

Individual Differences in Need for Cognitive Closure

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This article introduces an individual-difference measure of the need for cognitive closure. As a dispositional construct, the need for cognitive closure is presently treated as a latent variable manifested through several different aspects, namely, desire for predictability, preference for order and structure, discomfort with ambiguity, decisiveness, and close-mindedness. This article presents psychometric work on the measure as well as several validation studies including (a) a "known-groups" discrimination between populations assumed to differ in their need for closure, (b) discriminant and convergent validation with respect to related personality measures, and (c) replication of effects obtained with situational inductions of the need for closure. The present findings suggest that the Need for Closure Scale is a reliable and valid instrument of considerable potential utility in future "motivated social cognition" research.

In this article, we describe a dimension of individual differences related to persons' motivation with respect to information processing and judgment. This motivation is referred to as the *need for cognitive closure*. As used here, the term *need* denotes a motivated tendency or a proclivity rather than a tissue deficit (for a similar use see Cacioppo & Petty, 1982). In previous theory and research (Kruglanski, 1989, 1990b; Kruglanski & Webster, 1991) "need for closure" was defined in terms of a desire for "an answer on a given topic, any answer, . . . compared to confusion and ambiguity" (Kruglanski, 1990b, p. 337). Such need was referred to as "nonspecific" and was contrasted with needs for "specific closure," that is, for particular (e.g., ego-protective or enhancing) answers to one's questions.

The need for (nonspecific) cognitive closure is assumed to be proportionate to the perceived benefits of possessing closure, the perceived costs of lacking closure, or both. For instance, closure affords predictability and a base for action. Thus, need for closure may arise where predictability or action seem important.

Similarly, the absence of closure may seem costly in various circumstances. Thus, under time pressure the absence of closure may imply the danger of missing an important deadline. Hence, time pressure should elevate the need for closure. A different cost of lacking closure may stem from perceived labors of further information processing. Where processing is seen as

effortful or otherwise costly, the need for closure may be, therefore, elevated. The need for closure may also be aroused when the judgmental task appears intrinsically dull and unattractive to the individual. Under such circumstances, closure may serve as a means of escaping an unpleasant (hence, a subjectively costly) activity.

Functionally opposite to the need for closure is the need to avoid closure. Those two needs are conceptualized as ends of a continuum ranging from strong strivings for closure to strong resistance of closure (Kruglanski, 1989). The need to avoid closure may stem from the perceived costs of possessing closure (e.g., envisioned penalties for an erroneous closure or perceived drawbacks of actions implied by closure) and the perceived benefits of lacking closure (e.g., immunity from possible criticism of any given closure).

The foregoing discussion suggests that need for closure may vary as a function of the situation. Indeed, situational inductions of need for closure have often been used in past research. Thus, Kruglanski and Freund (1983) found that elevating the need for closure through time pressure increased subjects' tendency to succumb to primacy effects in impression formation, render stereotypically driven judgments, and anchor judgments on initial estimates, all presumed to represent various effects of the need for closure on the judgmental process. Similar time-pressure effects were obtained in research by Freund, Kruglanski, and Schpitzajzen (1985), Heaton and Kruglanski (1991), Jamieson and Zanna (1989), and Sanbomatsu and Fazio (1990).

Webster (1993) manipulated the need for closure through varying the perceived attractiveness of an attitude-attribution task (Jones & Harris, 1967). When the task was perceived as unattractive (rendering extensive processing of relevant information costly), subjects were more likely to exhibit the "correspondence bias" than when the task was perceived as moderately attractive. Furthermore, when the task was perceived as highly attractive (reducing the perceived costs of information

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processing), the tendency to exhibit the correspondence bias was all but eliminated.

Heightened need for closure may dispose persons to react negatively to individuals who disrupt closure (e.g., to opinion deviates in a group). Indeed, Kruglanski and Webster (1991) found that in proximity to the decision deadline, or in the presence of environmental noise, both assumed to enhance the desirability of closure, group members tended more to reject opinion deviates, and to be more evaluatively positive toward conforming individuals who made special efforts on behalf of the consensual opinion.

Need for Closure as an Individual-Difference Dimension

Though need for closure may vary as a function of the situation, it may also represent a dimension of stable individual differences. This possibility is explored in the present research. The development of an individual-difference measure of the need for closure promises to offer three distinct advantages. First, it affords a desirable cross validation of our previous, situational, inductions of this motivation. Theoretically, individuals who score high on our personality measure of the need for closure should exhibit similar judgmental patterns to those put under need for closure through such situational manipulations as time pressure, environmental noise, or task attractiveness. A comparison of results from a personality measure and situational inductions represents a rigorous test of the need for closure construct.

Secondly, a development of an individual-difference measure allows a richer exploration of the various subjective manifestations of the need for closure. In previous studies, assessment of need for closure often amounted to "manipulation checks" designed to tap whether the intended experimental conditions (e.g., of task attractiveness or unpleasant noise) were created. Construction of a specific personality scale affords the opportunity for a more differentiated and complex conceptualization of ways in which the need for closure may be subjectively experienced. Beyond its methodological significance then, an individual-difference measure represents an opportunity for theoretical refinement.

Finally, an individual-difference measure of the need for cognitive closure enables the allocation of individual variance to a personality main effect and to the person-situation interaction, reducing error variance and enhancing the statistical power for assessing situational effects (cf. Eysenck, 1954).

In the following paragraphs, we describe a program of research in which an individual-difference measure of the need for closure is developed and tested. We first describe the item selection process and the basic psychometric work on the scale. Subsequently, we report on discriminant validation of the scale against alternative personality measures. We then report a validation of the scale through the "known-group" method and a series of experiments examining the relation of the scale scores to a variety of cognitive measures. This last set of studies attempts to replicate by means of our individual-difference measure a variety of previous findings obtained through situational inductions of the need for closure.

Study 1: Psychometric Properties of the Need for Closure Scale (NFCS)

In developing the NFCS, our initial item-generation process attempted to capture a broad sense of the construct. In accordance with the underlying theory (Kruglanski, 1989, 1990a, 1990b), we reasoned that the need for closure may express itself in various ways. Thus, we treated it as a latent variable manifest through different aspects (Carver, 1989). In particular, we identified five major such aspects assumed to broadly represent the universe of the construct and generated diverse items correspondent with those aspects.

Theoretically, persons with a high need for closure should desire definite order and structure in their lives and abhor unconstrained chaos and disorder. Accordingly, one subset of items we have selected assessed the extent to which individuals professed a preference for *order and structure* in their environment (e.g., "I think that having clear rules and order at work is essential for success"). We included in this group five items (namely, NFCS items 6, 10, 32, 33, and 35) from a previous instrument based on the lay epistemic theory (Kruglanski, 1989) referred to as the Personal Need for Structure Scale (M. Thompson, Naccarato, Parker, & Moskowitz, 1993). A second item subset pertained to the affective *discomfort* occasioned by *ambiguity*, that is, an absence of closure (e.g., "I'd rather know bad news than stay in a state of uncertainty"). We assumed that individuals with a high need for closure would experience aversive situations devoid of closure, in which their motivation is frustrated. A third subset of items tapped the urgency of striving for closure in judgment and decision making (e.g., "I usually make important decisions quickly and confidently"). We assumed that persons with a high need for closure would experience an urgent desire to reach closure, reflected in a *decisiveness* of their judgments and choices. Three items in this group (namely, NFCS items 15, 22, and 37) were taken from M. Thompson, Naccarato, Parker, and Moskowitz's (1993) Personal Fear of Invalidity Scale.

The fourth and fifth item subsets pertained to the desire for secure or stable knowledge, assumed to increase under high need for closure. A secure knowledge is one that can be relied on across circumstances and is unchallenged by exceptions or disagreements. Specifically, the fourth item subset tapped the trans-situational-consistency implication of secure knowledge, affording *predictability* to future contexts (e.g., "I don't like to go into a situation without knowing what I can expect from it"). This subset too contained several items (namely NFCS items 3, 5, and 19) from the Personal Need for Structure Scale (M. Thompson, Naccarato, Parker, & Moskowitz, 1993). The fifth subset tapped the *close-mindedness* that the desire for secure closure may induce, that is, an unwillingness to have one's knowledge confronted (hence, rendered insecure) by alternative opinions or inconsistent evidence (e.g., "I do not usually consult many different opinions before forming my own view").

