What the Need for Closure Scale Measures and What It Does Not: Toward Differentiating Among Related Epistemic Motives

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The Need for Closure Scale (NFCS; D. M. Webster & A. W. Kruglanski, 1994) was introduced to assess the extent to which a person, faced with a decision or judgment, desires *any* answer, as compared with confusion and ambiguity. The NFCS was presented as being unidimensional and as having adequate discriminant validity. Our data contradict these conceptual and psychometric claims. As a unidimensional scale, the NFCS is redundant with the Personal Need for Structure Scale (PNS; M. M. Thompson, M. E. Naccarato, & K. E. Parker, 1989). When the NFCS is used more appropriately as a multidimensional instrument, 3 of its facets are redundant with the PNS Scale, and a 4th is redundant with the Personal Fear of Invalidity Scale (M. M. Thompson et al., 1989). It is suggested that the NFCS masks important distinctions between 2 independent epistemic motives: the preference for quick, decisive answers (nonspecific closure) and the need to create and maintain simple structures (one form of specific closure).

The recognition in social and personality psychology that motivational forces powerfully influence cognition has reemerged in the past decade and a half. This resurgence is evidenced not only by the proliferation of empirical articles, edited volumes, and monographs explicating the impact of social goals on thought processes (for overviews, see Gollwitzer & Bargh, 1996; Gollwitzer & Moskowitz, 1996; Higgins & Sorrentino, 1990; Sorrentino & Higgins, 1986, 1996) but also by the conceptual placement of motivational forces as central to understanding such traditionally mainstream issues as attitude change and persuasion (e.g., Chaiken, Giner-Sorolla, & Chen, 1996; Petty & Cacioppo, 1984), impression formation (e.g., Brewer, 1988; Fiske & Neuberg, 1990), decision making (e.g., Kruglanski, 1989), and relationships (e.g., Cantor, 1994).

One aspect of this revival has been the search for stable dispositional motives relevant to how people think about themselves and others and the design of instruments to assess these dispositions. To cite but three examples, the Need for Cognition Scale (Cacioppo & Petty, 1982) was created to assess individual differences in the amount of effortful, elaborative thought people desire; the Desire for Control Scale was created to assess people's preferences for having control over their lives (Burger, 1992); and the Personal Need for Structure (PNS) scale (M. M. Thompson et al., 1989) was designed to capture the chronic preference for cognitive simplicity and structure. These and other attempts to operationalize personality-based tendencies in thought processes have a rich history, rooted in the traditions established by such constructs as authoritarianism (Adorno, Frenkel-Brunswick, Levinson, & Sanford, 1950), dogmatism (Rokeach, 1960), and intolerance of ambiguity (Frenkel-Brunswick, 1949).

Kruglanski and his colleagues (Kruglanski, 1989, 1990; Kruglanski, Webster, & Klem, 1993; Webster & Kruglanski, 1994) introduced an apparently new construct to this mix. The *need for closure* reflects the desire for "*an* answer on a given topic, *any* answer, as compared to confusion and ambiguity" (Kruglanski, 1990, p. 337, italics in original). This desire for closure can ostensibly be activated by such situational forces as time pressure, but is also proposed to differ chronically across individuals. Specifically, a person high in need for closure is hypothesized to prefer order and predictability, to be decisive, to be uncomfortable with ambiguity, and to be closed-minded. The Need for Closure Scale (NFCS; Webster & Kruglanski, 1994) was designed to operationalize this construct and is presented as a unidimensional instrument possessing strong discriminant and predictive validity. Illustrating this latter point,

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Some of these findings were reported at the September 1995 joint meeting of the European Association of Experimental Social Psychology and the Society of Experimental Social Psychology, Washington, DC.

We thank James Clark for providing us access to the "shoppers sample," gathered as part of his doctoral dissertation in marketing at Louisiana Tech University; Renée Bator, Rebecca Collins, and Mark Schaller for their aid in collecting data; Angela Bryan for her help in data analysis; Bob Cialdini, Bill Graziano, and Mark Schaller for their feedback on a draft; and the Arizona State Social Psychology Research Institute participants for their commentary at an early presentation of these data.

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Journal of Personality and Social Psychology, 1997, Vol. 72, No. 6, 1396–1412
 0022-3514/97/$3.00

people who score high on the NFCS are more likely to exhibit impression primacy effects (Webster & Kruglanski, 1994), fall prey to the correspondence bias (Webster, 1993), make stereotypical judgments (Dijksterhuis, van Knippenberg, Kruglanski, & Schaper, 1996), assimilate new information to existing, active beliefs (Ford & Kruglanski, 1995), and, in the presence of prior information, resist persuasion (Kruglanski et al., 1993).

According to Webster and Kruglanski, the NFCS adds to our ability to predict important social–cognitive phenomena and, thus, contributes to the field's theoretical understanding of how people think about themselves and others. Others seem to agree with them. As of this date, researchers from other labs have adopted the NFCS for their own research, and it has been translated into foreign languages for use with non-English speakers (e.g., Mannetti, de Grada, & Pierro, 1995; Rubini, 1995). Unfortunately, like many other scales of exciting new constructs, it has been quickly disseminated before a thorough review of its dimensionality and convergent and discriminant validity has been undertaken. Such a review seems particularly important, given the growing recognition that dispositional epistemic motivations play key roles in psychological life—a recognition leading researchers to increasingly integrate measures of these motives into their research.

Overview

In this article, we assess the psychometric fitness of the NFCS and its relationships to conceptually (and operationally) similar instruments. In anticipation, we distill our findings into two main points: First, despite Webster and Kruglanski's claims, the NFCS fails as a unidimensional instrument: it operationalizes, instead, at least two distinct epistemic motives. Using the scale as recommended thus muddies the conceptual waters and renders data interpretation problematic.

Second, the NFCS fails to exhibit discriminant validity relative to the preexisting instruments most conceptually akin to it. When the NFCS is used in the recommended unidimensional fashion, it is highly redundant with M. M. Thompson et al.'s (1989) PNS Scale. Indeed, despite Webster and Kruglanski's report that the two scales are only minimally correlated (r = .24), results across our multiple data sets consistently show very high correlations (median r = .79). When the NFCS is used more appropriately as a multifactorial scale, three of the five NFCS subfacets also fail to demonstrate discriminant validity from preexisting measures. The two strongest NFCS subfactors are highly redundant with the two PNS Scale subfactors (Neuberg & Newsom, 1993), with correlations in the .80 range. And, again despite Webster and Kruglanski's position to the contrary, a third NFCS subfactor is highly redundant with the Personal Fear of Invalidity (PFI) Scale (M. M. Thompson et al., 1989), with a correlation between the two in the .75 range. Our analyses reveal, then, that the NFCS possesses little, if any, discriminant validity.

Although we believe the conceptual notion of *need for closure* to be a potentially useful one, we suggest that the NFCS and the theorizing that underlies it mask important differences between two largely independent epistemic motives: the preference for quick, decisive answers (*nonspecific* closure) and the need to create and maintain simple structures (one form of *specific* closure). This lack of clarity renders ambiguous the interpretation of previous findings using the NFCS, thus removing a good deal of empirical support for the need for closure construct. We complete our investigation by analyzing the costs and benefits associated with using the NFCS versus the PNS and PFI Scales.

Psychometric Fitness

Webster and Kruglanski (1994) argued for the unidimensional nature of the NFCS, on the basis of estimates of Cronbach's alpha and results from a series of confirmatory factor analyses. Although many of our arguments are supported by the findings they themselves reported, we sought our own data to explore the NFCS more fully.

First, we had five samples of students (N = 452) complete the NFCS, the PNS, and the PFI Scales (see Appendixes A, B, and C for the scales and scoring codes). These participants were recruited to be comparable to Webster and Kruglanski's undergraduate sample (N = 281) and were selected from different geographic locales, to reduce the risk that our data would be idiosyncratic and nongeneralizable. The first three student samples came from introductory psychology classes at Arizona State University (Sample 1 n = 173; Sample 2 n = 82; Sample 3 n = 47). Sample 4 consisted of students from a social psychology class at the University of British Columbia (n = 85). Sample 5 consisted of students in a social psychology course at the University of Montana (n = 65).

All three scales have a 6-point Likert-type response option, ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). The order of the scales within the questionnaire packet was counterbalanced across participants.

Second, because Webster and Kruglanski (1994) included a sample of participants from public libraries (n = 172), we gained access to a group of nonacademic participants as well: 285 female shoppers recruited in clothing stores around Memphis, Tennessee, who completed these scales, an inventory assessing the Big Five personality factors, and items unrelated to this project. Shoppers were compensated for their participation with discount coupons at those stores.

Before reporting our findings, we want to stress an important point. We believe it incumbent on any critic to provide an impartial opportunity for the targeted work to succeed (Cooper & Richardson, 1986). In this particular case, it would be unfair to confront the NFCS scale with participant populations inhospitable to psychometric testing. Thus, as mentioned above, we selected our samples to be similar to those of Webster and Kruglanski (1994). Moreover, we first used these samples to assess the psychometric fitness of the PNS Scale. Results of these analyses replicated previously published findings (Neuberg & Newsom, 1993) in both pattern and magnitude. Moreover, readers will soon note that we replicate many of the major findings reported by Webster and Kruglanski, further revealing the suitability of our samples for these purposes.

