority.

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The probability that you are correct is: (circle one)

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10. I give little thought to the impression I make on others.

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11. I am usually the first to offer a helping hand when it is needed.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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12. I am more concerned with finishing what I start than the average person is.

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13. Social approval is unimportant to me.

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14. When I’m doing something, I often worry about what other people will think.

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15. Philosophical discussions are a waste of time.

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16. If I have a problem, I like to work it out alone.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

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17. To me, crossing the ocean in a sailboat would be a wonderful adventure.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

- 0%-10%  11%-20%  21%-30%  31%-40%  41%-50%  51%-60%  61%-70%  71%-80%  81%-90%  91%-100%

The probability that you are correct is: (circle one)

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18. I feel incapable of handling many situations.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

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19. I am always prepared to do what is expected of me.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

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20. It seems foolish of me to worry about my public image.

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The probability that you are correct is: (circle one)

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153
21. I keep all of my important documents in one safe place.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

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22. When I am irritated, I let it be known.

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The probability that you are correct is: (circle one)

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23. Rarely, if ever, do I turn down a chance to have a good time.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

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24. I would not consider myself a success unless other people viewed me as such.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

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25. I am easily distracted when I am tired.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

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26. I very much enjoy being complimented.

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27. I would rather be an accountant than a theoretical mathematician.

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28. I seldom let a critical comment pass without saying something in my defense.

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29. I almost always accept a dare.

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30. I enjoy being neighborly.

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31. I feel more worthwhile when I am helping someone who is disabled.

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The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

32. I often quarrel with others.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

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33. I often get bored at having to concentrate on one thing at a time.

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The probability that you are correct is: (circle one)

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34. Trying to please people is a waste of time.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

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35. I try to convince others to accept my political principles.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%
36. Rarely, if ever, do I do anything reckless.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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37. My work is carefully planned and organized before it is begun.

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38. With a little effort, I can "wrap most people around my little finger".

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39. I often say the first thing that comes into my head.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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40. I respect rules because they guide me.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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41. I would like to be alone and my own boss.

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42. I spend a lot of time visiting friends.

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43. I’d like to be able to study the evolution of human knowledge.

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44. Stupidity makes me angry.

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45. If someone is in trouble, I try not to become involved.

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158
46. I would like the type of work which would keep me constantly on the move.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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- 51%-60%  X  61%-70%  71%-80%  81%-90%  91%-100%

The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

47. I am sure people think that I don’t have a great deal of drive.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

- 0%-10%  11%-20%  X  21%-30%  31%-40%  41%-50%
- 51%-60%  61%-70%  71%-80%  81%-90%  X  91%-100%

The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

48. I feel very sorry for lonely people.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

- 0%-10%  11%-20%  21%-30%  31%-40%  41%-50%
- 51%-60%  61%-70%  71%-80%  X  81%-90%  X  91%-100%

The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

49. I enjoy doing things which challenge me.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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- 51%-60%  61%-70%  71%-80%  81%-90%  X  91%-100%

The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

50. I like to read several books on one topic at a time.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

- 0%-10%  11%-20%  X  21%-30%  31%-40%  41%-50%
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The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%
51. Others think I am lively and witty.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

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52. I have unlimited curiosity about many things.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

53. I work hard because I have to, and for that reason only.

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The probability that you are correct is: (circle one)

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54. My greatest desire is to be independent.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

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55. I love the feeling of mist and fog.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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- 81%-90%
- 91%-100%

The probability that you are correct is: (circle one)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
56. I am quite soft-spoken.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

57. Most of my friends are curious-minded people.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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<th>Percentage</th>
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The probability that you are correct is: (circle one)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

58. If I didn’t have to earn a living, I would spend most of my time just having fun.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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<th>Percentage</th>
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The probability that you are correct is: (circle one)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

59. I prefer to face problems with a friend at my side.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

60. I find that I sometimes forget to “look before I leap”.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

161
61. People’s tears tend to irritate me more than to arouse my sympathy.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