Items in all the foregoing categories were intended to tap diverse assumed manifestations of the need for closure. As our theoretical interest was in this latent construct as such, its extent was assessed additively across the different item categories (Carver, 1989).

The 42 items composing the NFCS are presented in Krug-

lanski, Webster, and Klem (1993). Subjects indicate the extent to which they endorse each item by responding to a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Items 2, 5, 12, 15, 17, 18, 19, 20, 22, 24, 27, 28, 34, 37, 38, and 42 were designed to tap respondents' need to avoid closure; hence, these items are reverse scored. Items tapping the need for closure were negatively correlated with those tapping the need to avoid closure ($r = -.4566$, $n = 281$, $p < .01$), supporting a bipolar conceptualization of the need for closure construct (Kruglanski, 1989). Respondents' composite need for closure score is calculated by summing across each of the individual items (after reverse scoring the appropriate items).

The original form of the scale included a total of 57 items. On the basis of various item analyses, 15 of those items were dropped, leaving 42 items that make up the revised composite scale. The specific analyses, on which basis the original scale was revised, are described next.

The NFCS was administered to two independent, divergent groups of individuals. The first group, henceforth referred to as the *student sample*, consisted of psychology undergraduates. The second group, referred to as the *library sample*, consisted of adults at public libraries. Our purpose was to examine whether the psychometric properties of the scale replicate across different subject populations, and hence whether they may be considered of general utility.

Student Sample

Our student sample consisted of 146 female and 135 male undergraduates in an introductory psychology course at the University of Maryland at College Park. They participated in the study to fulfill a course requirement. These students completed the 57-item form of the NFCS at the start of a 14-week semester. Mean composite scale scores did not differ significantly for the two gender groups (M for men = 154.9; M for women = 153.94). To provide a means of assessing the test-retest reliability of the scale, a subgroup ($n = 49$) of the original sample returned after a 12–13-week interval and completed the (revised) scale a second time.

Item Selection

Exploratory factor analysis. As part of the item selection process, we began by conducting an exploratory factor analysis (SPSSX, varimax rotation). We expected greater interitem correlation within groups of items belonging to the same subset. Hence, a pattern of factor loadings consistent with a five-factor solution was expected. The scree plot presented in Figure 1 depicts the pattern of eigenvalues. As noted by the rapid drop in magnitude of eigenvalues after the fifth factor, five factors account for a substantial amount of the variance (38%) and the remaining factors appear less capable of accounting for variance. Furthermore, the configuration of loadings on each of the five factors supports the predicted pattern, such that loadings of most items were relatively high on the factor correspondent to the predicted subset and low or zero on the remaining factors. In accordance with the simple structure criterion (Thurstone, 1942), items loading .30 or higher on more than one factor were

eliminated. The resultant factor loadings are presented in Table 1.

Reliability. Cronbach's alpha was recalculated for the composite scale after removing each item in turn and dropping items that substantially reduced internal consistency. As noted earlier, 15 items in all were dropped from the original scale on the basis of this and the earlier item analyses.

Additional analyses indicated that the revised, 42-item scale possesses high internal consistency (Cronbach's $\alpha = .8405$) as well as high test-retest reliability ($r = .8611$). Cronbach's alpha for each of the item subsets ranged from .62 to .82 and are presented in Table 2.

Factor structure. Our theory predicts that the need for cognitive closure is a unitary latent variable, potentially manifest in various ways. Thus, we expected that a confirmatory factor analysis would support a single-factor model as the best fit to our data. However, because items were generated as part of five general domains, we expected greater interitem correlation within each of those facets. This expectation is consistent with results of the exploratory factor analysis. Hence, the model we hypothesized as providing the best fit to our data was a one-factor model that included a specification of correlated errors, that is, shared domain-specific variance within each of the five facets. In other words, we expected to find support for a model specifying a single coherent construct with five facets.

The hypothesized model was evaluated through a confirmatory factor analysis (through LISREL, SPSSX) where comparisons were made between the hypothesized model and models specifying alternative structural relationships among the scale items. In particular, we were interested in whether the hypothesized model would provide a better fit to the data than a model specifying five correlated or five orthogonal factors that corresponded to the five domains within which items were generated. Thus, model comparisons were conducted between the hypothesized model and each of the two five-factor models. Furthermore, we compared the hypothesized single-factor model with a single-factor model that did not include correlated errors within item domains.

Table 3 summarizes tests of goodness of fit for each of the four competing models. According to goodness-of-fit indexes, the hypothesized model seems to provide the best fit to the data among the four competing models. Results of chi-square difference tests between the competing models also indicate the hypothesized model provides a significantly better fit to the data than any of the other competing models. Taken together, those results support our hypothesis that the NFCS assesses a single latent variable, potentially manifest in various ways.

Library Sample

Our second group of respondents consisted of 77 male and 95 female adults recruited at three different public libraries in the suburban Maryland area and who volunteered to participate in the study. As with the first group, the mean composite scale scores did not differ significantly for the two gender groups (M for men = 156.78; M for women = 153.35). Subjects ranged in age from 24 to 56 years and were not affiliated with the University of Maryland. They all completed the 42-item revised form of the NFCS.

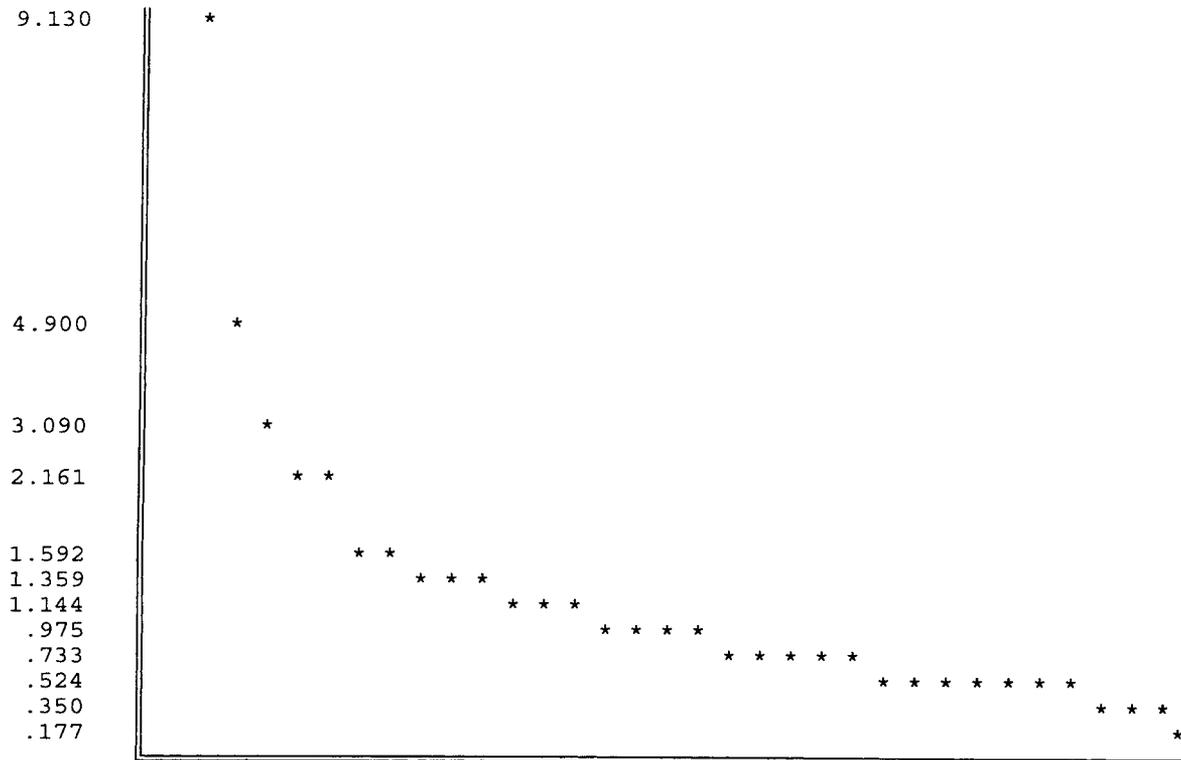


Figure 1. Scree plot for original Need for Closure Scale.

