The Convergent and Discriminant Validity of the Need for Cognition Scale

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This article reports two studies that examined the convergent and discriminant validity of the Need for Cognition Scale (Cacioppo & Petty, 1982). Using samples of college students and prison inmates, need for cognition scores were found to be positively associated with measures of self-esteem, masculine sex role attitudes, absorption, and private self-consciousness. Modest negative associations between need for cognition and measures of public self-consciousness and social anxiety were also uncovered. Need for cognition scores were generally unrelated to measures of feminine and androgynous sex role attitudes, shyness, sociability, and loneliness. These findings add further evidence supporting the construct validity of the Need for Cognition Scale and expand our understanding of the construct of need for cognition.

Exploration of the role of thought in social interaction has been a focus of the field of social psychology for at least 25 years. During this time, some researchers have attempted to measure individual differences in thinking styles in order to explore potential relationships between the way one constructs social reality and resultant social behavior. Two prominent examples include Rotter's (1966) measurement of beliefs about internal versus external control of reinforcement and Fenigstein, Scheier, and Buss's (1975) scale developed to measure the tendency to be self-reflective or "self-conscious."

More recently, Cacioppo and Petty (1982), building on the earlier speculations of Cohen and his associates (Cohen, 1957; Cohen, Stotland, & Wolfe, 1955), developed an instrument to measure a more global aspect of thinking, which they labeled the need for cognition. It is defined as "the tendency for an individual to engage in and enjoy thinking" (Cacioppo & Petty, 1982, p. 116). In a series of validation studies, these authors have found that scores yielded by a 34-item scale they developed to measure the need for cognition related to other personal attributes of respondents in predictable ways. University faculty were found to obtain higher scores on the measure than did assembly line workers, as pre-
dicted. In addition, need for cognition scores were found to be unrelated to social desirability and test anxiety, positively correlated with intelligence, and only weakly related to cognitive style and dogmatism. Finally, as expected, subjects high in the need for cognition were found to prefer complex to simple tasks, whereas those low in need for cognition showed a greater preference for simple tasks.

One of Cacioppo and Petty’s more explicit goals in developing their measure was to explore the need for cognition as it relates to the evaluation of persuasive communications. Cacioppo, Petty, and Morris (1983) hypothesized and found that the dimension of need for cognition related to how much people responded to message quality in evaluating some persuasive communication. Individuals high in need for cognition were more apt to take message quality into account when evaluating a persuasive communication.

Recently, the need for cognition construct has enjoyed increased attention. For example, Leary, Sheppard, McNeil, Jenkins, and Barnes (1986) uncovered a positive relationship between need for cognition and objectivism, $r = .47$, $p < .01$, which they defined as “the tendency to base one’s judgments and beliefs on empirical information and rational considerations” (p. 32). Baugh and Mason (1986) demonstrated a relationship between need for cognition and time perception. Individuals high in need for cognition tended to underestimate the passage of time. Olson, Camp, and Fuller (1984) found a positive correlation between the need for cognition and measures of curiosity. Roseboro and Osberg (1986) determined that need for cognition scores outperform measures of academic motivation in the prediction of academic achievement. In addition, Heesacker (1985), in his positive review of the technical merits of the Need for Cognition Scale, cited some unpublished studies demonstrating the relationship of this construct to various other aspects of behavior.

It is the goal of the present research to examine some of the other potential correlates of the need for cognition in order to further extend our evidence for the convergent and discriminant validity of this scale (Campbell & Fiske, 1959). Thus, although an important aim of this research is to gather data concerning additional correlates of this scale, it is equally important to marshal additional evidence demonstrating that scores on it are distinct from those yielded by measures of theoretically unrelated constructs.