Cronbach's Coefficient Alphas

Webster and Kruglanski (1994) reported coefficient alphas for the NFCS of .84 for both their student and library samples.

We replicated these data, with alphas ranging from .81 to .90 in our six samples (median α = .87). Such data, however, do not provide direct evidence that the NFCS possesses coherence as a unidimensional construct (West & Finch, in press). Although a unidimensional scale will indeed produce a high coefficient alpha, so can a multidimensional scale (Green, Lissitz, & Mulaik, 1977). We need, then, to look toward better indicators of unidimensionality.

Interitem Homogeneity

If a scale is truly unidimensional, its items should be positively correlated with each other. To explore this issue, we calculated the median interitem correlation for each of our six samples after reverse scoring all appropriate items. The median interitem correlations were very low, ranging from .07 to .17, with a median of .11. Importantly, a large proportion of the interitem correlations were negative, ranging from 14.9% to 35.4% across the six samples, with a median of 28.8%. This analysis suggests, then, a lack of unidimensionality.

Confirmatory Factor Analyses

A more direct method of assessing scale unidimensionality is confirmatory factor analysis. Confirmatory factor analysis allows the researcher both to test theoretically driven, *a priori* models of how a scale's items relate to each other and to compare the goodness of fit of alternative models. On the basis of Webster and Kruglanski's (1994) argument that the NFCS ought to possess a unidimensional structure, we explored first (using EQS; Bentler, 1993) a strict single-factor model (Model 1), in which all systematic covariance among items is totally accounted for by direct paths from the conceptual construct to each of the scale's items. As did Webster and Kruglanski, we discovered a poor fit of this model to the data, with the model falling far short of the conventionally recommended value of .90 for the comparative fit index (CFI, Bentler, 1990; see Figure 1).[1]

We then tested an alternative, less stringent model. Model 2 assumes that the need for closure construct is manifested by the five facets proposed by Webster and Kruglanski (1994)—Preference for Order, Preference for Predictability, Decisiveness, Discomfort With Ambiguity, and Closed-Mindedness—each of which possess an a priori, and unique, set of items as indicators. Although this second-order factor model appears to be the most consistent with Webster and Kruglanski's five-facet conception of the NFCS, no explicit test of this model has been previously reported. Our analyses revealed that despite a great improvement in fit over the pure, single-factor model, this model also failed to reach conventional levels of acceptable fit (see Figure 2).

Finally, we explored a still less restrictive model that hypothesizes that the NFCS is composed of five different, but positively correlated, facets (see Figure 3). Confirmatory factor analyses again failed to provide support for this model. Indeed, in the shoppers sample, there were serious technical problems associated with the interpretation of the fifth facet (Closed-Mindedness), owing to its low reliability (α = .33). Taken together, these analyses (a) raise strong doubts about the unidimensionality of the NFCS and (b) suggest that none of the a priori conceptualizations of the NFCS fit the data cleanly.

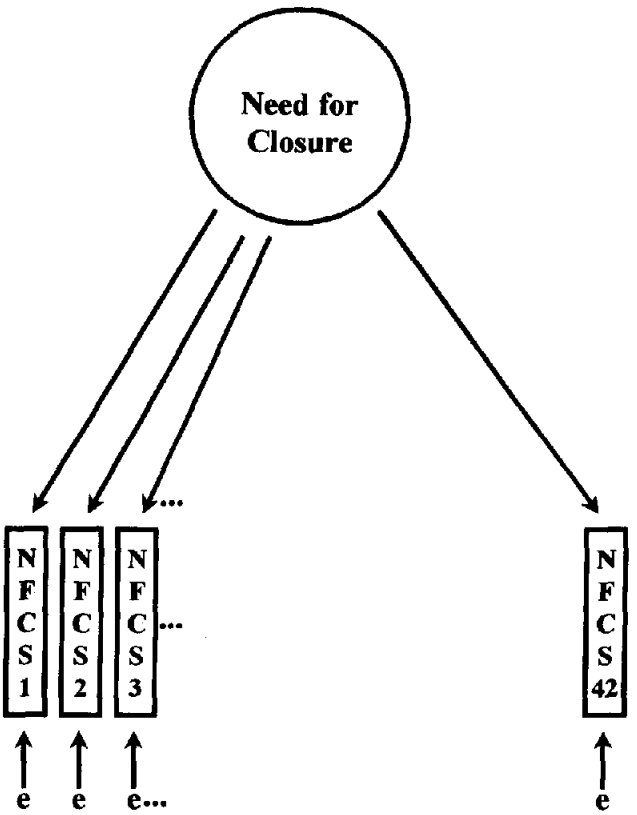

Figure 1. A representation of Model 1, the single-factor model of need for closure. NFCS = Need for Closure Scale; e = measurement error. Data from Webster and Kruglanski (1994): For student sample, χ^2 (819, N = 281) = 2,793.24, GFI = .18; for library sample, χ^2 (819, N = 172) = 2,797.18, GFI = .50. Data from present samples: For aggregated student samples, χ^2 (819, N = 431) = 3,882.40, CFI = .50; for shoppers sample, χ^2 (819, N = 279) = 2,501.76, CFI = .49. GFI = goodness-of-fit index; CFI = comparative fit index. Both Webster and Kruglanski's (1994) data and our own revealed this model to be a poor fit to the data.

Although Webster and Kruglanski (1994) acknowledged the poor fit of their single-factor model, they nonetheless claimed unidimensionality by presenting a model in which all errors associated with the scale items are allowed to correlate within their hypothesized facet, but not across facets. That is, although

[1] Webster and Kruglanski (1994) reported Jöreskog and Sörbom's (1981) goodness-of-fit index (GFI) as their measure of model fit. The GFI is not preferred by many analysts because (a) it involves an unrealistic baseline model in which no variance or covariance in the measured variables is permitted and (b) it underestimates fit at small (N < 400) sample sizes (Marsh, Balla, & McDonald, 1988). Bentler's (1990) CFI typically provides an upper-bound estimate of fit that is not adversely affected by small sample sizes. Using the CFI thus offers the models tested the maximal opportunity to fit the data. For the same reason, we used the traditional .90 convention as the criterion for adequate model fit (Bentler & Bonett, 1980), even though recent work suggests that this convention can often be too lax (Curran & West, 1996; Hu & Bentler, 1996).

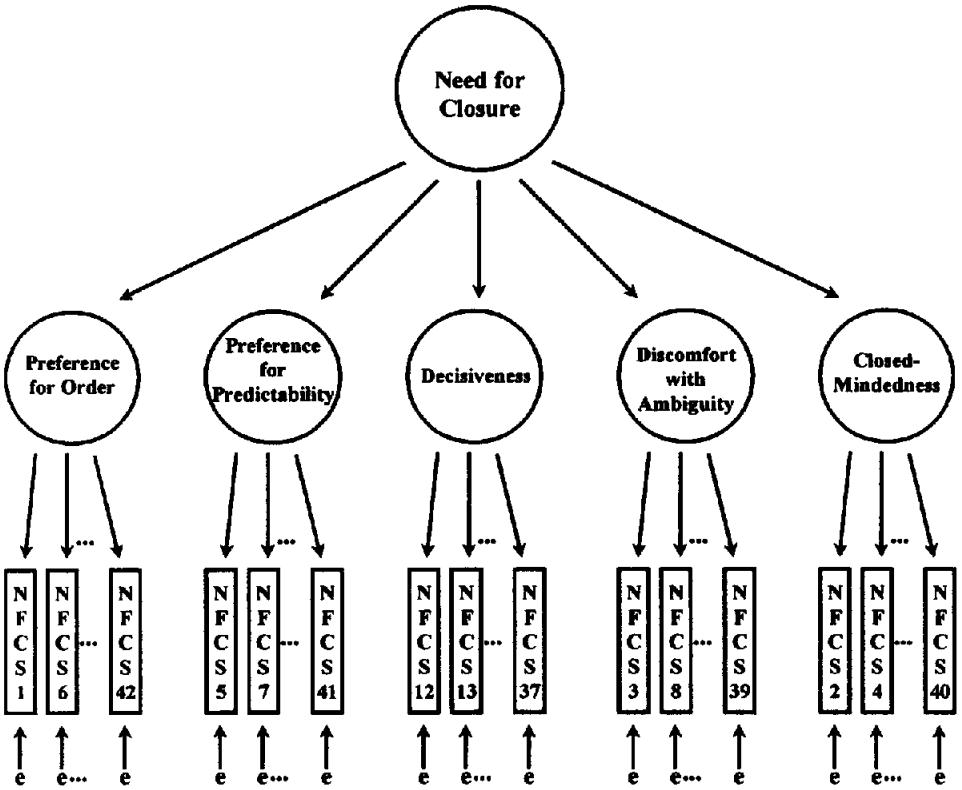

Figure 2. A representation of Model 2, the second-order factor model of need for closure. NFCS = Need for Closure Scale; e = measurement error. Data from present samples: for aggregated student samples: χ^2 (814, N = 431) = 2,570.90, CFI = .71; for shoppers sample, χ^2 (814, N = 279) = 2,035.46, CFI = .63. CFI = comparative fit index This model, although significantly better than the pure, single-factor model, still failed to fit the data adequately.

each of the 42 items load on only one superordinate facet—creating the impression of unidimensionality—they are allowed to correlate with, and only with, the other items presumed to be members of the same facet (see Figure 4). Two points need to be made: First, even this model failed to reach conventional levels of acceptable fit, for both Webster and Kruglanski's samples (GFIs = .868 and .755) and our own (CFIs = .836 and .802). Second, and more important, this correlated-errors model *does not* represent a single factor. The most favorable interpretation is that this is a five-facet model, with the facets defined by the correlations of the items' errors of measurement. The least favorable interpretation is that the correlated-errors model actually represents many more factors: Substantially more than one factor may be necessary to account for each of the five facets. Under either interpretation, a huge number of paths are required to correlate the errors, soaking up 148 more degrees of freedom than the straightforward five-correlated-factor model presented in Figure 3, thereby artifactually improving the fit of the model.