Reliability. Reliability analyses replicate the earlier finding that the revised, 42-item scale has high internal consistency (Cronbach's $\alpha = .8413$). Cronbach's alpha for each of the item subsets ranged from .63 to .80 and are presented in Table 2.

Factor structure. A confirmatory factor analysis (through LISREL, SPSSX) was performed on data from this group, and the model comparisons conducted for the student sample were repeated. The results replicate our earlier findings. According to goodness-of-fit indexes, the hypothesized single-factor model with correlated errors within domains seems to provide the best fit to the data among the four competing models. Results of chi-square difference tests between the competing models also indicate that the hypothesized model provides a significantly better fit to the data than any of the other competing models. Those results are presented in Table 3.

In summary, the results from our two samples of respondents suggest that the NFCS reliably assesses the need for closure construct. In addition, it seems to capture the single latent variable proposed by lay epistemic theory. Furthermore, the high test-retest reliability observed over a 12–13-week period indicates that the personality construct tapped by the scale is relatively stable. Finally, gender does not seem to affect one's score on the NFCS.

Study 2: The NFCS and Other Relevant Tests

The purpose of our second study was to examine the association between the NFCS and other relevant measures to ascer-

tain whether the NFCS taps a unique variable distinct from alternative relevant constructs. Essentially the latter constructs fell into three categories: (a) *overly inclusive* constructs that beside tapping aspects of the need for closure also tapped other unrelated variables, (b) *overly exclusive* constructs that tapped only some but not other aspects of the need for closure, and (c) constructs seemingly *unrelated* to the need for closure, yet whose pervasive relevance to various sociocognitive phenomena suggested the advisability of empirically probing their relations to this variable.

The overly inclusive category contained scales measuring authoritarianism, dogmatism, intolerance of ambiguity, cognitive complexity, and impulsivity. As we elaborate later, some aspects of those concepts are partially related to the need for closure, whereas other aspects are not.

The overly exclusive category contained scales measuring the need for structure and the fear of invalidity. Those scales, also derived from the lay epistemic theory, tap some aspects of the need for closure construct but not others. Finally, the category of unrelated constructs of general relevance included scales measuring social desirability, need for cognition, and intelligence.

Method

Subjects. One hundred fifty-seven male and female introductory psychology students at the University of Maryland participated in the study to fulfill a course requirement

Table 1
Factor Loadings for Need for Closure Scale:
Exploratory Factor Analysis

Items	Factor loadings (n = 281)
Factor 1: Preference for Order	
Item 33	.7462
Item 35	.7139
Item 32	.6712
Item 06	.6512
Item 20 (reversed)	.6358
Item 25	.5930
Item 01	.4810
Item 27 (reversed)	.4781
Item 42 (reversed)	.4388
Item 10	.3847
Factor 2: Preference for Predictability	
Item 19 (reversed)	.7244
Item 41	.6203
Item 25	.5712
Item 05 (reversed)	.5509
Item 26	.5286
Item 18 (reversed)	.5204
Item 11	.4638
Item 07	.3727
Factor 3: Decisiveness	
Item 22 (reversed)	.7828
Item 17 (reversed)	.7283
Item 16	.6771
Item 37 (reversed)	.6021
Item 13	.5343
Item 15 (reversed)	.5178
Item 12 (reversed)	.4806
Factor 4: Discomfort With Ambiguity	
Item 30	.5730
Item 36	.5493
Item 08	.5186
Item 31	.4672
Item 14	.4402
Item 29	.4341
Item 21	.3977
Item 39	.2262
Item 03	.5559
Factor 5: Closed-Mindedness	
Item 28 (reversed)	.7141
Item 24 (reversed)	.6207
Item 38 (reversed)	.6119
Item 40	.4940
Item 02 (reversed)	.4698
Item 34 (reversed)	.4486
Item 04	.2290
Item 09	.2020

Procedure. Ninety-seven subjects working in small groups that ranged in size from 3 to 12 subjects completed a packet of questionnaires including the NFCS; the *F* Scale, form 40 (Sanford, Adorno, Frenkel-Brunswik, & Levinson, 1950); the Dogmatism Scale, form E (Rokeach, 1960); the Social Desirability Scale (Crowne & Marlowe, 1964); the Need for Cognition Scale (Cacioppo & Petty, 1982); the In-

Table 2
Cronbach's Alpha for Need for Closure Scale and Facets

Facet	Group 1 (n = 281)	Group 2 (n = 172)
Total 42-item scale	.8405	.8413
Facet 1 (Structure)	.8216	.7725
Facet 2 (Predictability)	.7867	.7181
Facet 3 (Decisiveness)	.7001	.7882
Facet 4 (Ambiguity)	.6656	.8002
Facet 5 (Closed Mind)	.6152	.6166

tolerance of Ambiguity Scale (Eysenck, 1954); the Personal Need for Structure Scale (Neuberg & Newsom, 1993; M. Thompson, Naccarato, Parker, & Moskowitz, 1993); and the Personal Fear of Invalidation Scale (M. Thompson, Naccarato, Parker, & Moskowitz, 1993). Subjects received one of four possible packets, each including a different randomized order of tests.

A second group of tests was administered to 60 other subjects. First, the Quick Test (QT; Ammons & Ammons, 1962), which is a measure of intelligence, was administered to subjects individually. In addition, subjects worked in groups ranging from 1 to 10 persons and completed the Modified Bieri REP Test (Bieri, 1966), which assesses cognitive complexity, and the Control (vs. Impulsiveness) subscale of the Multidimensional Personality Questionnaire (Tellegen, 1982). The order in which subjects received each of the three tests was determined randomly. Correlations of each of the aforementioned measures with the NFCS are summarized in Table 4.

Table 3
Goodness-of-Fit Indexes (GFIs) and Chi-Square Difference Tests From Confirmatory Factor Analyses of the Need for Closure Scale

Test	Group 1 (n = 281)	Group 2 (n = 172)
Test of 1-factor model/correlated errors within facets		
χ^2	1,097.00	1,335.40
<i>df</i>	661	661
GFI	.868	.755
Test of 5-correlated factor model		
χ^2	1,731.85	1,813.85
<i>df</i>	809	809
GFI	.796	.670
Test of 5-orthogonal factor model		
χ^2	2,025.31	1,924.66
<i>df</i>	824	824
GFI	.761	.650
Test of 1-factor model/uncorrelated errors within facets		
χ^2	2,793.24	2,797.18
<i>df</i>	819	819
GFI	.177	.501
χ^2 difference for 1-factor model/correlated errors and 5-correlated factor model ^a	634.85	478.45
χ^2 difference for 1-factor model/correlated errors and 5-orthogonal factor model ^a	928.31	589.26
χ^2 difference for 1-factor model/correlated errors and 1-factor model/uncorrelated errors ^a	1,696.24	1,461.78

^a All χ^2 differences are significant at $p < .001$.

Table 4

Correlations of the Need for Closure Scale (NFCS) and Facets With Other Relevant Personality Measures

Personality measure	NFCS	Order	Predictability	Decisiveness	Ambiguity	Closed-Mindedness
Dogmatism Scale	.2870**	.3376**	.2621*	.2743*	.3268**	.1917
F Scale (authoritarianism)	.2660*	.2929**	.2312*	-.1158	.4028**	.0979
Intolerance of Ambiguity Scale	.2877**	.3553**	.2261*	-.2230	.3579**	.0841
Fear of Invalidity Scale	-.2109*	.0379	-.1406	-.3867**		-.1447
Need for Structure Scale	.2355**	.2763**	.2737**	-.2156	.1316	.0362
Need for Cognition Scale	-.2831*	-.3092**	-.1420	.1048	-.1291	-.3219**
Bieri REP Test (cognitive complexity)	-.2952*	-.3256*	-.1771	-.0750	-.1923	-.3061*
MPQ Control Subscale (impulsivity)	.2683	.2349	.1507	.2471	.1429	.1968
Social Desirability Scale	-.0181	.0713	.0326	.0522	-.1022	-.1887
Quick Test (intelligence)	-.1710	-.2747	-.1213	.0726	-.0248	-.0097

Note. Order = Preference for Order; Predictability = Preference for Predictability; Ambiguity = Discomfort With Ambiguity; MPQ = Multidimensional Personality Questionnaire.