In two investigations involving three separate samples of subjects, several personality dimensions were examined for their relationships to need for cognition including: private and public self-consciousness; social anxiety; self-esteem; masculinity, femininity, and androgyny; shyness; sociability; loneliness; and absorption. These characteristics were chosen for study because: (a) they did not overlap with the qualities examined in Cacioppo and Petty’s (1982) original validational study or in the other recent investigations just cited and (b) they differed in their predicted associations with need for cognition.
The present research is thus an attempt to conduct an independent convergent and discriminant validation of the Need for Cognition Scale that also expands our understanding of the construct of need for cognition. In pursuing the latter aim, this research may serve to point out areas for further study of how need for cognition relates to other important aspects of behavior.

It is especially important to establish that the Need for Cognition Scale taps something distinct from private self-consciousness, which is conceived of as the tendency to attend to and reflect on one's own attitudes and feelings (Fenigstein et al., 1975). Thus, although the conceptual similarity of these two constructs argues for some relationship, a strong positive association between measures of these two characteristics should not be evident if they are truly distinct.

Need for cognition and self-esteem are expected, on the other hand, to show a positive association. This expectation follows from a conceptualization of need for cognition as an attribute that may lead to feelings of competence and worth. An individual who enjoys engaging in thinking, preferring complex tasks and "figuring things out," may come to feel a sense of control or mastery over his or her world and thereby develop a greater sense of self-satisfaction. This conceptualization of need for cognition is supported by Heppner, Reeder, and Larson's (1983) finding that people high in need for cognition are high in self-perceived personal problem-solving ability.

Absorption, "a state of total attention...entirely dedicated to experiencing and modeling the attentional object" (Tellegen & Atkinson, 1974, p. 274), which has been explored for its relationship to hypnotic susceptibility, may similarly show a positive association with need for cognition. Individuals more prone to engaging in thinking may be more skilled at regulating their attentional focus.

Characteristics that were included in this study but were not expected on any conceptual grounds to show a special association with need for cognition were public self-consciousness, social anxiety, shyness, sociability, and loneliness. The relationships between masculinity, femininity, androgyny, and need for cognition were also examined on an exploratory basis because no firm expectations concerning the nature of their relationships are advanced.

STUDY 1

Method

The initial sample of subjects included 237 undergraduates enrolled in introductory psychology classes. Approximately 8 weeks into the semester, subjects were administered the Need for Cognition Scale; the Self-Consciousness Scale; the Personal Attributes Questionnaire (Spence, Helmreich, & Stapp, 1974), a measure of sex role orientation; and two measures of self-esteem, the Self-Esteem
Scale (Rosenberg, 1965) and the Revised Janis-Field Scale (Eagly, 1967). The original 34-item version of the Need for Cognition Scale was used in the present research, although an 18-item short form has been developed (Cacioppo, Petty, & Kao, 1984). Two different measures of self-esteem were employed because this construct is not definitively operationalized by any single assessment procedure (Demo, 1985). The Self-Esteem Scale asks global evaluative questions, whereas the Revised Janis-Field Scale includes some more focused items tapping into more specific content areas. Although correlated, these measures do seem to assess different aspects of self-esteem (Shrauger & Osberg, 1980). The sequence in which subjects responded to the questionnaires was randomized to guard against possible order effects (Osberg, 1985).

Results and Discussion

Pearson correlations were computed as the primary means of data analysis in this investigation. The correlations of the Need for Cognition Scale with the other personality measures administered as a part of Study 1 are presented in Table 1. Represented are the correlates across all subjects as well as within each sex. Because not all subjects completed all measures, the sample size for each correlation is reported beneath it in parentheses.

As indicated in Table 1, the Need for Cognition Scale and the Private subscale of the Self-Consciousness Scale showed only a weak positive correlation, sup-