Correlations Among the Scale's Five Facets

To further clarify our understanding, the models tested above can be studied at the level of Webster and Kruglanski's (1994) proposed facets. If the NFCS is unidimensional, its five facets ought to correlate positively with each other. Webster and Kruglanski did not present interfacet correlation matrices. Tables 1 and 2 do so, on the basis of our own data. We present the data from the student samples and the shoppers sample separately, as the Closed-Mindedness facet was highly unreliable in the shoppers sample, making proper estimations of correlations involving this latent facet impossible. Across all samples, three of the facets seem highly related to each other (Preference for Order, Preference for Predictability, and Discomfort With Ambiguity), Closed-Mindedness fits less well, and Decisiveness seems greatly out of place, even correlating *negatively* with the other facets at times. By this criterion too, then, the NFCS fails the test of unidimensionality.[2]

[2] Correlations between each facet and the remainder of the scale (i.e., mean of other four facets) reveal the powerful influence of the first two facets. Correlations between Preference for Order and the remainder of the scale ranged across the six samples from .45 to .73, with a median of .57; correlations between Preference for Predictability and the remainder of the scale ranged from .52 to .66, with a median of .62; correlations between Decisiveness and the remainder of the scale ranged from −.13 to .27, with a median of −.01; correlations between Discomfort With Ambiguity and the remainder of the scale ranged from .34 to .64, with a median of .44; and correlations between Closed-Mindedness and the remainder of the scale ranged from .11 to .48, with a median of .33.

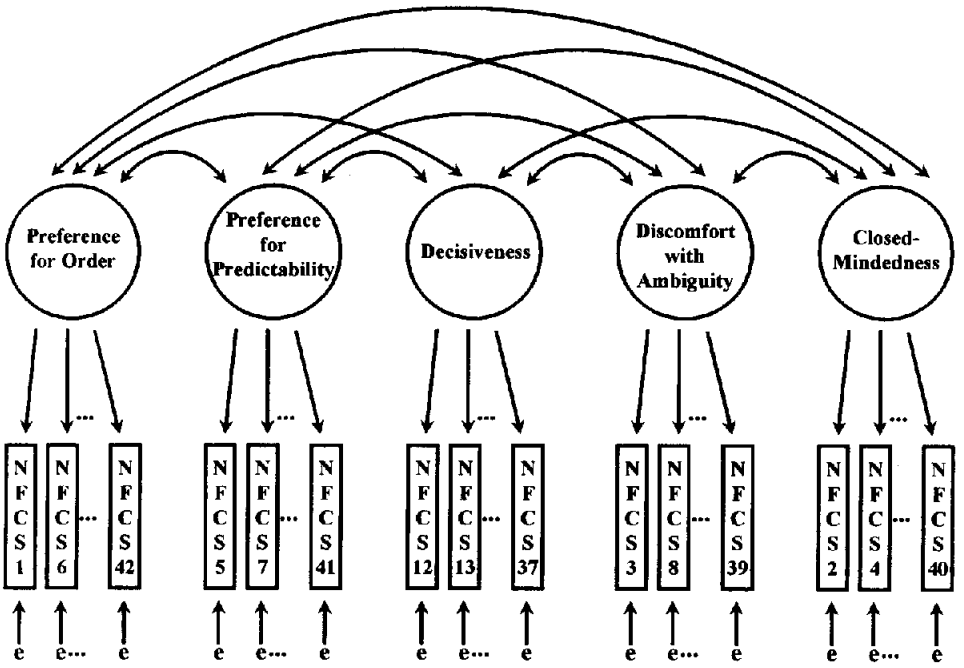

Figure 3. A representation of Model 3, the five-correlated-factor model. NFCS = Need for Closure Scale; e = measurement error. Data from Webster and Kruglanski (1994): For student sample, χ^2 (809, N = 281) = 1731.85, GFI = .80; for library sample, χ^2 (809, N = 172) = 1,813.85, GFI = .67. Data from present samples: For aggregated student samples, χ^2 (809, N = 431) = 2,481.74, CFI = .73; for shoppers sample, χ^2 (809, N = 279) = 1,952.08, CFI = .66. GFI = goodness-of-fit index; CFI = comparative fit index. This model provided the best fit to the data of the three theoretically driven models, although it also fell short of conventional standards of fit.

Relationships of the Facets to Other Constructs

If a scale is unidimensional, its facets ought to show similar patterns of correlation with other external variables. For example, people high on the Preference for Order facet should act similarly to people high on Decisiveness. Webster and Kruglanski (1994) did not report the effects of the five facets separately for any of their three validation studies, although they did report correlations of these facets with other personality scales in arguing for the scale's discriminant validity. We refer readers to Webster and Kruglanski's Table 4 (p. 1054). We note that the five facets seemed to operate quite differently from each other. For instance, Preference for Order and Closed-Mindedness were negatively and significantly correlated with Need for Cognition; Preference for Predictability, Decisiveness, and Discomfort With Ambiguity, however, were not. These and similar patterns again suggest that the NFCS is multidimensional.[3]

To address this criterion more closely, we examined correlations in the shoppers sample between the five NFCS facets and the dimensions of the Big Five as operationalized by the BFI–44 (John, Donahue, & Kentle, 1991). There is accumulating evidence that the Big Five dimensions—Extraversion, Agreeableness, Neuroticism, Conscientiousness, and Openness/Culture—represent broad fundamental traits people use to characterize themselves and others and are meaningful in predicting behavior (Goldberg, 1981, 1990; John, 1990; McCrae & Costa, 1985, 1987). We reasoned that if the NFCS were truly unidimensional, its facets would correlate similarly with these psychologically important dimensions.

As Table 3 reveals, the facets of the NFCS fail to converge here as well. For instance, Decisiveness correlates with Extraversion (r = .23, p < .001), whereas the remaining four facets do not (median r = .06, *ns*). Preference for Order (r = .24, p < .001) and Decisiveness (r = .22, p < .001) are each significantly positively correlated with Agreeableness, whereas Discomfort With Ambiguity (r = −.15, p < .05) is negatively correlated with Agreeableness. Preference for Order (r = .42, p < .001) and Decisiveness (r = .46, p < .001) show similar positive correlations with Conscientiousness, whereas they have quite different relationships with Neuroticism (r = .05, *ns*; r = −.47, p < .001, respectively). Whereas there appears to be no relationship between the total NFCS and Neuroticism (r = .06, *ns*), this aggregation of the facets in reality conceals the significant opposing relationships that Decisiveness (r = −.47, p < .001) and Discomfort With Ambiguity (r = .30, p < .001) have with Neuroticism. And so on. To borrow a phrase used by Briggs and Cheek (1986) in their critique of the unidimensionality of the Self-Monitoring scale, the Need for Closure scale is "a house divided unto itself" (p. 123).

[3] Weary and Edwards (1994) presented data that also reveal different correlation patterns among the five facets of the NFCS (Table 2, p. 311), as did Cacioppo, Petty, Feinstein, and Jarvis (1996, Table 2, p. 209).