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

Results

Authoritarianism and need for closure. Several aspects of authoritarianism as characterized by Sanford et al. (1950) appear to relate in part to the need for closure (e.g., rigidity, conventionalism, and intolerance of those who violate conventional norms), whereas other aspects of authoritarianism seem to be relatively unrelated to the need for closure (e.g., exaggerated assertion of power, superstition, projectivity, and preoccupation with sexual "goings-on"). We assumed that need for closure and authoritarianism represent distinct concepts encompassing a few common and many divergent elements. Consequently, we expected a low, positive correlation between scores on the NFCS and the F Scale.

As expected, the observed correlation between need for closure and authoritarianism was low and positive ($r = .2660$). Those results are given in Table 4. Our findings thus suggest that need for closure and authoritarianism are conceptually distinct.

Intolerance of ambiguity and need for closure. The concept of intolerance of ambiguity was first discussed by Frenkel-Brunswick (1949), and a scale was later created (Eysenck, 1954) to measure this construct. Conceptually, need for closure is related to one's tolerance for ambiguity because uncertainty threatens cognitive closure. The theoretical importance of this relation is evidenced by items generated as part of our general subset termed *discomfort with ambiguity*. However, the Intolerance of Ambiguity Scale (Eysenck, 1954) includes several items that seem to address issues other than intolerance of ambiguity (e.g., religious philosophy and perception of appropriate gender roles). Furthermore, we have hypothesized that discomfort with ambiguity is only one of several major surface manifestations of the need for closure. Consequently, we expected correlations between the NFCS and the Intolerance of Ambiguity Scale to be low and positive.

This expectation was confirmed: The correlation between the NFCS and the Intolerance of Ambiguity Scale was low and positive ($r = .2877$). As might be expected, items belonging to the Discomfort With Ambiguity subset exhibited a slightly higher

positive correlation with intolerance of ambiguity ($r = .3579$). The remaining subsets exhibited low positive or nonsignificant correlations with intolerance of ambiguity. Those results are summarized in Table 4. They seem to justify the conclusion that the NFCS and the Intolerance of Ambiguity Scale tap distinct phenomena.

Dogmatism and need for closure. The extent to which one's belief systems are open or closed has been termed *dogmatism* (Rokeach, 1960). A need for closure may foster closed belief systems because openness to conflicting information might threaten a state of closure. Hence, need for closure and dogmatism appear to be conceptually related. However, the instrument designed to measure dogmatism seems to tap several other constructs unrelated to the need for closure (e.g., the adequacy of self, power and status, and alienation of people). Hence, we expected low, positive correlations between the NFCS and the Dogmatism Scale. Indeed, as noted in Table 4, the correlation between the NFCS and dogmatism was low and positive ($r = .2870$), suggesting that the NFCS and the Dogmatism Scale assess distinct concepts.

Cognitive complexity and need for closure. Cognitive complexity has been described as a capacity to interpret social behavior in a multidimensional way or to use a greater number of dimensions in making judgments (Bieri, 1966; Kelly, 1955). One widely used measure of cognitive complexity is the Modified Bieri REP Test, which was developed on the basis of Kelly's (1955) theory of personal constructs. This test requires the respondent to judge 10 role types (persons relevant to the respondent) on 10 dimensions provided by the experimenter. The score for cognitive complexity is derived by comparing the rating given to each individual on a particular dimension with ratings given to that individual on the other dimensions.

We expected that cognitive complexity would be negatively related to need for closure because a simplistic cognitive system for interpreting the environment may provide secure or stable closure noncontingent on specific circumstances, and hence be general across situations. Conversely, the presence or absence of

cognitive complexity may depend on several factors other than the need for closure, that is, the enjoyment of thinking, an aesthetic value placed on complexity or simplicity, or the intellectual capability to develop complex cognitive structures (Bar-Tal, in press). Thus, the relationship between cognitive complexity and need for closure was expected to be small to moderate and negative. As expected, the correlation between the NFCS and the Modified Bieri REP Test was small and negative ($r = -.2952$).

Impulsivity and need for closure. Impulsivity has been referred to as a tendency to be impulsive, spontaneous, and careless as opposed to controlled, reflective, and cautious (Tellegen, 1982). As such, it may be positively related to need for closure. Specifically, a heightened need for closure may increase the immediacy with which closure is desired. This may increase the readiness to accept and act on the first idea that comes to mind, that is, the tendency to be impulsive. However, impulsivity is known to depend on several factors other than need for closure such as hyperactivity (e.g., Cantwell & Baker, 1992) or psychopathology (e.g., Bregman, Leckman & Ort, 1988; Ron, 1989). Consequently, we predicted a low, positive correlation between impulsivity and need for closure.

Impulsivity was measured using the Control (vs. Impulsiveness) Subscale of the Multidimensional Personality Questionnaire (Tellegen, 1982). As expected, a low, positive correlation between impulsivity and need for closure was found ($r = .2683$), suggesting the constructs are related but distinct.

Need for structure and need for closure. The Personal Need for Structure Scale (Neuberg & Newsom, 1993; M. Thompson, Naccarato, Parker, & Moskowitz, 1993) is an instrument designed to assess one's desire to structure and organize the environment. As noted earlier, like the NFCS, the questionnaire was designed on the basis of the lay epistemic theory (e.g., Kruglanski, 1989). The scale seems to tap two aspects of the need for closure construct: preference for order and preference for predictability. In fact, those two factors were identified by Mikulincer, Yinon, and Kabili (1991) as accounting for the preponderance of the variance in the Personal Need for Structure questionnaire. Consequently, as detailed above, we incorporated appropriate items from the Personal Need for Structure Scale when creating the Preference for Order and the Preference for Predictability subsets of the NFCS. We therefore expected a moderate positive correlation between the Personal Need for Structure Scale and both the Preference for Order subset and the Preference for Predictability subset of NFCS items. Furthermore, because these two preferences represent only two of the five major hypothesized surface manifestations of the need for closure construct, we expected a low, positive correlation between the Personal Need for Structure Scale and the composite NFCS.

These expectations were confirmed. As shown in Table 4, a low, positive correlation was obtained between the NFCS and the Personal Need for Structure Scale ($r = .2355$). Also as expected, the Preference for Predictability and Preference for Order subscales exhibited slightly higher, positive correlations with the Personal Need for Structure Scale ($r = .2763$ and $r = .2737$, respectively). The remaining subscales exhibited nonsignificant correlations with the Personal Need for Structure Scale. On the

basis of these data, it seems fair to conclude that the Need for Closure and Personal Need for Structure Scales, though partially related, tap distinct phenomena.

Fear of invalidity and need for closure. The Personal Fear of Invalidity Scale (M. Thompson, Naccarato, Parker, & Moskowitz, 1993) is an instrument designed to assess one's decision-making style and fear of making judgmental errors. Like the Personal Need for Structure Scale, this questionnaire was based on the lay epistemic theory. The scale seems to tap one specific aspect of the need for closure construct: indecisiveness. Accordingly, as noted earlier, we incorporated (in reverse-scored form) several items from the Personal Fear of Invalidity Scale when creating the Decisiveness subset of the NFCS. We, therefore, expected a moderate, negative correlation between the Personal Fear of Invalidity Scale and items composing the Decisiveness subset of the NFCS. However, because decisiveness represents only one of the hypothesized surface manifestations of the need for closure, we expected low, negative correlations between the Personal Fear of Invalidity Scale and the composite NFCS.