- 0%-10%  X  11%-20%  21%-30%  31%-40%  41%-50%
- 51%-60%  61%-70%  71%-80%  81%-90%  91%-100%

The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

62. I have often let others take credit for something I have done rather than be impolite about it.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

- 0%-10%  11%-20%  21%-30%  31%-40%  X  41%-50%
- 51%-60%  61%-70%  71%-80%  81%-90%  91%-100%

The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

63. I like to be in the spotlight.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

- 0%-10%  11%-20%  21%-30%  31%-40%  41%-50%
- X  51%-60%  61%-70%  71%-80%  81%-90%  91%-100%

The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

64. Inner satisfaction, rather than fame, is my goal in life.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

- 0%-10%  11%-20%  21%-30%  31%-40%  41%-50%
- 51%-60%  61%-70%  71%-80%  X  81%-90%  91%-100%

The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

65. I would prefer a quiet evening with friends to a loud party.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

- 0%-10%  11%-20%  21%-30%  31%-40%  41%-50%
- 51%-60%  X  61%-70%  71%-80%  81%-90%  91%-100%

The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

162
66. I often make people angry by teasing them.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

67. I seldom feel shy when I am the center of attention.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

68. I would enjoy the feeling of riding to the top of an unfinished skyscraper in an open elevator.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

69. I feel comfortable in a somewhat disorganized room.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

70. I only celebrate very special events.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

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The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%
71. My papers are always neat.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

- 0%-10%  11%-20%  21%-30%  31%-40%  41%-50%
- X  51%-60%  61%-70%  71%-80%  81%-90%  91%-100%

The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

72. I admire free, spontaneous people.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

- 0%-10%  11%-20%  21%-30%  31%-40%  41%-50%
- 51%-60%  61%-70%  71%-80%  81%-90%  X  91%-100%

The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

73. Practical jokes aren’t funny to me at all.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

- 0%-10%  X  11%-20%  21%-30%  31%-40%  41%-50%
- 51%-60%  61%-70%  71%-80%  81%-90%  91%-100%

The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

74. I spend a good deal of my time just having fun.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

- 0%-10%  X  11%-20%  21%-30%  31%-40%  41%-50%
- 51%-60%  61%-70%  71%-80%  81%-90%  91%-100%

The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

75. People have always said that I was a hard worker.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

- 0%-10%  11%-20%  21%-30%  31%-40%  41%-50%
- 51%-60%  61%-70%  X  71%-80%  81%-90%  91%-100%

The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%
76. I don’t like to leave anything unfinished.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

___ 0%-10%   ___ 11%-20%   ___ 21%-30%   ___ 31%-40%   ___ 41%-50%
___ 51%-60%   ___ 61%-70%   ___ 71%-80%   ___ 81%-90%   ___ 91%-100%

The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

77. I am not very insistent in an argument.

The percentage of OSU Introductory Psychology students who believe this statement accurately describes themselves is between: (check one)

___ 0%-10%   ___ 11%-20%   ___ 21%-30%   X  31%-40%   ___ 41%-50%
___ 51%-60%   ___ 61%-70%   ___ 71%-80%   ___ 81%-90%   ___ 91%-100%

The probability that you are correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

Note. Correct answers are presented as "X"s beside the specified range.

Participants in the evaluate condition were given the following response format after each question:

The probability that the answer given above is correct is: (circle one)

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%
APPENDIX D

Experiment 1 - Instructions To Participants
Uncued Condition

[As each subject arrives, instruct him/her]: Please sit at least one seat apart. Don't open the envelope until I describe the study.

[PAUSE]

Hi. I'm _____________. I'm a research assistant with the Psychology Department. This is Experiment _______. Please check your experiment cards to make sure that you have not participated in a PH-1 experiment, and pass the cards forward.

[PAUSE]

The study you are participating in today is part of an investigation concerned with knowledge about factual and social information. We are interested in finding out how much college students know about a variety of participants, as well as how confident they are about their knowledge.

You'll be asked to work on several different tasks today. In the first booklet you'll work on, there are two instruments we want you to complete. Pull out the pink sheet titled "Sample Sheet" from the envelope.