**TABLE 1**

<table>
<thead>
<tr>
<th></th>
<th>All Subjects</th>
<th>Males Only</th>
<th>Females Only</th>
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</thead>
<tbody>
<tr>
<td>Private Self-Consciousness</td>
<td>.11</td>
<td>.24*</td>
<td>.05</td>
</tr>
<tr>
<td>Public Self-Consciousness</td>
<td>-.21***</td>
<td>-.04</td>
<td>-.25***</td>
</tr>
<tr>
<td>Social Anxiety</td>
<td>-.30****</td>
<td>-.18</td>
<td>-.32****</td>
</tr>
<tr>
<td>Revised Janis-Field Scale</td>
<td>.44****</td>
<td>.48****</td>
<td>.41****</td>
</tr>
<tr>
<td>Self-Esteem Scale</td>
<td>.42****</td>
<td>.50****</td>
<td>.38****</td>
</tr>
<tr>
<td>PAQ-Masculinity</td>
<td>.30****</td>
<td>.43****</td>
<td>.37****</td>
</tr>
<tr>
<td>PAQ-Femininity</td>
<td>.08</td>
<td>.21</td>
<td>.06</td>
</tr>
<tr>
<td>PAQ-Androgyny</td>
<td>-.13</td>
<td>.19</td>
<td>-.22**</td>
</tr>
</tbody>
</table>

*p < .05. ***p < .03. ****p < .01. *****p < .001.
NEED FOR COGNITION

porting the conclusion that the newer measure does tap something distinctive. Interestingly, when examined separately by sex, the two measures appear to show no association among females, whereas a modest positive correlation was observed among males.

Public self-consciousness and social anxiety scores showed unexpected but significant negative correlations with scores on the Need for Cognition Scale across the total sample. This finding seemed to be accounted for largely by the female portion of the sample and appears to make intuitive sense. At least among female college students, being more prone to engage in thinking or reasoning is associated with being less attentive to, or less concerned with, social cues or requirements.

The strongest associations were found between need for cognition and the two measures of self-esteem. It appears that, as expected, need for cognition and self-esteem are positively correlated. This finding was obtained in the total sample and also within each sex. Although interpreting this finding is speculative, it may be the case that people who more carefully analyze their world feel more mastery over it and therefore evidence higher self-esteem.

Finally, need for cognition showed a significant positive association with the endorsement of masculine sex role attitudes. This was true across the total subject sample as well as separately within the sexes. Conversely, need for cognition appeared unrelated to holding feminine or androgynous sex role attitudes. These findings appear to fall in line with the traditional sex role stereotype that masculinity is associated with being more analytic.

Because a positive relationship exists between self-esteem and masculine sex role attitudes \( (r = .46, n = 154, p < .001 \text{ and } r = .52, n = 156, p < .001 \text{ for the Revised Janis-Field Scale and Self-Esteem Scale, respectively}) \), it is important to demonstrate that each characteristic's association with need for cognition is independent of the other. Partial correlations were thus computed. Although diminished, significant relationships between need for cognition and self-esteem (controlling for masculinity scores, \( r_{\text{partial}} = .29, n = 140, p < .001 \text{ and } r_{\text{partial}} = .31, n = 140, p < .001 \) for the Revised Janis-Field and Self-Esteem Scales, respectively) and need for cognition and masculinity (controlling for Revised Janis-Field Scale scores, \( r_{\text{partial}} = .27, n = 140, p < .01; \text{ controlling for Self-Esteem Scale scores, } r_{\text{partial}} = .24, n = 140, p < .01 \)) were still obtained.

The results of Study 1 have therefore provided general support for some of the expectations concerning the correlates of need for cognition advanced earlier. Need for cognition does appear to be a characteristic separable from private self-consciousness. It also evidences strong positive associations with self-esteem and masculine sex role attitudes. Modest but significant negative associations with public self-consciousness and social anxiety were also found.

One limitation of the findings of Study 1 concerns the relationship of need for cognition to self-esteem. It is a possibility that this relationship is specific to college settings where there are many rewards for exercising one's capacity to
think.\footnote{I am grateful to John Cacioppo for pointing out this possibility.} This concern about the generalizability of the findings of Study 1 was addressed in Study 2.