This prediction was supported. As shown in Table 4, a low, negative correlation was obtained between the NFCS and the Personal Fear of Invalidity Scale ($r = -.2109$). Also as expected, the Decisiveness subset of the NFCS exhibited a slightly higher, negative correlation with the Personal Fear of Invalidity Scale ($r = -.3867$). All other subsets exhibited nonsignificant correlations with the Personal Fear of Invalidity Scale. It thus appears that fear of invalidity and need for closure, though partially related, tap substantially different constructs.

Need for cognition and need for closure. The need for cognition refers to the extent to which one "engages in and enjoys thinking" (Cacioppo & Petty, 1982, p. 1). Individuals high (vs. low) in need for cognition, on the one hand, have been found to process information in a more elaborative, effortful manner (Cacioppo, Petty, & Morris, 1983). Hence, the need for cognition seems to exert a quantitative influence on cognitive activity (e.g., affecting how much thought one engages in). The need for closure, on the other hand, refers to a desired cognitive end state that might be obtained by either extensive processing or by limited processing. Hence, the relation between need for closure and need for cognition is not simple or straightforward. We expected that whenever possible, individuals high in the need for closure would engage in limited processing in pursuit of a quick closure. However, in other cases (e.g., when initial processing fails to provide closure), high (vs. low) need for closure individuals may engage in more extensive processing to reach the desired cognitive end state (Kruglanski, Peri, & Zakai, 1991). Consequently, we predicted a low, negative correlation between need for closure and need for cognition.

As shown in Table 4, the observed correlation between need for closure and need for cognition was indeed low and negative ($r = -.2831$). Similarly, the NFCS subsets exhibited low, negative or nonsignificant correlations with need for cognition. Hence, it seems unlikely that the NFCS and the Need for Cognition Scale reflect the same underlying construct.

Intelligence and need for closure. Because individuals high in need for closure often limit their information-processing activities, this may suggest a negative relationship between intelligence and need for closure. However, need for closure may

sometimes promote extensive information processing where closure is lacking. Thus, the relationship between need for closure and intelligence is not readily apparent. Our general expectation was that intelligence and need for closure would be largely uncorrelated.

To obtain an IQ score for each subject, the QT (Ammons & Ammons, 1962) was administered to subjects individually. This test has been shown to correlate very well with scores on the 1937 Stanford Binet as well as various forms of the Wechsler tests of intelligence. The QT requires the experimenter to present the respondent with a series of pictures and a set of words. The respondent is then asked to select the picture that is most relevant to each of the words. On this measure, higher IQ scores are indicated by a greater number of correct matches. As shown in Table 4, the observed correlation between intelligence and need for closure is low and negative ($r = -.1710$) but not significant.

Social desirability and need for closure. As expected, the NFCS and each of its subscales exhibited no correlation with the Crowne-Marlowe Social Desirability Scale.

Discussion

In summary, the NFCS appears to possess acceptable discriminant and convergent validity with respect to other relevant psychological measures. Admittedly, the set of constructs in reference to which we validated the NFCS is not exhaustive. For instance, for technical reasons (related to the scoring of projective measures) we have excluded here Sorrentino's "uncertainty orientation" (Sorrentino & Short, 1986). Both *certainty- and uncertainty-oriented* individuals strive to have cognitive closure; however, whereas the former do so through a closed-minded attitude toward new information, the latter enjoy the process of attaining closure through open-mindedly coping with informational novelty and inconsistency. On balance, one might expect a low, negative correlation between the need for closure and uncertainty orientation. This particular prediction could be investigated in subsequent research.

The need for closure did exhibit the predicted pattern of relations with a number of other relevant measures. Specifically, it manifested low to moderate association with authoritarianism, intolerance of ambiguity, dogmatism, need for cognition, cognitive complexity, impulsivity, need for structure, and fear of invalidity, while retaining considerable distinctiveness from those various constructs. Finally, as expected, it did not appear to be related to respondents' intelligence or their concerns regarding social desirability. These findings attest to the construct validity of our scale.

Study 3: The NFCS and Known-Groups Validity

To test the known-groups validity of the NFCS we sought to identify groups of individuals assumed a priori to differ on their need for closure. In doing so, we used a theory of careers proposed by Holland (1985) and designed to explain vocational behavior. His work provides evidence that particular personality variables predict vocational choice. The six personality "types" relevant to Holland's theory include Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. The two types

most relevant to the need for closure construct are the Conventional and Artistic types. Holland's conceptualization implies that these two personality types vary considerably in their need for closure. Specifically, the Conventional type is described as preferring explicit, ordered, and structured tasks; and as having aversion to ambiguous, free, exploratory, or unstructured ones. This type is described by the adjectives inhibited, conforming, unimaginative, inflexible, and orderly, all of which depict a personality likely to be characterized by a relatively high degree of the need for closure.

In contrast, the Artistic type is described as preferring ambiguous, free, and unstructured activities and as holding an aversion to explicit, structured, and ordered activities. It is described by the adjectives disorderly, nonconforming, original, and open. Holland's description of the Artistic personality type portrays a personality likely to be characterized by a low dispositional need for closure.

For the present study we selected advanced students who had chosen a career in either the Conventional or the Artistic domain. Specifically, we recruited advanced accounting majors (representing the Conventional type in Holland's classification) and advanced studio-art majors (representing the Artistic type) to constitute our two comparison groups. On the basis of our earlier discussion, we expected that, overall, accounting majors would attain higher scores on the NFCS than would studio-art majors. Additionally, we expected each individual item of the NFCS to significantly discriminate between the two groups of subjects.

Method

Subjects. Sixty-three advanced accounting majors and fifty-one advanced studio-art majors at the University of Maryland volunteered to participate in our study.

Procedure. The experimenter visited classes taken exclusively by either advanced accounting or advanced studio-art majors and administered the NFCS as part of a lesson on personality and career choice. She then delivered a brief lecture describing Holland's work on personality and vocational choice. Finally, she explained the hypotheses of the current study, answered any questions students had, and thanked them for their participation.

Results and Discussion

Simple one-way analyses of variance (ANOVAs) were conducted on each item to ascertain whether it discriminated between the accounting majors and the studio-art majors. The results of these tests indicated that on all items, accounting majors exhibited substantially higher scores than did studio-art majors ($p < .05$ in all cases). Additionally, on the average, composite NFCS scores were higher for accounting ($M = 173.3$) versus studio-art majors ($M = 139.22$), $F(1, 112) = 101.09$, $p < .001$.

In summary, those individuals assumed to possess a high dispositional need for closure, namely accounting majors, in fact exhibited significantly higher scores on the separate NFCS items and obtained higher composite NFCS scores than individuals assumed to possess a low dispositional need for closure, namely studio-art majors. These findings demonstrate the ability of the NFCS to discriminate between groups of individuals

for whom a difference in dispositional need for closure may be plausibly assumed to exist.

The theoretical analysis on which the present work is based assumes that the need for closure both constitutes a dimension of individual differences and is capable of being induced situationally. Past work indeed demonstrated several theoretically predicted effects of the need for closure with diverse situational manipulations assumed to instill this particular motivation, for example, time pressure (Freund et al., 1985; Heaton & Kruglanski, 1991; Jamieson & Zanna, 1989; Kruglanski & Freund, 1983; Sanbomatsu & Fazio, 1990), environmental noise (Kruglanski & Webster, 1991), or task attractiveness (Webster, 1993). It is, therefore, of particular importance to show that our individual-difference measure of the need for closure is capable of replicating those various effects. We devote the last portion of the present article to studies designed to carry out such replications.

Study 4: Need for Closure and Primacy Effects in Impression Formation

The tendency to base one's impressions of a target more on early than on late information has been referred to as an impression primacy effect (Asch, 1946). Primacy effects represent an early closure and relative insensitivity to subsequent information (Kruglanski, 1989, 1990b). Individuals motivated to attain cognitive closure should be more likely to use early information in forming judgments compared with individuals motivated to avoid closure, who, in turn, should be more likely to consider subsequent, possibly conflicting information. The results of past research support this notion. Manipulating the need for closure through time pressure enhanced the primacy effects (Heaton & Kruglanski, 1991; Kruglanski & Freund, 1983), whereas manipulating the need to avoid closure through evaluation apprehension reduced the primacy effects (Kruglanski & Freund, 1983). On the basis of these findings, we hypothesized that primacy effects should be augmented for individuals with a high (vs. low) dispositional need for closure.