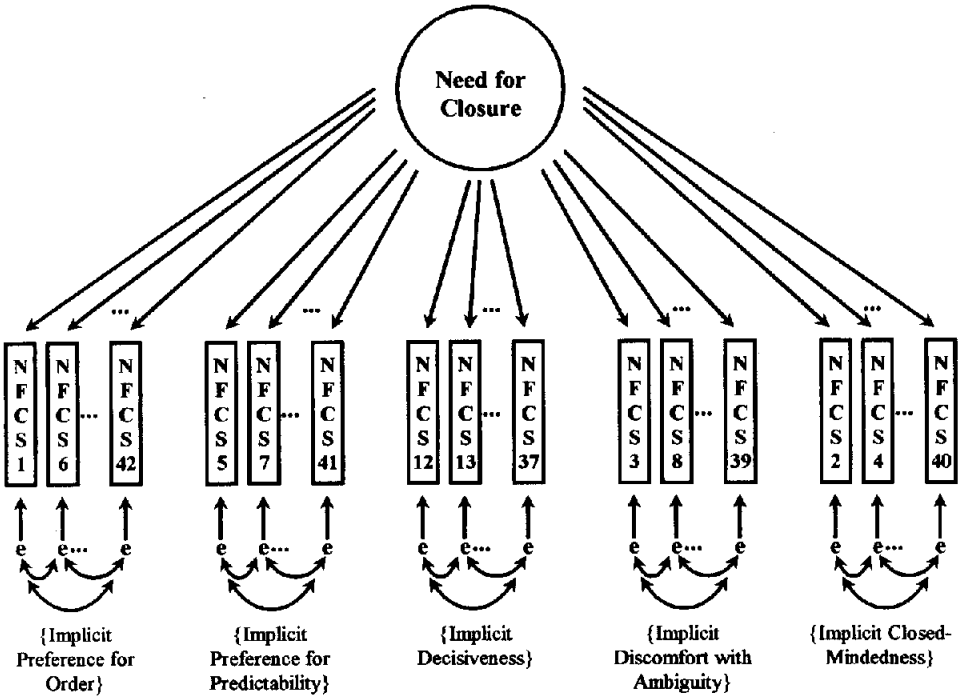

Figure 4. A representation of Webster and Kruglanski's (1994) correlated-errors model. NFCS = Need for Closure Scale, e = measurement error. Data from Webster and Kruglanski (1994): For student sample, χ^2 (661, N = 281) = 1,097.00, GFI = .87; for library sample, χ^2 (661, N = 172) = 1,335.40, GFI = .76. Data from present samples: For aggregated student samples, χ^2 (661, N = 431) = 1,665.24; CFI = .84; for shoppers sample, χ^2 (661, N = 279) = 1,318.46, CFI = .80. CFI = comparative fit index; GFI = goodness-of-fit index. This model correlated all item errors within facet only, creating a "subterranean" five-factor model. Despite the great increase in power generated by estimating the large number of covarying errors, this model also failed to reach conventional levels of acceptable fit.

The evidence is clear: The NFCS is *not* a unidimensional scale. It possesses low interitem homogeneity, confirmatory factor analyses reveal a multifactorial structure, the theoretically based subfacets do not all correlate positively with each other, and the five subfacets display differing relationships with external variables.[4]

But what is the nature of this multidimensionality? How many factors underlie the need for closure construct, as operationalized by Webster and Kruglanski? It is not our purpose here to perform and report a thorough revision of the NFCS. We note, however, that preliminary analyses on our data suggest a two-factor solution: The first—which could be labeled the *need for structure*—seems to comprise items from the highly correlated Preference for Order, Preference for Predictability, and Discomfort With Ambiguity subfacets; the second—possibly labeled *decisiveness*—is made up solely of items from the Decisiveness subfacet. The place of the Closed-Mindedness subfacet, owing to the lack of psychometric coherence among its items, is unclear. We note that this two-factor solution is similar to one reported by Rubini (1995) and has interesting theoretical implications, as we discuss later.

Discriminant Validity

We have presented compelling evidence that the NFCS fails all tests of unidimensionality. We explore next the discriminant validity of the NFCS, in both its unidimensional and facet-based manifestations.

Discriminant Validity as a Unidimensional Instrument

The NFCS is not unidimensional. Nonetheless, because Webster and Kruglanski argued that the scale be used in such a

[4] One might argue that the NFCS is intended to operationalize a very broad construct—a particularly high level conceptualization of cognitive desire—and, as such, need not be constrained by an apparent lack of unitariness at lower levels. For example, one might point out that certain tests of intelligence possess several dimensions at their lower levels but nonetheless are quite useful as broad predictors of certain types of task performance. Such an argument is not compelling in the case of the NFCS, however, for three reasons. First, even the subfactors of such broad constructs as intelligence are moderately to very highly positively correlated with each other and have similar relationships with external variables. Second, as we argue later, the NFCS, when used unidimensionally, captures not a broad epistemic motivation at all, but rather one that is circumscribed, dominated by items measuring the "need for structure" (M. M. Thompson et al., 1989). Finally, the usefulness of broad explanatory constructs that aggregate across their constituent subfactors comes in predicting equally broad criterion constructs—such as overall college performance in the case of intelligence. Because the purpose of the NFCS as used in research to this point seems to focus on understanding and predicting narrow criterion constructs, such as simple decisions made within the context of laboratory experiments,

Table 1
Intercorrelation Matrix of Need for Closure Scale Facets for Five Student Samples

Facet	1	2	3	4	5
1. Preference for Order	—				
2. Preference for Predictability	.62 (.74)	—			
3. Decisiveness	.08 (.04)	−.03 (−.10)	—		
4. Discomfort With Ambiguity	.51 (.69)	.56 (.79)	−.19 (−.32)	—	
5. Closed-Mindedness	.27 (.12)	.41 (.33)	.18 (.24)	.22 (.02)	—

Note. $n = 452$. The values presented are the median correlations. The values in parentheses are the correlations between the latent constructs from the test of Model 3 for the aggregated student sample.

manner, it seemed worthwhile to explore its discriminant validity in this form.

To do so, we first need to characterize the NFCS as it exists in its single-factor configuration. Table 4 contains the loadings from both the aggregated student sample and the shoppers sample, as gleaned from our confirmatory factor analysis of the pure, single-factor model presented in Figure 1—the model that makes the assumptions implicit in Webster and Kruglanski's (1994) simple adding algorithm for calculating the total NFCS score. For clarity, we present the items by facet. Moreover, note that all items were appropriately reverse scored before these analyses; thus, any negative loadings reflect items that fit poorly within the unidimensional solution.

A perusal of the loadings is informative. First, the facets Decisiveness and Closed-Mindedness add little to the unidimensional construct, as their loadings are generally small and frequently negative. Second, the highest loadings come from the first two facets: the Preferences for Order and Predictability. This is clearly illustrated when we look at the top 10 loadings for each sample. In the student sample, 9 of the 10 strongest loadings are items from these two facets, and the only exception—Item 3 ("I don't like situations that are uncertain")—seems on its face a better representative of Preference for Predictability than Discomfort With Ambiguity, where it had been assigned. Indeed, when allowed to load on both facets, Item 3 loads higher on Preference for Predictability (.595) than on Discomfort With Ambiguity (.149). In the shoppers sample, 8 of the 10 strongest loadings were from the Preference for Order and Preference for Predictability facets, and again, the ambiguous Item 3 was one of the exceptions—and again, it had a higher loading on Preference for Predictability (.445) than Discomfort With Ambiguity (.199). The NFCS, then, when used as a unidimensional scale, is heavily dominated by items intended to capture the Preferences for Order and Predictability.

aggregation across subfacets is likely to lead to the loss of important specific information (see Briggs's [1992] analysis of the Big Five).

Given their centrality to the scale's functioning as a unidimensional instrument, we should look more carefully at these particular items. As Webster and Kruglanski (1994) acknowledged, 8 (our count is 9) of the 18 items constituting these two facets were borrowed, either verbatim or with slight changes in the wording, from M. M. Thompson et al.'s (1989) 12-item PNS Scale (NFCS5 = PNS9; NFCS6 = PNS6; NFCS10 = PNS8; NFCS11 = PNS1; NFCS18 = PNS8; NFCS32 = PNS10; NFCS33 = PNS3; NFCS35 = PNS4; and NFCS41 = PNS11; and NFCS3, from the Discomfort With Ambiguity facet, = PNS7). The PNS Scale, first distributed informally in 1986, was designed to capture the extent to which people differ in their desire to structure their worlds in a simple manner. This instrument thus reflects a dispositional manifestation of a cognitive motive previously conceptualized by others as situationally induced (e.g., Harvey & Schroder, 1963; Kruglanski & Freund, 1983). A recent series of confirmatory factor analyses of the PNS Scale elaborated on its earlier version, revealing that the scale is best thought of as an 11-item instrument (Item 5 was deleted), consisting of two highly related subfactors: Desire for Structure and Response to Lack of Structure (Neuberg & Newsom, 1993). Moreover, research using the PNS Scale has clearly demonstrated its ability to predict which individuals are especially likely to engage—both cognitively and behaviorally—in simplifying, structuring processes. People scoring high on the PNS Scale view themselves, others, and nonsocial objects in less complex ways (Neuberg & Newsom, 1993); they are more likely to use simplifying stereotypes to understand others (Naccarato, 1988; Neuberg & Newsom, 1993); they are more likely to create simple stereotypes of new groups (Schaller, Boyd, Yohannes, & O'Brien, 1995); they are more likely to assimilate new information to previously existing structures (E. P. Thompson, Roman, Moskowitz, Chaiken, & Bargh, 1994); they are more likely to generate simplifying trait inferences spontaneously (Moskowitz, 1993); they are more likely to overgeneralize failure experiences into learned helplessness (Mikulincer, Yinon, & Kabili, 1991); they are more likely to complete research requirements in a prompt fashion, thus

Table 2
Intercorrelation Matrix of Need for Closure Scale Facets for Shoppers Sample

Facet	1	2	3	4	5
1. Preference for Order	—				
2. Preference for Predictability	.61 (.78)	—			
3. Decisiveness	.12 (−.02)	.01 (−.13)	—		
4. Discomfort With Ambiguity	.36 (.58)	.47 (.78)	−.24 (−.46)	—	
5. Closed-Mindedness	.05	.27	.00	.21	—

Note. $n = 279$. The values in parentheses are the correlations between the latent constructs from the test of Model 3 for the shoppers sample. There are no latent construct entries for Closed-Mindedness, because given this facet's low reliability in this sample, we were not able to derive appropriate estimates of factor correlations.