**STUDY 2**

The goals of Study 2 were to replicate some of the foregoing preliminary findings as well as to explore the relationship of need for cognition to other aspects of personality that influence interpersonal behavior. Because an important concern regarding the previous finding of a correlation between the dimensions of need for cognition and self-esteem is the possibility that these findings might be specific to college populations where rewards for cognitive mastery are abundant, a prison sample was used to test the generalizability of the relationship between these two dimensions. It was assumed that the prison environment would not emphasize cognitive mastery to the extent that the college environment would. In addition to reexamining the relationships of need for cognition to self-esteem and to private and public self-consciousness, the associations between the need for cognition and absorption, shyness, sociability, and loneliness were examined.

**Method**

The results of this study are based on findings using two samples of subjects. The first sample included 66 undergraduates (28 males, 38 females) who responded to several personality questionnaires during a class session to partially fulfill an introductory psychology course requirement. The second sample was composed of 52 inmates at the Attica Correctional Facility who volunteered their participation. The college sample was administered the Need for Cognition Scale, the Self-Esteem Scale, the Revised Janis-Field Scale, the Self-Consciousness Scale, and measures of shyness, sociability (Cheek & Buss, 1981), and loneliness (Russell, Peplau, & Cutrona, 1980). The inmate subjects were tested in groups ranging in size from 2 to 14 and responded only to the measures of need for cognition, self-esteem, and self-consciousness.

**Results and Discussion**

Once again, the data were analyzed by means of Pearson correlations. The major findings for the college and prison samples are displayed in Tables 2 and 3, respectively. Although the overall pattern of results generally replicated that of Study 1, some important differences did emerge. Contrary to the previous findings, a significant relationship between need for cognition and private self-
TABLE 2
Intercorrelation of Need for Cognition With Other Personality Measures in Study 2 College Sample (n = 66)

<table>
<thead>
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<th></th>
<th>All Subjects</th>
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<th>Females Only</th>
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<tr>
<td>Private Self-Consciousness</td>
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<td>.41**</td>
</tr>
<tr>
<td>(66)</td>
<td>(28)</td>
<td>(38)</td>
<td></td>
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<td>Public Self-Consciousness</td>
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<td>(66)</td>
<td>(28)</td>
<td>(38)</td>
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</tr>
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<td>-.39*</td>
</tr>
<tr>
<td>(66)</td>
<td>(28)</td>
<td>(38)</td>
<td></td>
</tr>
<tr>
<td>Revised Janis-Field Scale</td>
<td>.37**</td>
<td>.38*</td>
<td>.44**</td>
</tr>
<tr>
<td>(66)</td>
<td>(28)</td>
<td>(38)</td>
<td></td>
</tr>
<tr>
<td>Self-Esteem Scale</td>
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<td>.25</td>
<td>.25</td>
</tr>
<tr>
<td>(66)</td>
<td>(28)</td>
<td>(38)</td>
<td></td>
</tr>
<tr>
<td>Shyness</td>
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<td>.05</td>
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<tr>
<td>(66)</td>
<td>(28)</td>
<td>(38)</td>
<td></td>
</tr>
<tr>
<td>Sociability</td>
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<td>-.05</td>
</tr>
<tr>
<td>(66)</td>
<td>(28)</td>
<td>(38)</td>
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</tr>
<tr>
<td>Loneliness</td>
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<td>-.07</td>
<td>-.07</td>
</tr>
<tr>
<td>(66)</td>
<td>(28)</td>
<td>(38)</td>
<td></td>
</tr>
<tr>
<td>Absorption</td>
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<td>.51*</td>
<td>.32</td>
</tr>
<tr>
<td>(66)</td>
<td>(28)</td>
<td>(38)</td>
<td></td>
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</tbody>
</table>

*p < .05. **p < .01.