[Wait for participants to pull out the Sample Sheet]

This sheet contains one example of each of the two tasks you'll be completing in the first booklet. The first task is to answer a large set of general knowledge questions about a wide variety of topics, such as history, music, politics, and the like. Each item asks you to respond by selecting one of two possible answers. For each question, one of the two responses provided is the correct answer. Simply circle the answer that you believe is correct. Do not leave questions unanswered just because you are not sure of the answer. If a question is very difficult, simply make your best guess at what the answer is. Below each question, indicate the probability that your answer is correct by circling a percentage between 50% and 100%. Please note that you will always have at least a 50% chance of answering correctly because there are only two alternatives given. So, do not give probability estimates below 50%. Giving 50% as your probability of being correct means that you are completely unsure, and that your answer is a pure guess. On the other hand, giving 100% as your probability of being correct means that you are completely sure that your answer is correct. An answer of 70% means that your answer has a 70% chance of being correct.

The second example is representative of the other task we want you to complete. It concerns knowledge about people. Each item will have two statements, A and B, and you are to indicate whether it is likely that a person who answers "True" to Statement A would also answer "True" to Statement B. If it is likely that a person answering Statement A as "True" would also answer Statement B as True, circle "True". If it is unlikely that a person answering Statement A as "True" would also answer Statement B as "True", circle False. One of these choices is the correct answer.
Next to each question, indicate the probability that your answer is correct by circling a number between 50% and 100%. Once again, please note that you will always have at least a 50% chance of answering correctly because there are only two alternatives given. **Do not give probability estimates below 50%.**

As I stated before, giving 50% as your probability of being correct means that you are completely unsure and that your answer is a pure guess. On the other hand, giving 100% as your probability of being correct means that you are completely sure that your answer is correct.

You will work on Booklet One first. **Please take your time and work carefully on all of the items.** [Look at Ss] We want all of you to do as well as you can and you have more than enough time to complete all of the items. When you are finished with it, put it back in the envelope and take out the smaller, second booklet, labeled "Booklet Two". After reading the instructions on each questionnaire, mark your responses in an honest manner. At the end of the hour, I have some additional comments to make so if you finish Booklets 1 and 2 before the end of the hour, please begin reading the article included in your envelope and wait until everyone has finished.

On the cover sheets for both Booklet One and Booklet Two, write in your name, age, and sex. We need to have your names on the materials so that we can match the responses you gave today with the responses you gave at the beginning of the quarter. However, when we analyze the data, your name will be permanently erased from the materials and your responses will not be identifiable in any way.

If for some reason you feel you need to discontinue working on the materials, you should feel free to stop, and you can leave without penalty.

Are there any questions? [Pause]

You may pull Booklet One from the packet and begin.
Cued-Random Condition

[As each subject arrives, instruct him/her]: Please sit at least one seat apart. Don’t open the envelope until I describe the study.

[PAUSE]

Hi. I’m ________________. I’m a research assistant with the Psychology Department. This is Experiment ______. Please pass your experiment cards forward.

[PAUSE]

The study you are participating in today is part of an investigation concerned with knowledge about factual and social information. We are interested in finding out how much college students know about a variety of participants as well as how confident they are about their knowledge.

You’ll be asked to work on several different tasks today. In the first booklet you’ll work on, there are two instruments we want you to complete. Pull out the pink sheet titled "Sample Sheet" from the envelope.

[Wait for participants to pull out the Sample Sheet]

This sheet contains one example of each of the two tasks you’ll be completing in the first booklet. The first task consists of a large set of general knowledge questions about a wide variety of topics, such as history, music, politics, and the like. For each question, one of the two alternatives provided is the correct answer. Also for each question, one of the alternatives (A or B) has been randomly circled by flipping a coin between them. Do not attempt to answer the item. Simply read each item and try to determine the probability that the circled alternative is the correct answer. Below each question, indicate the probability that the circled alternative answer is correct by circling a percentage between 0% and 100%. An answer of 0% means that the circled alternative has absolutely no chance of being correct and an answer of 100% means that the circled answer has a 100% chance of being correct. Circling 50% means that the circled answer has an equal chance of being either correct or incorrect. Indicate probabilities for all of the items given to you. Do not leave probabilities unanswered just because an item is very difficult. Simply make your best guess at the probability that the circled alternative is correct. Do you understand what we want you to do? [Look for blank or confused expressions]