Table 3
Correlations of NFCS and Its Facets With the Dimensions of the Big Five Personality Traits, for Shoppers Sample

NFCS facet	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness
Scale Total	−.00	.13*	.33**	.06	−.12*
Preference for Order	−.06	.24**	.42**	.05	−.13*
Preference for Predictability	−.07	.11	.12*	.14*	−.22**
Decisiveness	.23**	.22**	.46**	−.47**	.26**
Discomfort With Ambiguity	−.06	−.15*	−.07	.30**	−.08
Closed-Mindedness	−.01	−.09	−.00	.12*	−.20**

Note. NFCS = Need for Closure Scale. $n = 273$.
* $p < .05$. ** $p < .001$.

avoiding the discomfort associated with a lack of completion (Neuberg & Newsom, 1993; Roman, Moskowitz, Stein, & Eisenberg, 1995); and so on.

By Webster and Kruglanski's (1994) description, the items from the NFCS's Preference for Order are largely based on the PNS Scale's Desire for Structure and the items from the NFCS's Preference for Predictability are largely based on the PNS Scale's Response to Lack of Structure. There is thus considerable operational overlap between NFCS and the PNS Scale. Indeed, the best items from the NFCS are largely those of the PNS Scale. In the aggregated student sample, the 10 highest loading NFCS items were from the PNS Scale; in the shoppers sample, 8 of the 10 highest loading NFCS items were from the PNS Scale. One would thus expect a strong correlation between the overall NFCS score and the PNS Scale score. To the contrary, Webster and Kruglanski reported a correlation between the two scales of only .24 ($N = 157$). More surprisingly, the reported correlations with the PNS Scale of the NFCS's Preference for Order and Preference for Predictability—those facets explicitly based on the PNS Scale items—were also low, .28 and .27, respectively.

Our data revealed a starkly different relationship. In all six samples, the correlations between the NFCS and the PNS Scale were substantial, ranging from .69 to .84 (median NFCS–PNS $r = .79$). Indeed, when we corrected these correlations for attenuation by measurement error, the NFCS–PNS correlation from the six samples ranged from .87 to .98, with a median of .92. Our data, then, overwhelmingly suggested that the NFCS, when used as if it were unidimensional, is redundant with the PNS Scale.

How might one reconcile the huge difference between Webster and Kruglanski's (1994) estimate and our own? It is unlikely that the discrepancy resulted from differences in our samples. Not only did our six samples replicate each other quite well, but they also replicated previously published findings and the bulk of Webster and Kruglanski's data. Indeed, the greater generality and size of our overall sample, and the consistency of findings across our individual samples, suggest that the present data more closely approach the true relationship between the NFCS and the PNS Scale.

Moreover, it is unlikely that the different correlations came from the same population distribution but happened to fall at the extreme opposite tails. If we calculate the 99.999% confidence intervals around the uncorrected correlations, we see that the upper bound of Webster and Kruglanski's (1994) estimate (.54) does not even overlap with the lower bound of our comparable aggregated student sample (.70). Indeed, given the high overlap of items between the PNS Scale and the NFCS, we can ask whether it is even statistically possible for the correlations in the Webster and Kruglanski sample to be so low.

We have explored our data for artifacts that might explain the discrepancy in findings. First, given that the high correlation between the two scales is attributable to their overlap in items, it could be that some aspect of our procedure inappropriately increased the correlation among these common items. This makes little sense, however, as the expected correlation between identical or near-identical items is already 1.0 (less measurement error). In contrast, it may be that Webster and Kruglanski's (1994) procedures reduced the similarity of participants' responses to the common items and that any procedure that attenuates the reliability of these items would also reduce the correlation between the two scales. In this light, we note that the report of their procedures reveals that the PNS Scale was administered along with seven other scales; we can only speculate that perhaps the reliability of responding decreased as participants moved through the inventory packet.

Second, using both graphical procedures and diagnostic case statistics—including leverages, externally studentized residuals, and Cook's distance (Neter, Wasserman, & Kutner, 1989)—we explored our data for outliers that could artifactually increase the correlations between the two scales. We found no such suspicious cases. Finally, we rechecked all of our scoring and data analyses for errors that could artificially inflate our estimates of the NFCS–PNS Scale correlation and found none. Taken together with the consistency of our findings across samples, we believe the source of the discrepancy lies in either the procedures, a few aberrant data points, or statistical miscalculations of the original Webster and Kruglanski (1994) study. Indeed, more recent data collected by Kruglanski and his colleagues estimated the correlations between the NFCS and PNS Scale as ranging from .67 to .79 (A. W. Kruglanski, personal communication, April 11, 1996). To summarize, the evidence is overwhelming that when used in a unidimensional manner, as Web-

Table 4
Simple Factor Loadings of the NFCS on Its 42 Items for the Single-Factor Model 1

Item no.	Students sample	Shoppers sample
Preference for Order		
1	.39	.43
6	.70[a]	.72[a]
10	.59[a]	.63[a]
20	.28	.17
23	.53	.49
27	.25	.03
32	.71[a]	.68[a]
33	.74[a]	.79[a]
35	.58[a]	.59[a]
42	.28	.20
Preference for Predictability		
5	.52	.34
7	.52	.49
11	.68[a]	.72[a]
18	.61[a]	.38
19	.62[a]	.34
25	.54	.30
26	.49	.58[a]
41	.71[a]	.54[a]
Decisiveness		
12	−.19	−.20
13	.01	.27
15	.04	−.11
16	−.02	.13
17	−.13	−.12
22	−.09	−.17
37	−.11	−.23
Discomfort With Ambiguity		
3	.70[a]	.58[a]
8	.52	.39
14	.47	.43
21	.12	.20
29	.37	.22
30	.52	.50[a]
31	.26	.45
36	.44	.49
39	.12	.18
Closed-Mindedness		
2	.07	−.14
4	.44	.46
9	.38	.34
24	−.02	−.23
28	.10	−.21
34	.33	.06
38	−.01	−.08
40	.08	.25

Note. Items are sorted by facet. NFCS = Need for Closure Scale.
[a] Among top 10 loadings in sample.

ster and Kruglanski recommended, the NFCS is operationally redundant with the PNS Scale.

Discriminant Validity as a Multidimensional Instrument

To this point, our analyses reveal that (a) the NFCS is a multidimensional instrument dominated by its first two facets and (b) when inappropriately used as a unidimensional scale, it is redundant with the PNS Scale. Perhaps, though, the NFCS possesses greater discriminant validity after discarding the failed assumption of unidimensionality. Here, then, we ask the question, Do its parts possess more discriminant validity than its whole?

Facet 1: Preference for Order. Given the data presented above, the reader will not be surprised that the Preference for Order facet cannot be discriminated from the PNS Scale subfactor Desire for Structure. Not only do all four of the relevant PNS Scale items appear on this facet, but according to Webster and Kruglanski's (1994) own data (Table 1, p. 1053), these PNS Scale items are its four top loading items. Indeed, the correlations between this NFCS facet and the PNS Scale subfactor in our data ranged from .66 to .86, with a median of .84. When we corrected for the attenuation due to measurement error, the correlations ranged from .91 to 1.00, with a median of 1.00. Thus, the Preference for Order facet of the NFCS is redundant with the PNS Scale subfactor Desire for Structure.

Facet 2: Preference for Predictability. Similarly, the overlap is considerable between the NFCS's Preference for Predictability and the PNS Scale's Response to Lack of Structure. The two subfactors share four of the seven PNS Scale items, and this leads to high correlations between the two subscales: The smallest correlation from our six samples is .65, the largest correlation is .84, and the median is .82. When we corrected for the attenuation due to measurement error, the correlations ranged from .90 to 1.00, with a median of 1.00. Clearly, the Preference for Predictability facet of the NFCS is redundant with the PNS Scale subfactor Response to Lack of Structure. Thus, the two strongest components of the NFCS are nondiscriminable from the two factors of the PNS Scale.

Facet 3: Decisiveness. Webster and Kruglanski (1994) noted that three of the seven Decisiveness items were taken from M. M. Thompson et al.'s (1989) 14-item PFI Scale. This scale, developed in conjunction with the PNS Scale and distributed informally beginning in 1986, was designed to capture individual differences in the fear of making judgmental errors. As such, it represents a dispositional manifestation of a cognitive motive previously explored by Kruglanski and his colleagues as a situationally induced variable (e.g., Freund, Kruglanski, & Shpitzajzen, 1985). Given the item overlap, one might expect a strong negative correlation between Decisiveness and the PFI Scale (Decisiveness is conceptually framed in terms of a lack of fear of invalidity). Surprisingly, Webster and Kruglanski reported a moderate negative correlation between Decisiveness and the PFI Scale of −.39 (N = 157). In contrast, in our six samples, the weakest correlation was −.60, the strongest correlation was −.86, and the median was −.75. After we corrected for attenuation due to measurement error, the correlations ranged from −.73 to −1.00, with a median of −.93. The redundancy of the Decisiveness factor with the PFI Scale indicates, then, that Decisiveness also lacks adequate discriminant validity.