TABLE 3
Intercorrelation of Need for Cognition With Other Personality Measures in Study 2 Male Inmate Sample (n = 52)

<table>
<thead>
<tr>
<th></th>
<th>Private Self-Consciousness</th>
<th>Public Self-Consciousness</th>
<th>Social Anxiety</th>
<th>Revised Janis-Field Scale</th>
<th>Self-Esteem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need for Cognition</td>
<td>.34*</td>
<td>-.02</td>
<td>-.38**</td>
<td>.54**</td>
<td>.40**</td>
</tr>
<tr>
<td>(43)</td>
<td>(46)</td>
<td>(47)</td>
<td>(44)</td>
<td>(44)</td>
<td></td>
</tr>
</tbody>
</table>

*p < .05. **p < .01. ***p < .001.

consciousness was documented. Despite this, the sizes of the correlations do not suggest that these constructs are totally overlapping. Generally weaker and nonsignificant associations were found between need for cognition and public self-consciousness in the two samples examined here, although the negative relationship between need for cognition and social anxiety was replicated in both the college and prison samples. Apparently, greater preoccupation with cognitive activity is related to being less socially anxious.

Most important, the previous pattern of results suggesting a positive relationship between need for cognition and self-esteem was replicated. Within the college sample in Study 2, both self-esteem measures were positively correlated with need for cognition. However, these correlations reached conventional lev-
els of significance only for scores obtained using the Revised Janis–Field Scale, which is more content specific, measuring self-esteem in reference to performance in a variety of social contexts (e.g., talking before a group, meeting people, etc.), than the more global Self-Esteem Scale. Perhaps the key finding here was the replication of the need for cognition–self-esteem association within the prison inmate sample. In fact, the correlations obtained within this sample were stronger than those observed in the college sample. Thus, despite choosing a population wherein, if anything, these two characteristics might be expected to be dissociated, a strong relationship between them still was evident. These findings may have important implications for correctional psychologists in light of recent data suggesting that low self-esteem is an important self-perceived negative consequence of incarceration (Osberg, 1986).

Despite the replication of the positive association between need for cognition and self-esteem, it is important to reiterate that drawing conclusions about the direction of causality between these two constructs is highly speculative. Although the interpretation advanced here is that people who more carefully analyze their world feel more mastery and therefore evidence higher self-esteem, it is possible that if there is a causal relationship operating it may be in the opposite direction. That is, high self-esteem may be a condition that leads to an enhanced eagerness to approach difficult cognitive activities. Future research is needed to clarify the exact nature of this relationship.

With respect to the results bearing on the relationship of need for cognition to personal characteristics not examined in Study 1, only the dimension of absorption emerged as strongly associated (in a positive direction) with need for cognition. This finding confirms the hypothesis that these two dimensions are related. It seems apparent that individuals who are higher in need for cognition also possess the ability to devote their attentional processes exclusively to any ongoing intellectual task. Further, people who seek situations that involve thinking are likely to be able to become absorbed in their own thought processes.

GENERAL DISCUSSION

Taken together, the results of the present research allow for an expanded view of the construct of need for cognition. The findings presented not only shed light on additional correlates of this dimension, but they also appear to lend additional evidence supporting the construct validity of the instrument developed by Cacioppo and Petty (1982) to assess the need for cognition. In speculating about the potential future uses of this scale, it appears that assessment of need for cognition could be a fruitful endeavor for practitioners in the field of clinical psychology and also those interested in health psychology. Previous research has shown that, in the process of psychological assessment, certain types of individuals' self-assessments often prove more valid in predicting behavior than assessments de-
NEED FOR COGNITION

derived through more traditional means (Shrauger & Osberg, 1981). As suggested
by Osberg and Shrauger (1986), perhaps those high in need for cognition are
most apt to provide accurate self-judgments. In addition, varying levels of need
for cognition may well relate to preferences for different brands of psychother-
apy. People high in need for cognition may be the most apt to respond favorably
to insight-oriented, cognitive, or cognitive-behavioral approaches to therapy. If
the control/mastery explanation of the relationship between need for cognition
and self-esteem is correct, need for cognition should also correlate positively with
measures of locus of control and satisfaction with life (e.g., Diener, Emmons,
Larsen, & Griffin, 1985). Finally, health psychologists may perhaps find that in-
dividuals high in the need for cognition, because of their analytic nature, re-
spond more favorably and show more success in following complicated medical
regimens. These possibilities should continue to be explored in future research.

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