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## **Item selection and validation of a brief, 15-item version of the Need for Closure Scale**

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## Abstract

Since its introduction, the Need for Closure scale (NFC, Webster & Kruglanski, 1994, revised by Roets & Van Hiel, 2007) has been frequently used in psychological research. However, given the scale's substantial length, researchers often used abridged, 'idiosyncratic' versions by selecting a number of items on seemingly arbitrary grounds, without reporting or validating their item selection. The present study aims to meet the apparent need for an empirically validated abridged NFC scale. Based on data obtained from an aggregated heterogeneous sample ( $N = 1584$ ), we propose a 15-item selection comprising three items from each facet scale. Comparison of the full and reduced NFC scales revealed similar psychometric properties and correlations with third variables. The brief NFC scale provides researchers with a useful tool for assessing the NFC construct when practical considerations prohibit the use of the original full 42-item scale or the 41-item revised version.

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## Introduction

The Need for Closure (NFC) concept was introduced by Kruglanski (1990; Kruglanski & Webster, 1996) to develop a theoretical framework for the cognitive-motivational aspects of decision making. Kruglanski (1990) defined NFC as the desire for “*an* answer on a given topic, *any* answer ... compared to confusion and ambiguity” (p. 337). Two highly entwined tendencies are assumed to underlie the NFC: the urgency tendency refers to the inclination to ‘seize’ on closure quickly whereas the permanence tendency refers to the desire to maintain or ‘freeze’ on closure. Both tendencies serve to avoid the aversive lack of closure, the first by terminating this state quickly, and the second by keeping it from recurring. This desire for cognitive closure varies along a continuum with a strong need to attain closure at one end and a high need to avoid closure at the other end. NFC may be temporarily increased by situational manipulations (e.g., noise or time pressure), but people also substantially differ in their chronic level of ‘dispositional closure’. To measure these stable individual differences, Webster and Kruglanski (1994) developed a 42-item NFC scale, which includes five facet scales representing various ways in which NFC expresses itself. Individuals high in dispositional NFC *prefer order* and structure in their lives, abhorring chaos and disorder. They also *prefer predictability*, desiring secure and stable knowledge, which is reliable across circumstances and unchallenged by exceptions. High NFC individuals also experience an urgent desire to reach swift decisions, reflected in their need for *decisiveness*. Furthermore, they feel *discomfort with ambiguity*, experiencing situations as aversive when they are devoid of closure. Finally they are *closed-minded*, being unwilling to have their knowledge challenged by alternative opinions or inconsistent evidence.

*Dimensional structure of the Need for Closure Scale*

Although the NFC scale was developed as a one-dimensional measure of the NFC construct, Neuberg, Judice, and West (1997) proposed a two-dimensional structure for the scale based on their psychometric analyses. The first factor comprised items from the facets Order, Predictability, Ambiguity and Closed-mindedness, whereas the Decisiveness items loaded on a second, orthogonal factor. Neuberg et al. (1997) suggested that these two factors represent the freezing and seizing tendencies respectively. However, this interpretation has been heavily contested and the meaning of the two factors remained the subject of debate for years (see, e.g., Kruglanski, De Grada, Mannetti, Atash, & Webster, 1997; Neuberg, West, Judice, & Thompson, 1997; Roets & Van Hiel, 2007). Recently however, Roets, Van Hiel, and Cornelis (2006) provided an alternative interpretation of the two-dimensional structure arguing that the distinct status of the Decisiveness factor is due to contamination by ‘ability-content’ as opposed to the intended measurement of a motivational ‘need’ (see also, Mannetti, Pierro, Kruglanski, Taris, & Bezinovic, 2002). This claim was corroborated in a series of studies by Roets and Van Hiel (2007) who demonstrated that the original Decisiveness items indeed tap into the ability to achieve cognitive closure rather than to probe into the motivation or need to achieve closure. To resolve this problem, the authors provided six alternative Decisiveness items measuring the intended ‘need’ to replace the seven original, ‘contaminated’, Decisiveness items in the NFC scale. Subsequent analyses showed that the revised 41-item NFC scale constitutes a one-dimensional *need* scale, as was intended by its original developers. As such, the revised scale has now been acknowledged by NFC researchers as the “improved version of the scale” (Kruglanski, Dechesne, Orehek, & Pierro, 2009; p. 151).

#### *The need for an abridged version of the NFC scale*

During the last decade, the NFC construct has captured the interest of many researchers and hundreds of studies indexed in Web of Science have used the (revised) NFC scale in a wide

variety of domains within psychology, as well as in business and management literature. However, given the scale's substantial length, researchers often used abridged versions, selecting items at their own discretion. Some recent examples of this common practice include Keller (2005) who selected 14 items, Kimmelmeier (2010) who used a 26-item version, and Lynch, Netemeyer, Spiller, and Zammit (2010) who used an 8-item version. Regrettably, these studies using abridged versions generally did not provide information about which items were used, nor on which ground the items were selected or whether an attempt was made to validate the selected item set. Although the abridged NFC versions generally yielded the expected effects, the use of such 'idiosyncratic' item selections is problematic. Indeed, the arbitrary selection of items is a threat to the comparability of results across studies and makes it hard to replicate findings. Moreover, it is unclear to what extent these unvalidated item-sets capture the core aspects of NFC, and to what extent they are representative for the various facet scales.