Facets 4 and 5: Discomfort With Ambiguity and Closed-Mindedness. We have not explored fully the relationships of the last two NFCS facets with preexisting instruments, and so we briefly make just two points. First, given the previously discussed positive relationship between Discomfort With Ambiguity and the Preferences for Order and Predictability—and the entirely overlapping relationships of these latter two facets with the PNS Scale—we were not surprised to discover that the correlations between the PNS Scale and Discomfort With Ambi-

guity (ranging from .44 to .73, with a median of .56) were essentially the same as the correlations of the Preferences for Order and Predictability with Discomfort With Ambiguity (see Table 1). As operationalized, the Discomfort With Ambiguity generally follows in the footsteps of the PNS Scale and, by extension, the Preferences for Order and Predictability. Whether the Discomfort With Ambiguity facet possesses unique utility of its own remains to be demonstrated.

Second, with respect to Closed-Mindedness, we merely note that it demonstrates little reliability as a stand-alone facet: Webster and Kruglanski (1994) reported coefficient alphas of .62 in their two samples, and our own data replicated this (αs range from .33 to .70, with a median of .59). Moreover, our analyses reveal that only two of its eight items load at levels greater than .50 on the Closed-Mindedness facet; Webster and Kruglanski's own data (Table 1, p. 1053) revealed that only three of the eight items load at this level. Given the weakness of its items, it seems unlikely that Closed-Mindedness by itself will add much of use without further psychometric development.

In summary, attempts to demonstrate discriminant validity of the NFCS fare no better when one reduces the scale to the five facets proposed by Webster and Kruglanski (1994). In particular, the Preference for Order, Preference for Predictability, and Discomfort With Ambiguity facets are redundant with the PNS Scale, and Decisiveness is redundant with the PFI Scale. Note that a revised two-factor model of the NFCS alluded to earlier would also share these difficulties, because the first of these factors seems to comprise the Preference for Order, Preference for Predictability, and Discomfort With Ambiguity facets (which are all redundant with the PNS Scale), and the second factor comprises the Decisiveness facet (which is redundant with the PFI Scale).

Theoretical Coherence

Kruglanski and his colleagues are quite consistent in their explicit definition of need for closure and the NFCS (e.g., Kruglanski, 1990; Kruglanski & Webster, 1996; Webster & Kruglanski, 1994). We reiterate this definition, quoted earlier: The need for closure reflects the desire for "*an* answer on a given topic, *any* answer, as compared to confusion and ambiguity" (Kruglanski, 1990, p. 337, italics in original). As defined, the NFCS is intended to capture a preference for nonspecific closure: Any apparently valid answer to a question is fine; whether it fits with existing views or beliefs does not matter.

The NFCS appears a poor implementation of this definition. Our analyses indicate that the bulk of the scale's items, and its most powerful items when used unidimensionally, do not assess nonspecific closure. In particular, the strongest items—from the Preference for Order, Preference for Predictability, and Discomfort With Ambiguity facets—reflect instead a preference for a specific closure, one that seeks either a clear structure or a fit of new information with previously created structures (i.e., existing beliefs, expectations, and routines). For instance, the highest loading item from the Preference for Order facet (Item 33) reads, "I enjoy having a clear and structured mode of life." Indeed, all items from these facets suggest a propensity or desire for a closure compatible with existing structures. Thus, although by definition, the NFCS was intended to capture the desire for an unconstrained, nonspecific closure, the reality of the scale's strongest and most abundant items is that they reflect the desire for a specific answer, one that creates or maintains a simple or existing structure.

This is not the case for all items, however. In particular, items from the Decisiveness facet seem to operationalize more adequately the intended construct. For instance, the two strongest items from this facet (Items 17 and 22), both reverse coded, read, "I would describe myself as indecisive" and "I tend to struggle with most decisions." Such items do not imply that any particular decision is preferred over another. Unfortunately, the Decisiveness items constitute only a small portion of the overall NFCS and, as Table 4 reveals, are overwhelmed and uninfluential when the scale is used unidimensionally. Thus, the NFCS fails to operationalize the explicit definition of the need for closure construct. Instead, it seems to capture two types of closure—most strongly, the desire for a specific closure that creates and maintains structure (as revealed in the items of the Preference for Order, Preference for Predictability, and Discomfort With Ambiguity facets) and, more weakly, the originally intended desire for a nonspecific closure (as revealed in items from the Decisiveness facet).

Conceptual complications also arise in recent presentations of the theory underlying the NFCS (Kruglanski & Webster, 1996). In brief, a person characterized by closure seeking is hypothesized to engage in two sequential processes. The first, labeled *seizing*, represents the person's urgent desire to obtain any closure as quickly as possible. The second, labeled *freezing*, represents the person's desire to maintain the previously acquired closure. The seizing process strikes us as capturing what is meant by the notion of *nonspecific* closure; the person wants to seize on an answer, any answer, and quickly, too. The subsequent freezing process, however, is not nonspecific or content free. Rather, it is organized around protecting the answer just obtained, the existing structure. As such, the freezing process reflects a desire for maintaining a *specific* closure. The processes proposed by Kruglanski and Webster to enable nonspecific closure thus reveal the same problem as the NFCS: Just as the scale includes many items capturing the desire for specific closure (contradicting its definitional aim), the model proposed to underlie the desire for nonspecific closure includes a subprocess directed toward fulfilling the desire for a specific closure. In both cases, the operations partially contradict the definition on which they are based.

What are the implications of this conceptual complication for the NFCS? The first is an optimistic one: When viewed in terms of Kruglanski and Webster's (1996) proposed two-stage process, the NFCS may potentially be quite useful if used as a multidimensional, two-factor instrument. That is, it seems to us that the Decisiveness factor (or reverse-coded PFI Scale; M. M. Thompson et al., 1989) may capture individual differences in the desire to seize, whereas the aggregated Preference for Order/Preference for Predictability/Discomfort With Ambiguity (or PNS; M. M. Thompson et al., 1989) may capture individual differences in the desire to freeze.

Unfortunately, when used unidimensionally, as done in all research to this point and as recommended by Webster and Kruglanski (1994), the NFCS confounds the dispositional desires underlying these two theoretically separable processes.

This is done in two ways. First, as already noted, the NFCS is heavily dominated by items related to the desire to freeze; as a consequence, the desire to nonspecifically seize gets short shrift.

Second, the characterization of participants as "highs" or "lows" on the NFCS through selecting extreme groups using quartile or tertile splits, as Webster and Kruglanski are wont to do, risks introducing several sources of potential bias (Pitts & West, 1996).[5] Most important for the present context, people characterized as "highs" will tend to be relatively high on both dimensions, whereas people characterized as "lows" will tend to be relatively low on both dimensions. As a consequence, the logical and highly plausible possibility that the dimensions of decisiveness and need for structure are largely orthogonal (as our data suggest) is masked, as is the possibility that these two dispositional factors operate independently on the seizing and freezing processes. Because of the confounding of the dimensions, we learn about people who are decisive and prefer simple structure, and we learn about people who are indecisive and do not prefer simple structure. However, we learn little (if anything) about the cognitive habits of people who are indecisive and prefer simple structure or who are decisive and do not prefer simple structure.

In summary, there appears to be a conceptual complication within Kruglanski and Webster's (1996) logical analysis of the need for nonspecific closure: One of the processes associated with it can be characterized by a desire for specific closure. This lack of conceptual consistency has woven itself into the NFCS, because most of its items also reflect a desire for specific closure. To us, the claimed unidimensionality in both the theory and the NFCS feels forced and confounds important distinctions between the two constructs from which they spring—*decisiveness* (i.e., the desire for nonspecific closure) and the *need for structure* (i.e., the desire for one type of specific closure).

What Do Existing NFCS Findings Mean?

We explore here two related issues. The first addresses the difficulty in interpreting specific findings that have relied on the NFCS as a unidimensional scale; the second considers the implication of such ambiguities for the broader empirical status of the need for closure construct.

Three Plausible Interpretations

All existing investigations validating the NFCS, of which we are aware, have used it as a unidimensional instrument. Because our findings demonstrate the multidimensionality of the NFCS, these findings need to be reinterpreted. Three particularly plausible interpretations stand out.

First, recall that the NFCS, when used unidimensionally, is driven largely by the three structure-related factors (Preference for Order, Preference for Predictability, and Discomfort With Ambiguity) and that it is correlated in the .80 range with the PNS Scale (M. M. Thompson et al., 1989). Such data suggest the straightforward possibility that findings using the NFCS merely reflect participants' relative desires for simple structure and that the Decisiveness component plays no role. Indeed, such an argument fits quite well with the gathered data: In all five published validation studies of the NFCS, people scoring high on the NFCS were more likely to make decisions based on information already available to them; that is, they were more likely to emphasize their existing structures and beliefs over newly acquired information running counter to these structures. In Webster and Kruglanski's (1994) study of impression formation, high-scoring participants were especially likely to exhibit *primacy* effects; their impressions were more heavily influenced by information received earlier than later. In Dijksterhuis et al. (1996), high-scoring participants were more likely to rely on their existing stereotypes to form impressions and recall information. In Kruglanski et al. (1993), high-scoring participants in a mock jury study, who had formed an initial verdict on the basis of an experimenter-provided legal analysis of the case, were especially likely to resist later attempts to persuade them to change their views. (When participants were provided with no compelling early information, and thus possessed no initial structure for a verdict, the high-NFCS individuals were especially likely to accept the views of their codeliberator, perhaps hoping to create a structure for themselves.) In Ford and Kruglanski (1995), high-scoring participants were especially likely to assimilate their views of an ambiguously presented target person to recently primed cognitive structures (see E. P. Thompson et al., 1994, for a conceptually similar demonstration using the PNS Scale). And in Webster (1993), high-scoring participants were especially likely to rely on their initial disposition-based hypotheses to understand the causes of another's actions; that is, they fell prey to the correspondence bias (Jones, 1979). Because dispositional categorizations typically occur early in the attribution sequence (Gilbert, Pelham, & Krull, 1988; Jones, 1990; Winter & Uleman, 1984; see Gilbert & Malone, 1995, for a review), thus providing an initial structure for the attributional process, we again see an instance in which prior information has a particularly strong influence on people scoring high on the NFCS.