Overview and Design

To test this hypothesis, subjects previously classified as either high or low on a dispositional need for closure formed an impression of a job candidate and judged the likelihood of his success on a job for which he had applied. This judgment was to be made on the basis of a tape recording containing a mix of positive and negative information about the candidate. Half the subjects heard positive information first, followed by negative information, and the remaining subjects heard the same information in a reverse order.

The design of the experiment was a 2×2 factorial with two levels of information sequence (positive-negative or negative-positive) and two levels of dispositional need for closure (high need for closure or low need for closure). Our main prediction was that subjects with high (vs. low) dispositional need for closure would rate the job candidate more positively after hearing the positive-negative sequence and more negatively after hearing the negative-positive sequence.

Method

Pretest. One hundred seventy-two male and female students in an introductory psychology course at the University of Maryland completed the NFCS as part of a course requirement. Respondents scoring in the upper third of this distribution (score exceeding 166) were classified as high in dispositional need for closure, and those scoring in the lower third of the distribution (score below 148) were classified as low in this need.

Subjects. Twenty-nine students previously classified as high and 30 previously classified as low on the need for closure volunteered to participate in the study to fulfill a course requirement.

Procedure. The experimental procedure was highly similar to that of Heaton and Kruglanski (1991). On arrival at the laboratory, subjects were randomly assigned to the information sequence conditions. They were all told that the study investigates the hiring process in organizations. Furthermore, they were advised that they would be estimating a job candidate's future potential as a company president on the basis of different types of information about this person. To begin with, they would be indicating the type and amount of information they would like to receive about the candidate before making their judgment. To do so, subjects were given an "information request sheet" that listed several categories of information about the candidate and the number of pages that each informational category included (e.g., personal statement, 4 pages; sample of work, 8 pages). Subjects were asked to check off each item they would like to examine. They then were asked to estimate how confident they would be in their judgment of the candidate given the information they had requested. They also estimated the amount of time it would take them to form their judgment.

After completing this part of the procedure, the experimenter explained to subjects that in business organizations employers are often compelled to make hiring decisions on the basis of limited knowledge about the candidate. To reflect this reality, in this experiment the information would also be limited. Specifically, rather than receiving the information they had requested earlier, they would be listening to a tape recording in which some of the candidate's recent business experiences were summarized. Subjects were told at this point that after hearing the tape they would be judging the candidate's likely success as a company president.

Manipulation of the information sequence. The tape-recorded summary of the candidate, "Phil's" business experiences, contained two segments, one with positive and the other with negative information. The two parts were presented in a naturally flowing combined sequence. The positive information described Phil as having concern for the welfare of his employees, exhibiting consistent productivity, behaving in a courteous and sensitive manner toward his clients, and possessing important leadership qualities. The negative information described Phil as failing to persuade an important client to hire his company, being inattentive to some employee problems, failing to troubleshoot problems effectively, and lacking in personal organization. Half the subjects heard the positive segment first followed by the negative segment (positive-negative sequence) and the remaining subjects heard the information in the reverse order (negative-positive sequence).

Following the tape-recorded presentation, subjects were asked to estimate Phil's future success as a company president on a 15-point Likert scale ranging from 0 (*very successful*) to 14 (*very unsuccessful*). They also rated the likelihood they would hire Phil on a 15-point scale ranging from 0 (*highly unlikely*) to 15 (*very likely*). Finally, they rated the candidate on several personality dimensions including honesty, reliability, pleasantness, decisiveness, and organization. They also rated the extent to which they perceived him as hardworking, qualified, and ethical. In all cases, the ratings were made on 15-point Likert scales ranging from 0 (*not at all*) to 14 (*extremely*). Following the completion of all measures subjects were debriefed and thanked for their participation.

Results and Discussion

The judgment processes. We expected individuals possessing high (vs. low) dispositional need for closure to request less employment-relevant information before forming their judgment of the candidate, to estimate that they would be more confident in their decision, and to require a briefer amount of time to form a judgment. A 2×2 (Need for Closure \times Information Sequence) ANOVA yielded a significant main effect of need for closure on amount of information requested, $F(1, 57) = 36.836$, $p < .001$. As expected, subjects classified as high in the need for closure requested fewer pages of information ($M = 21.38$) than did subjects classified as low in this need ($M = 32.20$). Additionally, there was a significant main effect of need for closure on subjective confidence, $F(1, 57) = 90.275$, $p < .001$. Specifically, subjects classified as high in the need for closure expected to be more confident in their judgments ($M = 12.93$) than were subjects classified as low in the need for closure ($M = 9.77$). Finally, there was a significant main effect of need for closure on estimated time required to reach a judgment, $F(1, 57) = 57.609$, $p < .001$. As predicted, subjects estimated needing fewer minutes to form a judgment when classified as high ($M = 4.79$) versus low ($M = 10.70$) on the need for closure. No other effects were significant.

Ratings of the job candidate. Our critical prediction was that subjects classified as high (vs. low) in the dispositional need for closure would rate the job candidate more positively after hearing the positive-negative sequence and more negatively after hearing the negative-positive sequence.

To test this prediction, a 2×2 ANOVA was performed on ratings of the candidate's likely success with two levels of dispositional need for closure (high need for closure or low need for closure) and two levels of information sequence (positive-negative or negative-positive) as the independent variables. The interaction between these two variables was significant, $F(1, 52) = 22.301$, $p < .001$. Planned comparisons indicated, as expected, that in the positive-negative information sequence condition success ratings were higher in the high ($M = 10.77$) versus low ($M = 6.54$) need for closure group, $F(1, 24) = 15.553$, $p < .001$. Also as expected, the opposite pattern was manifest in the negative-positive information sequence where success ratings were lower in the high ($M = 6.13$) versus the low ($M = 8.21$) need for closure group, $F(1, 28) = 6.333$, $p < .05$.

A similar ANOVA was conducted on subjects' ratings of the probability they would hire Phil. The pattern of results paralleled exactly the predicted success ratings. Specifically, the critical two-way interaction was significant, $F(1, 52) = 34.089$, $p < .001$. Additional planned comparisons revealed, as expected, that in the positive-negative information sequence condition subjects' ratings of the likelihood they would hire Phil were higher in the high ($M = 10.69$) versus the low ($M = 6.69$) need for closure group, $F(1, 24) = 11.166$, $p < .01$. Also as expected, the opposite trend emerged in the negative-positive information sequence where ratings of hiring likelihood were lower in the high ($M = 5.63$) versus the low ($M = 9.57$) need for closure group, $F(1, 28) = 29.287$, $p < .001$.

We expected that subjects' ratings of Phil's personality would follow the trends observed with their ratings of his probable success and of likelihood of hiring him for the job. Subjects' ratings

Table 5
Mean Ratings of Job Candidate's Personality as a Function of Dispositional Need for Closure and Information Sequence

Information sequence	Dispositional need for closure classification			
	High need for closure		Low need for closure	
	<i>M</i>	<i>n</i>	<i>M</i>	<i>n</i>
Positive-negative	112.23	13	88.46	13
Negative-positive	61.06	16	90.21	14

of Phil's honesty, reliability, pleasantness, decisiveness, organization, and the extent to which he seemed hardworking, qualified, and ethical were all significantly intercorrelated (mean $r = .5975$, $p < .001$). Consequently, we computed a composite personality evaluation index by summing across the eight separate scales. The relevant results are summarized in Table 5.