Still, the use of a reduced version of the NFC scale makes sense as practical considerations may impede the assessment of the rather lengthy, full NFC scale, especially when NFC is only one of many variables of interest in a particular study. The present study therefore seeks to meet the need for an empirically validated, short version of the NFC scale. Our aim was to obtain a reduced, one-dimensional version of the scale with high internal consistency and a minimal loss of the content richness and the predictive power of the construct.

To reach this goal, we analyzed the factor loadings of the 41 items of the revised NFC scale (Roets & Van Hiel, 2007) on a single dimension in a large heterogeneous sample. Next, we selected the three items with the highest loadings for each facet scale. This approach allows identifying the items that best tap into the general NFC construct, but also ensures a fair representation of all NFC facets. In particular, a selection of three items from each facet scale

eliminates the possibility that one or two facets would dominate the reduced item set, thereby compromising its utility as a general measure of the broad NFC construct. Finally, we compared the relationships between the full and the reduced NFC scale and a variety of relevant variables.

## Method

### *Participants*

Several data sets assessing the revised NFC scale collected over the last three years were merged to obtain a large heterogeneous sample ( $N = 1584$ ). This aggregated sample comprised new samples as well as data from Dhont, Roets, and Van Hiel (in revision); Onraet, Van Hiel, Roets, and Cornelis (in press); Roets and Soetens (2010); and Roets and Van Hiel (2008; in press). The total sample consisted of 1142 adults and 442 students of which 36% were men. Mean age was 34.04 years ( $SD = 15.62$ ), ranging from 16 to 86 years.

### *Measures*

All participants completed the 41-item revised NFC scale (Webster & Kruglanski, 1994; revised by Roets & Van Hiel, 2007). Additionally, we assessed a number of variables relevant for comparing the magnitudes of the relationships with the brief and full NFC scale. These variables included Right-Wing Authoritarianism (RWA; Altemeyer, 1981), Social Dominance Orientation (SDO; Pratto, Sidanius, Stallworth & Malle, 1994), Subtle racism (Pettigrew & Meertens, 1995), Blatant racism (Van Hiel & Mervielde, 2002; based on Billiet and De Witte, 1991), Essentialist Entitativity beliefs (Roets & Van Hiel, in press), Need for Cognitive Structure (Bar-Tal, 1994), Need for Cognition (Cacioppo & Petty, 1982), Need for Affect (Maio & Esses, 2001), NEO-FFI (Costa & McCrae, 1992), and Psychological distress (SCL-90; Derogatis, 1977). All scales were rated on 5-point Likert scales ranging from 1 (completely disagree) to 5 (completely agree) with the exception of Need for Closure, Need for Cognition, Need for Affect,

and Need for Structure, which were rated on 6-point Likert scales ranging from 1 (completely disagree) to 6 (completely agree).

## Results

Given that the revised NFC scale is used and validated as a one-dimensional measure (see Roets & Van Hiel, 2007), Principal Component Analysis was used to extract a single component from the full NFC item set, explaining 23.10% of the variance. All items with their component loadings are presented in Table 1, with the three highest loading items for each facet highlighted in bold face. These items were combined in a 15-item brief NFC scale.

Next, we conducted Exploratory and Confirmatory Factor Analysis on the 15 selected items to test the one-dimensionality of the reduced scale. PCA clearly revealed a one-dimensional solution for the 15-item selection explaining 36.7% of the variance. An eigenvalue of 5.51 was obtained for the first component whereas the eigenvalues for the subsequent components dropped to 1.19, 1.08, .95, and .88 respectively. Subsequently, Confirmatory Factor Analysis in Lisrel was conducted, testing a model in which all items loaded on a single latent variable and errors between items from the same facet were allowed to correlate to account for their common facet source<sup>1</sup>. Based on the standard cut-off values of .09 for SRMR, .06 for RMSEA and .95 or more for CFI (see, Hu and Bentler, 1999), the data yielded a good model fit;  $\chi^2(75) = 446.06$ , SRMR = .038, RMSEA = .058, CFI = .98, corroborating the one-dimensional structure of the 15-item scale<sup>2</sup>.

Means and internal consistencies were compared for the full and abridged NFC scales. As depicted in Table 2, both NFC scales showed similar scale characteristics. The Cronbach alphas

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<sup>1</sup> Mean levels of error term correlations for the five facets were .19, .08, .13, .00, and .10, respectively with .23 being the highest individual value. Alternative models including a hierarchical facet model and a model ignoring the items' common facet source yielded considerably worse fit on all indices. Specifications and fit indices for these models are available on request from the authors.