In each of these studies, then, NFCS findings can be reinterpreted in terms of a need for structure alone: People scoring high on the NFCS clearly displayed a strong preference for information already accessible in the cognitive system over information that had just become available. This preference for already available information is the hallmark of individuals who desire to maintain their existing views of the world.

A second possibility is that the need for structure component captured by the NFCS combines additively with its decisiveness component, to influence the tendency of high NFCS scorers to prefer information compatible with initial views or expectations. That is, both components may alone encourage such simplification and, thus, when added together—as they are in a unidimensional use of the scale—lead to large effects of this sort.

A third possibility, and perhaps the most intriguing, is that the need for structure and decisiveness components interacted to create the discovered findings. That is, in the presence of a strong preference to create and maintain simple structures and

[5] The issues raised here can be most adequately addressed through the use of special participant-sampling techniques and multiple regression models. Pitts and West (1996) presented an extended discussion of issues in participant-sampling designs, including ones in which extreme scorers are selected; West, Aiken, and Krull (1996) presented a tutorial on the use of multiple regression analysis in such cases.

a strong desire to be decisive in one's decisions (which are confounded when using the NFCS unidimensionally to select extreme groups), a person should show particularly powerful primacy effects and the like. Likewise, in the presence of only a weak (or nonexistent) desire for simple structure and a desire to be indecisive (also confounded in a unidimensional use of the NFCS), a person would show no such effects. For instance, envisioning a closure-motivated process such as the one proposed by Kruglanski and Webster (1996), one might posit that a dispositionally decisive person would form a quick judgment of any sort, which would then be quickly and strongly crystallized only if that person also held a strong preference for simple structure.

Of course, any of the three alternatives are possible as things presently stand. Because the original data have not been analyzed at the facet level, and because these data are no longer available (A. W. Kruglanski, personal communication, December 27, 1995), one cannot differentiate among these possibilities.

Implications for the Need for Closure Construct

Not only was the NFCS seen by Webster and Kruglanski (1994) as a means for assessing individual differences in the need for closure, but it was also viewed as a means of cross-validating previous findings—in particular, of reducing the interpretational ambiguity of studies that attempted to manipulate the need for closure situationally. For instance, time pressure encourages people to cognitively simplify (e.g., Kruglanski & Freund, 1983), and this is assumed by Kruglanski and his colleagues to occur because time pressure increases the need to gain closure.[6] Time pressure has other effects as well, however. It reduces cognitive capacity and increases arousal, both of which have been found to lead to cognitive simplification, and thus, the effects of time pressure are ambiguous demonstrations of the need for closure construct. Webster and Kruglanski (see also Ford & Kruglanski, 1995) claimed that replications of such situationally induced effects by people who score highly on the NFCS—which ostensibly operationalizes the need for closure construct more clearly—validate their "closure" explanations of these previous studies.[7]

Unfortunately, the data presented here render the meaning of NFCS findings ambiguous. Need for closure interpretations based on situational manipulations like time pressure thus remain at issue, and evidence for the broader need for closure framework will need to come from sources other than the NFCS.

Advice for the Potential User

Our first point is straightforward: Do not use the NFCS as a unidimensional instrument. It is clearly multidimensional, so to use it as if it were unidimensional will leave interpretations of its effects ambiguous, masking potentially interesting and important findings from the subfacet level.

Given the emerging two-stage-process conception of closure seeking (Kruglanski & Webster, 1996), might the NFCS be more useful as a multidimensional instrument? We first note that the NFCS was not originally developed to represent this two-dimensional conception. We do not know how many factors will be required to adequately account for the responses to the current NFCS. We strongly suspect that ultimately, two major factors will emerge: a primary factor, reflecting a desire for structure, and a secondary factor, measuring a desire for decisiveness. However, additional work will be necessary for these scales to reach their maximum potential as measures of the intended constructs. Careful attention will need to focus on both conceptual and psychometric analyses of the items: The five current facets need to be cleaned of weak items, the ability of all items to assess the desired content domains should be reevaluated, and items may need to be added to augment the currently weaker Decisiveness factor. If proper studies of convergent, discriminant, and construct validity establish the intended and unique interpretations of the resulting subscales, the "NFCS—Revised" would offer considerable promise of being an excellent measure of individual differences in seizing and freezing.

At present, however, our recommendations must be limited to the NFCS as it is currently operationalized, relative to existing instruments. The available alternatives for assessing individual differences in seizing are the NFCS Decisiveness subfacet score and the PFI Scale. The alternatives for assessing individual differences in freezing are the aggregated Preference for Order, Preference for Predictability, and Discomfort With Ambiguity subfacets of the NFCS and the PNS Scale.

No current information exists in the literature on the unidimensionality and construct validity of the NFCS facet scales as they stand alone.[8] More complete data exist for the PNS and PFI Scales (M. M. Thompson et al., 1989). The NFCS Preference for Order and Preference for Predictability facets largely comprise items from the earlier developed PNS Scale, leading to correlations between these two facets and their corresponding PNS Scale factors in the .80 range. The factors from both scales possess reasonable internal consistencies, although the PNS Scale factors do so with fewer items. Neuberg and Newsom (1993) dropped one item from the original PNS Scale and demonstrated that two highly correlated (median $r = .68$) factors, Desire for Structure and Response to Lack of Structure, underlie this scale. Considerable scale validation work on the PNS Scale has shown its ability to predict which individuals

[6] In earlier instantiations of lay epistemic theory, time pressure was presumed to activate the need for structure (e.g., Kruglanski & Freund, 1983).

[7] Of course, just because scores on the NFCS predict similar outcomes to those created by situational manipulations does not mean that the processes underlying the two outcomes are the same. There are difficult conceptual and empirical issues associated with making claims that a manipulation changes, and a measurement operation assesses, the same construct (West, 1986; West & Finch, in press), and demonstrations that two variables yield parallel effects across studies provide only weak evidence toward this end.

[8] Our focus is on the NFCS Preference for Order, Preference for Predictability, and Decisiveness facets. Our data reveal that Discomfort With Ambiguity is tightly linked with the Preferences for Order and Predictability and that Closed-Mindedness stands very weakly on its own. Although there might be some utility in creating distinct Discomfort With Ambiguity and Closed-Mindedness subscales, we have seen no evidence of it.

engage in simplifying, structuring processes (see our earlier review).

Items from the NFCS Decisiveness facet are derived largely from the M. M. Thompson et al. (1989) PFI Scale. The two scales are scored in the opposite direction and correlate strongly ($r = -.75$). In our samples, coefficient alpha for the PFI Scale was slightly higher than that of the Decisiveness facet (e.g., .85 vs. .82 in the aggregated student sample, .79 vs. .71 in the shoppers sample), reflecting its longer scale length (14 vs. 7 items). Confirmatory factor analyses on the one-factor model of the PFI Scale yielded CFIs of .83 in the aggregated student sample and .78 in the shoppers sample. The identical analyses of the one-factor model of Decisiveness showed an adequate fit in the aggregated student sample (CFI = .97) and a marginal fit in the shoppers sample (CFI = .86). These analyses suggest that Decisiveness has a better single-factor structure. Elimination or rewording of weaker PFI Scale items would be expected to increase its unidimensionality. Finally, unlike the Decisiveness subscale, the PFI Scale has demonstrated some usefulness in predicting theoretically relevant outcomes related to indecisiveness. For instance, people scoring high on the PFI Scale are more likely to experience ambivalent attitudes (M. M. Thompson & Zanna, 1995) and to procrastinate and fail to complete course requirements (Somers & Lefcourt, 1991).

Taken together, the data seem to suggest that the scales will be largely interchangeable for purposes of practical prediction, owing to their common origins in the items from the M. M. Thompson et al. (1989) scales. Nonetheless, small advantages in psychometric properties and construct validity are magnified when using individual-differences measures to test precise theoretical predictions. The PNS Scale demonstrates comparable internal consistency, a clearer dimensional structure, and considerably greater evidence of validity than the NFCS facets of Preference for Order and Preference for Predictability. As a result, the PNS Scale would seem a more effective operationalization of individual differences in the desire to cognitively freeze.

Conclusions to be drawn from the comparison of the PFI Scale and the NFCS facet of Decisiveness are less clear. The PFI Scale offers a slight advantage in internal consistency and somewhat greater evidence of construct validity, whereas the Decisiveness facet offers a clearer one-dimensional structure. Given the importance of the seizing process and the desire for nonspecific closure in the theorizing on epistemic motives, future research to improve the dimensional structure of the PFI Scale or to provide evidence of the validity of the Decisiveness facet is needed.