A 2×2 ANOVA was performed on these data with two levels of dispositional need for closure (high need for closure or low need for closure) and two levels of information sequence (positive-negative or negative-positive) as the independent variables. The interaction between these two variables was significant, $F(1, 52) = 55.988$, $p < .001$. Planned tests indicated further that mean ratings of Phil in the positive-negative sequence were higher for the high need for closure versus the low need for closure group, $F(1, 24) = 25.714$, $p < .001$, whereas in the negative-positive sequence ratings were lower for the high need for closure compared with the low need for closure group, $F(1, 28) = 31.962$, $p < .001$.

Above findings suggest that individuals with high (vs. low) dispositional need for closure plan to consider less relevant information before making a judgment, yet expect to be more confident in their judgment and to require less time to form it. These results are consistent with our theoretical predictions of need for closure effects. Furthermore, as expected, primacy effects were significantly greater for individuals classified as high (vs. low) on a dispositional need for closure, replicating similar effects obtained with situational inductions of this need (Freund et al., 1985; Heaton & Kruglanski, 1991; Kruglanski & Freund, 1983).

The next two studies in this article have been described in detail elsewhere (namely in Webster, 1993, and Kruglanski et al., 1993, respectively). They are summarized here briefly because of their relevance to the validation of our scale.

Study 5: Need for Closure and the Correspondence Bias

This study, reported fully in Webster (1993), concerns the relation between need for closure and the tendency to commit the correspondence bias (Jones, 1979). This particular bias was demonstrated originally in an experiment by Jones and Harris (1967), and it concerns a tendency to partially attribute to targets an attitude consistent with an essay they have written even if they had no choice as to whether to prepare the essay in the first place. Various theorists (e.g., Gilbert, Pelham, & Krull, 1988; Jones, 1979) have explained correspondence bias by the

observer's failure to adjust sufficiently to reflect the probable influence of the situation. These underadjusted causal judgments may typically reflect dispositional overattribution because inferences about personality often represent a spontaneous, unintentional process of encoding behavioral information (Winter & Uleman, 1984; Winter, Uleman, & Cunniff, 1985). By contrast, adjustment in light of situational constraints is cognitively effortful and may require significant motivation to engage in it. One such motivation may be the need to avoid premature closure and openly examine all available information. Conversely, under high need for cognitive closure the adjustment process may be curtailed and the tendency to exhibit the correspondence bias may be exaggerated.

To test these predictions, Webster (1993, Study 1) situationally manipulated the need for closure by varying the perceived attractiveness of an attitude-attribution task. The underlying logic here was that the less attractive a task appears the more the processing of task information would be perceived as costly; hence, the more elevated the need for closure would be.

Subjects watched a video presentation in which a target read a speech on student exchange programs, expressing a negative attitude on this issue. In a condition assumed to induce a high need for closure, the task was made to appear unattractive by introducing an expectancy of a much more attractive subsequent task (the watching of comedy tapes). In a condition assumed to induce a need to avoid closure the task was made to appear attractive by introducing an expectancy of a subsequent less attractive task (the watching of a videotaped lecture on multivariate statistics). Also included was a "neutral" control condition in which the anticipated task was similar to the first one, involving likewise the watching of a videotaped speech. These motivational variations were orthogonally crossed with the choice-no-choice manipulation used in most correspondence bias research.

Manipulation checks indicated that the intended differences in perceived task attractiveness were indeed created and that these were paralleled by different degrees of need for closure as indexed by (a) greater judgmental confidence, (b) lesser perceived amount of thought required by the task, (c) greater reported need to make a quick judgment, and (d) lesser amount of actual time spent on the task in the unattractive (high need for closure) versus the attractive (low need for closure) condition, with the neutral control condition falling in the middle. Furthermore, as expected, the correspondence bias (exhibited in the no-choice condition) was significantly stronger in the unattractive task condition than in the neutral condition, where it was stronger, in turn, than in the attractive task condition.

The purpose of the present study (Webster, 1993, Study 2) was to replicate the foregoing situational effects of the need for closure with our individual-difference measure of this motivation.

Method

Subjects. Eighty-two male and female students in introductory psychology classes at the University of Maryland participated as subjects to fulfill a course requirement. Eighteen subjects whose scores fell in the upper quartile of the need for closure distribution (score exceeding 168) were classified as high in the need for closure, 21 subjects with scores in

Table 6
Mean Rating of Target's Attitude as a Function of Dispositional Need for Closure and Situational Constraint

Target constraint	Dispositional Need for Closure Classification					
	High need for closure		Medium need for closure		Low need for closure	
	<i>M</i>	<i>n</i>	<i>M</i>	<i>n</i>	<i>M</i>	<i>n</i>
No choice	1.67	9	5.39	23	7.50	10
Choice	1.44	9	2.10	20	3.00	11

the lower quartile of this distribution (score below 147) were classified as low in the need for closure, and 43 subjects with scores in the middle 50% of the distribution were classified as medium on the need for closure.

Design. The design of the experiment was a 2×3 factorial with two levels of target constraint (choice or no-choice) and three levels of dispositional need for closure (high, medium, or low).

Procedure. The procedure was similar to that of the preceding experiment (Webster, 1993, Study 1) except for deletion of the task-attractiveness manipulation and addition of the NFCS. Subjects completed the NFCS immediately on arrival at the experimental laboratory. They were told that this survey was part of a general assessment of participants' background characteristics. Subjects then watched the videotaped presentation of the speech in which the target expressed a negative opinion on student exchange programs. Subsequently, they responded to various manipulation-check measures and to the critical, attitude-attribution item.

Results

Results of various manipulation checks indicated that in the particular experimental situation we have created, subjects classified as dispositionally high on the need for closure indeed manifested a higher degree of the closure motivation than did subjects classified as medium in the need for closure, who, in turn, manifested a higher degree of this motivation than subjects classified as low on the dispositional need for closure. Specifically, significantly (a) higher degree of judgmental confidence, (b) higher reported need to make a quick decision, (c) lower estimated amount of thought required by the judgment task, and (d) lower actual number of seconds spent working on this task were manifested by the high versus the medium need for closure subjects, who, in turn, significantly differed in the same direction from the low need for closure subjects.

More important, the attitude-attribution data supported the present predictions. The interaction between the choice and the need for closure variables was significant ($p < .01$). Whereas no significant differences were obtained between the three motivational groups in the choice condition, in the no-choice condition the high need for closure subjects exhibited greater correspondence bias than the medium subjects ($p < .001$), who, in turn, exhibited greater such bias than the low need for closure subjects ($p < .02$). Those data are summarized in Table 6.

Study 6: Need for Closure and Resistance to Persuasion

A set of studies (reported fully in Kruglanski et al., 1993) investigated the relation between need for closure and resis-

tance to persuasion. Earlier research (e.g., Jamieson & Zanna, 1989; Kruglanski & Freund, 1983) suggests that given early information or prior stereotypes, subjects under high (vs. low) need for closure are less likely to use subsequent information. This implies that, given the presence of prior information, high (vs. low) need for closure subjects should be more resistant to persuasion. The situation may be very different, however, when subjects are lacking prior information. In such circumstances, high (vs. low) need for closure subjects should be less (rather than more) resistant to persuasion because the persuasive message provides them with the closure they desire.

To test those ideas subjects were invited for research ostensibly concerned with the workings of legal juries. Each experimental session involved a naive subject and a confederate posing as a subject. Both participants were presented with materials concerning a legal case in which a lumber company was suing an airline for an air-crash-induced fire that consumed substantial lumber. Their task was to peruse the materials and discuss the case as a jury to arrive at a common verdict. The confederate (posing as the other juror) always argued against the side favored by the subject. The degree to which the subject resisted the confederate's arguments was the major dependent variable of interest.

In the *complete* information condition, materials given to the subject included a legal analysis of the case, arguing conclusively in favor of the plaintiff (the lumber company) or the defendant (the airline). In the *incomplete* information condition, no legal analysis was included.

In one study (Kruglanski et al., 1993, Study 2) a situational induction of the need for closure was attempted through introduction of environmental noise (through a noisy computer printer) that made continued information processing effortful and unpleasant (the noisy condition). No comparable noise was introduced in the comparison (the quiet) condition.