The second example is representative of the other task we want you to complete. Each item will have two statements, A and B, and you are to think about how likely it is that a person who answers “True” to Statement A would also answer "True" to Statement B. If it is likely that a person answering Statement A as "True" would also answer Statement B as "True", then "True" would be the correct answer. If it is unlikely that a person answering Statement A as "True" would also answer Statement B
as "True", then "False" would be the correct answer. One of these choices is the correct answer. 

[Pause] For each item, one of the alternatives (True or False) has been randomly circled by flipping a coin between them. Do not attempt to answer the item. Simply read each item and try to determine the probability that the randomly circled alternative is the correct answer. Below each question, indicate the probability that the circled alternative answer is correct by giving a percentage between 0% and 100%. An answer of 0% means that the circled alternative has no chance of being correct and an answer of 100% means that the circled alternative has a 100% chance of being correct. An answer of 50% means that the circled answer has an equal chance of being either correct or incorrect. Do you all understand? [Pause and look at participants] Once again, do not leave probabilities unanswered just because an item is very difficult. Simply make your best guess at the probability that the circled alternative is correct.

The first booklet is labeled "Booklet One". Take your time and work carefully on all of the items in the first booklet. When you are finished with it, put it back in the envelope and take out the smaller, second booklet, labeled "Booklet Two". After reading the instructions on each questionnaire, mark your responses in an honest and straightforward manner. At the end of the hour, I have some additional comments to make so if you finished before the end of the hour, please begin reading the article included in your envelope and wait until everyone has finished.

On the cover sheets for both Booklet One and Booklet Two, write in your name, age, and sex. We need to have your names on the materials so that we can match your responses today with the responses you gave at the beginning of the quarter. However, when we analyze the data, your name will be permanently erased from the materials and your responses will not be identifiable in any way.

If for some reason you feel you need to discontinue working on the materials, you should feel free to stop, and you can leave without penalty.
Cued-Peer Condition

[As each subject arrives, instruct him/her]: Please sit at least one seat apart. Don't open the envelope until I describe the study.

[PAUSE]

Hi. I'm __________________. I'm a research assistant with the Psychology Department. This is Experiment ______. Please pass your experiment cards forward.

[PAUSE]

The study you are participating in today is part of an investigation concerned with knowledge about factual and social information. We are interested in finding out how much college students know about a variety of participants, as well as how confident they are about their knowledge.

You'll be asked to work on several different tasks today. In the first booklet you'll work on, there are two instruments we want you to complete. Pull out the pink sheet title "Sample Sheet" from the envelope.

[Wait for participants to pull out the Sample Sheet]

This sheet contains one example of each of the two tasks you'll be completing in the first booklet. The first task consists of a large set of general knowledge questions about a wide variety of topics, such as history, music, politics, and the like. For each question, one of the two responses provided is the correct answer. Also for each question, one of the alternatives has already been answered by someone who participated in this study last quarter, so, do not attempt to answer the item. Simply read each item and try to determine the probability that the respondent's chosen alternative is the correct answer. Below each question, indicate the probability that the circled alternative answer is correct by giving a percentage between 0% and 100%. An answer of 0% means that the circled alternative has no chance of being correct and an answer of 100% means that the circled alternative has a 100% chance of being correct. An answer of 50% means that the circled alternative has an equal chance of being either correct or incorrect. Indicate probabilities for all of the items given to you. [Pause] Do not leave items unanswered just because an item is very difficult. Simply make your best guess at the probability that the respondent's answer is correct. Do you understand what we want you to do? [Look for blank or confused expressions]