In summary, the potential adopter of the NFCS should be wary. Its use as a unidimensional instrument is likely to mask interesting and important processes occurring at the subfactor level, and it has yet to receive validation as a multifactor instrument.

Where Do We Go From Here?

The NFCS (Webster & Kruglanski, 1994) is not a unidimensional scale but quite likely consists of two independent factors—one capturing the *desire for decisiveness* (i.e., the desire for nonspecific closure) and the other capturing a *need for simple structure* (i.e., one form of the desire for specific closure). The process underlying nonspecific closure seeking (Kruglanski & Webster, 1996) also has a two-part character: a seizing process, characterized by the urgent desire to gain a quick, nonspecific solution, and a freezing process, characterized by the desire to maintain with some extent of permanence the specific solution seized on. We have suggested a symmetry between the closure-seeking process and the chronic preferences captured by the NFCS. The seizing process has, as a dispositional analogue, a preference for decisiveness, whereas the freezing process has, as a dispositional analogue, a preference for structure. Unfortunately, both the NFCS (when used unidimensionally) and the theory of closure (when defined as a theory of nonspecific closure) mask the important conceptual and dispositional differences between *seizing/need for nonspecific closure* and *freezing/need for structure*. We hope this article clearly illustrates this confounding and encourages explorations to disentangle the constructs and their operations. Pitts and West (1996) presented methods for doing this.

Broader Issues in Personality Scale Development

We have criticized the NFCS for its multidimensionality. Although some multidimensional constructs are theoretically useful, multidimensionality in measurement instruments that are used as if they were unidimensional is always problematic. As psychometricians have long noted, such instruments leave researchers unable to discern the true forces underlying their effects (e.g., Briggs & Cheek, 1986; Finch & West, in press; Guilford, 1954; McNemar, 1946; West & Finch, in press). The NFCS is a case in point.

In closing, we make two brief suggestions regarding scale development and use. First, whenever conceptually justifiable, create a unidimensional instrument, one that captures precisely the psychological construct of interest and little else. Second, if an existing scale is multidimensional, use it that way. We strongly agree with Briggs and Cheek (1986): "It is unacceptable to continue using a total score alone when to do so deliberately ignores distinctions that are conceptually meaningful and empirically useful" (p. 129).

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Appendix A

Need for Closure Scale

1. I think that having clear rules and order at work is essential for success. (*Facet 1*)
2. Even after I've made up my mind about something, I am always eager to consider a different opinion. (*reverse scored, Facet 5*)
3. I don't like situations that are uncertain. (*Facet 4*)
4. I dislike questions which could be answered in many different ways. (*Facet 5*)
5. I *like* to have friends who are unpredictable. (*reverse scored, Facet 2*)
6. I find that a well-ordered life with regular hours suits my temperament. (*Facet 1*)
7. When dining out, I like to go to places where I have been before so that I know what to expect. (*Facet 2*)
8. I feel uncomfortable when I don't understand why an event occurred in my life. (*Facet 4*)
9. I feel irritated when one person disagrees with what everyone else in a group believes. (*Facet 5*)
10. I hate to change my plans at the last minute. (*Facet 1*)
11. I don't like to go into a situation without knowing what I can expect from it. (*Facet 2*)
12. When I go shopping, I have difficulty deciding exactly what it is that I want. (*reverse scored, Facet 3*)
13. When faced with a problem I usually see the one best solution very quickly. (*Facet 3*)
14. When I am confused about an important issue, I feel very upset. (*Facet 4*)
15. I tend to put off making important decisions until the last possible moment. (*reverse scored, Facet 3*)
16. I usually make important decisions quickly and confidently. (*Facet 3*)
17. I would describe myself as indecisive. (*reverse scored, Facet 3*)
18. I think it is fun to change my plans at the last minute. (*reverse scored, Facet 2*)
19. I enjoy the uncertainty of going into a new situation without knowing what might happen. (*reverse scored, Facet 2*)
20. My personal space is usually messy and disorganized. (*reverse scored, Facet 1*)
21. In most social conflicts, I can easily see which side is right and which is wrong. (*Facet 4*)
22. I tend to struggle with most decisions. (*reverse scored, Facet 3*)
23. I believe that orderliness and organization are among the most important characteristics of a good student. (*Facet 1*)
24. When considering most conflict situations, I can usually see how both sides could be right. (*reverse scored, Facet 5*)
25. I don't like to be with people who are capable of unexpected actions. (*Facet 2*)
26. I prefer to socialize with familiar friends because I know what to expect from them. (*Facet 2*)
27. I think that I would learn *best* in a class that *lacks* clearly stated objectives and requirements. (*reverse scored, Facet 1*)
28. When thinking about a problem, I consider as many different opinions on the issue as possible. (*reverse scored, Facet 5*)
29. I like to know what people are thinking all the time. (*Facet 4*)
30. I dislike it when a person's statement could mean many different things. (*Facet 4*)
31. It's annoying to listen to someone who cannot seem to make up his or her mind. (*Facet 4*)
32. I find that establishing a consistent routine enables me to enjoy life more. (*Facet 1*)
33. I enjoy having a clear and structured mode of life. (*Facet 1*)
34. I *prefer* interacting with people whose opinions are very different from my own. (*reverse scored, Facet 5*)
35. I like to have a place for everything and everything in its place. (*Facet 1*)
36. I feel uncomfortable when someone's meaning or intention is unclear to me. (*Facet 4*)
37. When trying to solve a problem I often see so many possible options that it's confusing. (*reverse scored, Facet 3*)
38. I always see so many possible solutions to problems I face. (*reverse scored, Facet 5*)
39. I'd rather know bad news than stay in a state of uncertainty. (*Facet 4*)
40. I do not usually consult many different opinions before forming my own view. (*Facet 5*)
41. I dislike unpredictable situations. (*Facet 2*)
42. I *dislike* the routine aspects of my work (studies). (*reverse scored, Facet 1*)

Note. Facet 1 = Preference for Order; Facet 2 = Preference for Predictability; Facet 3 = Decisiveness; Facet 4 = Discomfort With Ambiguity; Facet 5 = Closed-Mindedness. From "Motivated Resistance and Openness to Persuasion in the Presence or Absence of Prior Information," by A. W. Kruglanski, D. M. Webster, and A. Klem, 1993, *Journal of Personality and Social Psychology, 65,* pp. 861–876. Copyright 1993 by the American Psychological Association. Reprinted with permission of the author.

(*Appendixes continue*)

Appendix B

Personal Need for Structure Scale

1. It upsets me to go into a situation without knowing what I can expect from it. (*Factor 2*)
2. I'm not bothered by things that interrupt my daily routine. (*reverse scored, Factor 2*)
3. I enjoy having a clear and structured mode of life. (*Factor 1*)
4. I like to have a place for everything and everything in its place. (*Factor 1*)
5. I enjoy being spontaneous. (*discarded in revised 11-item version*)
6. I find that a well-ordered life with regular hours makes my life tedious. (*reverse scored, Factor 1*)
7. I don't like situations that are uncertain. (*Factor 2*)
8. I hate to change my plans at the last minute. (*Factor 2*)
9. I hate to be with people who are unpredictable. (*Factor 2*)
10. I find that a consistent routine enables me to enjoy life more. (*Factor 1*)
11. I enjoy the exhilaration of being in unpredictable situations. (*reverse scored, Factor 2*)
12. I become uncomfortable when the rules in a situation are not clear. (*Factor 2*)

Note. Factor 1 = Desire for Structure; Factor 2 = Response to Lack of Structure. From *Assessing Cognitive Need: The Development of the Personal Need for Structure and Personal Fear of Invalidity Scales,* by M. M. Thompson, M. E. Naccarato, and K. E. Parker, 1989. Copyright 1986 by M. M. Thompson, M. E. Naccarato, and K. E. Parker. Reprinted with permission.

Appendix C

Personal Fear of Invalidity Scale

1. I may struggle with a few decisions, but not very often. (*reverse scored*)
2. I never put off making important decisions. (*reverse scored*)
3. Sometimes I become impatient over my indecisiveness.
4. Sometimes I see so many options to a situation that it is really confusing.
5. I can be reluctant to commit myself to something because of the possibility that I might be wrong.
6. I tend to struggle with most decisions.
7. Even after making an important decision, I continue to think about the pros and cons to make sure that I am not wrong.
8. Regardless of whether others see an event as positive or negative, I don't mind committing myself to it. (*reverse scored*)
9. I prefer situations where I don't have to decide immediately.
10. I rarely doubt that the course of action I have selected will be correct. (*reverse scored*)
11. I tend to continue to evaluate recently made decisions.
12. I wish I didn't worry so much about making errors.
13. Decisions rarely weigh heavily on my shoulders. (*reverse scored*)
14. I find myself reluctant to commit to new ideas but find little comfort in remaining with the tried and true.

Note. From *Assessing Cognitive Need: The Development of the Personal Need for Structure and Personal Fear of Invalidity Scales,* by M. M. Thompson, M. E. Naccarato, and K. E. Parker, 1989. Copyright 1986 by M. M. Thompson, M. E. Naccarato, and K. E. Parker. Reprinted with permission.

Received October 25, 1995
Revision received April 29, 1996
Accepted July 5, 1996 ■