Various manipulation checks suggest that the noise manipulation indeed produced the intended differences in the need for closure. Thus, when prior information was available (but not when it was unavailable) subjects exhibited higher confidence ($p < .001$) in their prediscussion verdicts when under noise (vs. in the quiet condition). They also reported a higher experienced need to reach agreement with their partner ($p < .0001$). Most important, the critical interaction effect was significant with our two measures of resistance to persuasion, degree of shift in verdict from pre- to postdiscussion (assumed inversely related to resistance), and the amount of time spent arguing with the confederate (assumed directly related to resistance). Whereas in the complete information condition, subjects in the noisy (vs. the quiet) condition exhibited lesser verdict shifts ($p < .01$) and spent more time arguing ($p < .05$); in the incomplete information condition they exhibited greater verdict shifts ($p < .05$) and spent less time arguing ($p < .01$).

In the present study (Kruglanski et al., 1993, Study 3) we attempted to replicate the foregoing effects by substituting dispositional need for closure assessed by means of our scale for the situational induction of this motivation through environmental noise.

Method

Subjects and design. As no sex differences appeared in our previous studies in this paradigm, and because of availability considerations, only

Table 7
Mean Deliberation Time (in Minutes) as a Function of Dispositional Need for Closure and Informational Base

	Dispositional Need for Closure Classification			
	High need for closure		Low need for closure	
Informational base	<i>M</i>	<i>n</i>	<i>M</i>	<i>n</i>
Complete	7.31	8	5.60	13
Incomplete	4.20	10	6.46	10

female subjects were recruited for the present experiment. On the basis of mass pretesting conducted at the beginning of the semester, women scoring above the 75th percentile of the NFCS (score exceeding 168) composed the population from which our high need for closure subjects were sampled, and women scoring below the 25th percentile (score below 149) composed the low need for closure population. In all, 41 female subjects took part in the experiment, 18 classified as high and 23 classified as low on the need for closure. The design of the study was a 2×2 factorial with two degrees of dispositional need for closure (high and low) orthogonally crossed with the two informational conditions (of complete vs. incomplete information).

Procedure. Except for omitting the environmental noise, the present procedure followed in most details that of the previous study. After examining the case information, subjects indicated their prediscussion verdicts and recorded their confidence in those. They then interacted with a confederate who argued the opposite position. After 7.5 min of discussion, an alleged mid-discussion break took place. Subjects entered their (postdiscussion) verdicts and indicated the extent to which they had felt the need to reach agreement with their partner.

Results

The manipulation checks indicated that subjects classified as high (vs. low) on the dispositional need for closure indeed manifested differing degrees of such motivation with respect to the experimental task. Specifically, in the complete information condition subjects high on the need for closure reported higher confidence in their prediscussion verdicts than subjects classified as low on the need for closure ($p < .001$). As expected, no significant differences between high and low subjects emerged in the incomplete information condition. Furthermore, sub-

Table 8
Mean Pre- to Postdiscussion Verdict Shifts as a Function of Dispositional Need for Closure and Informational Base

	Dispositional Need for Closure Classification			
	High need for closure		Low need for closure	
Informational base	<i>M</i>	<i>n</i>	<i>M</i>	<i>n</i>
Complete	1.50	8	3.46	13
Incomplete	4.10	10	2.30	10

jects high (vs. low) in the need for closure reported a significantly higher felt need to agree with their partner ($p < .001$).

Of greatest importance, our indexes of resistance to persuasion showed the predicted interaction between need for closure and the informational conditions ($p < .001$). Specifically, in the complete information condition, subjects high (vs. low) on the dispositional need for closure exhibited smaller verdict shifts from pre- to postdiscussion ($p < .01$) and argued longer with the confederate ($p < .01$). In contrast, in the incomplete information condition, subjects high (vs. low) on the dispositional need for closure exhibited larger verdict shifts ($p < .01$) and spent less time arguing with the confederate ($p < .001$). These findings are summarized in Tables 7 and 8.

General Discussion

In this article, we introduced a self-report measure designed to tap stable individual differences in the motivation for cognitive closure. We began by presenting evidence regarding the psychometric properties of our NFCS. Data from two divergent groups of subjects suggest that the NFCS possesses a factor structure consistent with our theoretical expectations. Additionally, our results suggest that the NFCS possesses adequate reliability as well as convergent and discriminant validity with respect to related psychological constructs. Further validation of the NFCS derives from evidence that each item of the scale, as well as the composite index, significantly discriminated between groups assumed a priori to differ in the need for closure (namely, accounting vs. studio-art majors).

A particularly important form of validation consisted in scale-based replications of previous effects obtained through diverse situational inductions of the need for closure. Thus, our Study 4 has demonstrated that primacy effects in impression formation are stronger for subjects classified as high (vs. low) on the dispositional need for closure. This finding replicates a similar result in studies where need for closure was induced through time pressure (Heaton & Kruglanski, 1991; Kruglanski & Freund, 1983) or the instructions to form "global" versus "differentiated" impressions (Freund et al., 1985).

Our Study 5 has demonstrated that, just as with a situational induction of the need for closure through a task-attractiveness manipulation, high (vs. low) need for closure measured by means of our scale is related to greater (vs. lesser) tendency to commit the correspondence bias in attitude attribution (Jones, 1979). Finally, our Study 6 has indicated that dispositional need for closure interacts in the predicted way with informational conditions to determine resistance to persuasion: In the presence of prior information, high (vs. low) need for closure is associated with higher resistance to persuasion, whereas in the absence of prior information, high (vs. low) need for closure is associated with lower resistance to persuasion. This finding replicates with our scale identical effects obtained in an experiment (Kruglanski et al., 1993, Study 2) where need for closure was manipulated through environmental noise.

The foregoing replications not only cross-validate our specific measure of the need for closure construct but concomitantly validate the entire underlying theory or "nomological network" (Cronbach & Meehl, 1955) in which this measure is embedded and that posits a specific configuration of relations between con-

ceptual and operational variables in relevant domains. As predicted, scores on the NFCS were found to be related to a wide range of theoretically specified effects in the same way as other seemingly divergent, though conceptually related, factors (e.g., time pressure, environmental noise, or the perception of task attractiveness).

It is precisely the specific theoretical framework that lends unique significance to the need for closure notion in counter-distinction from related individual-difference variables in prior research. For instance, whereas intolerance of ambiguity (Frenkel-Brunswik, 1949), authoritarianism (Sanford et al., 1950) or dogmatism (Rokeach, 1960) constructs were embedded in psychodynamic conceptions of personality development, the need for closure notion is strongly wedded to a social cognitive theory of lay epistemics addressed at the process whereby all human judgments are formed and modified (Kruglanski, 1989, 1990b). The function of need for closure in this process is to instigate it and determine its extent and course. The theory further assumes that all human judgments contain a motivational component arising not only from stable personality dispositions but also from transient contextual influences. It is the latter theoretical feature that uniquely warrants the comparison of results attained by means of the NFCS and of various situational manipulations of motivational significance.

Perhaps most important, the lay epistemic theory underlying this work assumes that much of social cognition and cognitively mediated social interaction is governed by the way persons process information and form their subjective knowledge. The need for closure is accorded a central role in this process. In the realm of social cognition, for example, the need for closure was found to affect, among others, persons' tendency to (a) use stereotypes or render judgments in a category-based versus attribute-based fashion (Fiske & Neuberg, 1990; Jamieson & Zanna, 1989; Kruglanski & Freund, 1983, Study 2), (b) exhibit construct-accessibility effects in interpreting ambiguous information (E. P. Thompson, Roman, Moskowitz, Chaiken, & Bargh, 1993), (c) exhibit correspondence bias in person perception (Webster, 1993), and (d) conduct social comparisons with similar versus dissimilar others (Kruglanski & Mayseless, 1987). In the realm of social interactions, the need for closure was found to affect (a) persons' readiness to be persuaded by their partners (Kruglanski et al., 1993) and (b) group members' tendency to react with rejection to opinion deviates (Kruglanski & Webster, 1991). Thus, a valid and reliable measure of the need for closure, offered in this article, could contribute to the fruitful study of fundamental social psychological phenomena from a motivated social cognition perspective.

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