The second example is representative of the other task we want you to complete. Each
item will have two statements, A and B, and you are to think about how likely it is that a person who answers "True" to Statement A would also answer "True" to Statement B. If it is likely that a person answering Statement A as "True" would also answer Statement B as "True", then "True" would be the correct answer. If it is unlikely that a person answering Statement A as "True" would also answer Statement B as "True", then "False" would be the correct answer. One of these choices is the correct answer. [Pause] For each question, one of the alternatives has already been answered by someone who participated in this study last quarter, so, do not attempt to answer the item. Simply read each item and try to determine the probability that the respondent's chosen alternative is the correct answer. Below each question, indicate the probability that the circled alternative answer is correct by giving a percentage between 0% and 100%. An answer of 0% means that the circled alternative has no chance of being correct and an answer of 100% means that the circled alternative has a 100% chance of being correct. An answer of 50% means that the circled answer has a 50% chance of being correct or incorrect. Indicate probabilities for all of the items given to you. Do you understand what we want you to do? [Pause and look at participants] Once again, do not leave items unanswered just because an item is very difficult. Simply make your best guess at the probability that the respondent's answer is correct.

The first booklet is labeled "Booklet One". Take your time and work carefully on all of the items in the first booklet. When you are finished with it, put it back in the envelope and take out the smaller, second booklet, labeled "Booklet Two" and after reading the instructions on each questionnaire, mark your responses in an honest and straightforward manner. At the end of the hour, I have some additional comments to make so if you finished before the end of the hour, please begin reading the article included in your envelope and wait until everyone has finished.

On the cover sheets for both Booklet One and Booklet Two, write in your name, age, and sex. We need to have your names on the materials so that we can match your responses today with the responses you gave at the beginning of the quarter. However, when we analyze the data, your name will be permanently erased from the materials and your responses will not be identifiable in any way.

If for some reason you feel you need to discontinue working on the materials, you should feel free to stop, and you can leave without penalty.
APPENDIX E

Experiment 2 - Instructions To Participants
Generate Condition

[As each subject arrives, instruct him/her]: Please sit at least one seat apart. Don’t open the envelope until I describe the study.

[PAUSE]

Hi. I’m ______________. I’m a research assistant with the Psychology Department. This is Experiment ______. Please pass your experiment cards forward.

[PAUSE]

The study you are participating in today is part of an investigation concerned with knowledge about factual and social information. We are interested in finding out how much college students know about a variety of participants as well as how confident they are about their knowledge.

You’ll be asked to work on several different tasks today. In the first booklet you’ll work on, there are two instruments we want you to complete. Pull out the pink sheet title "Sample Sheet" from the envelope.

[Wait for participants to pull out the Sample Sheet]

This sheet contains one example of each of the two tasks you’ll be completing in the first booklet. The first task is to answer a large set of general knowledge questions about a wide variety of topics, such as history, music, politics, and the like. Try to think of the best answer for each question. Please answer each question and do not leave questions unanswered just because you are not sure of the answer. If a question is very difficult, we strongly encourage you to make your best guess at what the answer is. Furthermore, do not be concerned with incorrectly spelling your answers. Below each question, indicate the probability that your answer is correct by using the probability scale. Circle the number that best indicates the probability that your answer is correct. You should circle 0 if you are completely certain that your answer is incorrect. You should circle 100 if you are completely certain that your answer is correct. Circling 50 indicates that you think your answer is equally likely to be right as it is wrong. If you circle 30, you are indicating that your answer has a 30 percent chance of being correct.

The second example is representative of the other task we want you to complete. It concerns knowledge about people. We want to you to indicate the percentage of Introductory Psychology students that you feel would endorse each item; that is, answer "True" of
themselves. Below each statement, indicate the percentage of students that you believe would answer "True" to the statement (that is, "Yes, this accurately describes me") by checking one of the ten (10) ranges provided (0-10 through 91-100). For example, you feel 25% of students would say that the sample item is True of themselves, you would check the 21-30% range. Answer all of the questions in the order given to you. Once again, do not leave questions unanswered just because you are not sure of the answer. And if a question is very difficult, simply make your best guess at what the answer is. Finally, indicate the probability that your answer is correct by giving a percentage between 0% and 100%.

You will work on Booklet One first. Please take your time and work carefully on all of the items. [Look at Ss] We want all of you to do as well as you can and you should have more than enough time to complete all of the items. When you are finished, put it back in the envelope and take out the smaller, second booklet, labeled "Booklet Two". After reading the instructions on each questionnaire, mark your responses in an honest manner. At the end of the hour, I have some additional comments to make so if you finish Booklets 1 and 2 before the end of the hour, please begin reading the article included in your envelope and wait until everyone has finished.

On the cover sheets for both Booklet One and Booklet Two, write in your name, age, and sex. We need to have your names on the materials so that we can match the responses you gave today with the responses you gave at the beginning of the quarter. However, when we analyze the data, your name will be permanently erased from the materials and your responses will not be identifiable in any way.

If for some reason you feel you need to discontinue working on the materials, you should feel free to stop, and you can leave without penalty.

Are there any questions? [Pause]

You may pull Booklet One from the packet and begin.
Evaluate Condition

[As each subject arrives, instruct him/her]: Please sit at least one seat apart. Don't open the envelope until I describe the study.

[PAUSE]

Hi. I'm __________________. I'm a research assistant with the Psychology Department. This is Experiment ______. Please check your experiment cards to make sure that you have not participated in another PH series experiment, and pass the cards forward.

[PAUSE]

The study you are participating in today is part of an investigation concerned with knowledge about factual and social information. We are interested in finding out how much college students know about a variety of participants as well as how confident they are about their knowledge.

You'll be asked to work on several different tasks today. In the first booklet you'll work on, there are two instruments we want you to complete. Pull out the pink sheet titled "Sample Sheet" from the envelope.

[Wait for participants to pull out the Sample Sheet]

This sheet contains one example of each of the two tasks you'll be completing in the first booklet. The first task consists of a large set of general knowledge questions about a wide variety of topics, such as history, music, politics, and the like. These questions were given to someone who participated in an experiment during a previous quarter. They were instructed to try to answer each question and were strongly encouraged to give their best guesses to questions for which they were unsure of the answer. Additionally, participants were told that incorrect spelling of their answers would not count against them. [PAUSE] Your participation in this experiment involves indicating your belief that their answers are correct. Below each question and its answer, indicate the probability that the answer given is the correct answer by using the scale provided. Do not attempt to write an answer to the question. Circle 0 if you are completely certain that the answer is incorrect. Circle 100 if you are completely certain that the answer is correct. Circling 50 indicates that you think the answer is equally likely to be right as it is wrong. If you circle 30, you are indicating that the answer has a 30 percent chance of being correct. Misspelled answers that are correct should be considered correct. Please note that if the participant did not provide an answer, we crossed out the item and you can go on to the next item. Answer indicate percentages for...
all of the items for which the previous respondent has provided an answer, no matter how difficult the question.

The second example is representative of the other task we want you to complete. It concerns knowledge about people. The objective is to estimate the percentage of Introductory Psychology students who would endorse each of the statements in this booklet (that is, answer "True" to the behavior or attitude expressed). Once again, these items were given to someone else to answer and that individual has indicated the percentage of students they believe would answer True to each of the items by marking one of the 10 ranges provided. We want to you to indicate the probability the marked range contains the correct percentage of Introductory Psychology students who would answer True to the item. Next to each question indicate the probability that the assigned range is correct by circling a percentage between 0% and 100%. Once again, circle 0 if you are completely certain that the answer is incorrect and circle 100 if you are completely certain that the answer is correct. Circling 50 indicates that you think the answer is equally likely to be right as it is wrong. Answer all of the items for which the previous respondent has provided an answer.

You will work on Booklet One first. Please take your time and work carefully on all of the items. [Look at Ss] We want all of you to do as well as you can and you have more than enough time to complete all of the items. When you are finished with it, put it back in the envelope and take out the smaller, second booklet, labeled "Booklet Two". After reading the instructions on each questionnaire, mark your responses in an honest manner. At the end of the hour, I have some additional comments to make so if you finish Booklets 1 and 2 before the end of the hour, please begin reading the article included in your envelope and wait until everyone has finished.

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Are there any questions? [Pause]

You may pull Booklet One from the packet and begin.