<sup>2</sup> For a Confirmatory Factor Analysis of the full NFC scale, see Roets and Van Hiel (2007).



were comparable and no significant difference between the scale means was found,  $t(1, 1583) = 1.50$ , *ns*. Additionally, a subsample of 93 participants completed the NFC scale twice with a one month interval. Adequate test-retest stability was obtained for both the 41-item version ( $r = .87$ ) and the 15-item version ( $r = .79$ ).

Next, we computed the correlations of the two NFC scales with variables that have been previously linked to NFC (i.e., RWA, SDO, racism, essentialism, psychological distress, and NEO-FFI factors) and with variables that allow testing convergent and divergent validity (Need for Structure, Need for Cognition, and Need for Affect). As can be seen in Table 2, correlations with these variables were almost identical for the full and the 15-item version of the NFC scale. Formal comparison of the magnitude of these relationships was conducted by computing Steiger's  $z$  values for dependent correlations. Overall, these analyses revealed no significant differences between the two scales in their correlations with the relevant variables (see Table 2). Only for the correlations with SDO and Subtle racism were the minor differences in magnitude (i.e.,  $\Delta r = .05$  and  $.03$  respectively) significant, merely as a result of the large sample sizes.

### Discussion

The aim of the present study was to provide researchers with an empirically validated abridged version of the Need for Closure scale (NFC, Webster & Kruglanski, 1994; revised by Roets & Van Hiel, 2007). Based on their component loadings, a total of fifteen items were selected including three items from each NFC facet scale. Further analyses showed that the psychometric properties of the abridged NFC scale were similar to those of the revised full NFC scale. Moreover, virtually identical relationships were found between both versions of the scale and relevant variables that have been associated with NFC in the literature. The results indicate that the 15-item selection may be used as a valid alternative measure of the NFC construct, as

such providing researchers with a useful tool for assessing the NFC construct when practical considerations prohibit the use of the full scale. We believe that the present reduced version of the scale therefore allows extending the scope of studies in which NFC can be assessed and provides a standard alternative for the existing variety of unvalidated, ‘ideosyncratic’ item-sets that have often been used to measure the NFC construct in previous studies (e.g., Keller, 2005; Kimmelmeier, 2010).

Having highlighted the merits of the standardized abridged scale, we however want to put forward some cautionary notes concerning its use. First, it might be possible that responses on the 15 item scale somewhat depend on whether these items are imbedded in the full NFC scale or whether they are assessed as a stand-alone questionnaire. Indeed, Knowles and Condon (2000) have argued that “respondents interpret items within a context. As the context of an item changes, ..., the meaning of the item may shift” (p. 250). Given the straightforward nature of the NFC items and the equal representation of all NFC facets, we expect such context-dependent changes in meaning (if any) to be minimal and unlikely to substantially affect the predictive power of the brief scale or its comparability with the full scale. Nevertheless, future research assessing the scale as a stand-alone measure is warranted to rule out possible “context-effects” as a final step in the validation of the brief NFC scale.

Second, we want to emphasize that the brief NFC scale does not aim to replace the full scale<sup>3</sup>. Moreover, keeping in mind its purpose, the 15-item selection is designed to measure overall individual differences in NFC on a one-dimensional scale, while preserving the content richness of the broad construct. The abridged scale is, however, not suitable for the assessment of the individual NFC facets. Indeed, each facet is represented by three items to obtain a scale that

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<sup>3</sup> Given that the brief NFC scale is a selection of existing items, we believe that it is appropriate for researchers to also accredit the authors of the original full NFC scale and its revised version when using this selected item set.

taps into the different aspects of NFC, but these items were selected for being most representative for the overall NFC construct rather than for their respective facets. In other words, the selected items are exemplary for the different facet scales, but not all of these items are necessarily the ones with the highest loading on their specific facet scale. Therefore, we advise researchers to use the full (revised) scale if they seek to discriminate between the different facets of the NFC scale in their studies. Finally, we want to note that the original scale and the present abridged version assess the NFC relying on the “five major aspects assumed to broadly represent the universe of the construct” (Webster & Kruglanski, 1994; p. 1050) without explicitly framing the items in terms of seizing and freezing tendencies (see e.g. Kruglanski & Webster, 1996; Roets et al., 2006). It may nevertheless be interesting to investigate in future research whether these tendencies can be disentangled and assessed individually with items specifically designed for this purpose.

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Table 1

Items of the revised NFC scale with component loadings for the 41-item and the 15-item version

A	Item	41- item NFC	15-item NFC
1	I think that having clear rules and order at work is essential for success.	.500	
5	Even after I've made up my mind about something, I am always eager to consider a different opinion. R	-.051	
4	<b>I don't like situations that are uncertain.</b>	.655	.672
5	<b>I dislike questions which could be answered in many different ways.</b>	.520	.556
2	I like to have friends who are unpredictable. R	.435	
1	<b>I find that a well ordered life with regular hours suits my temperament.</b>	.728	.718
2	When dining out, I like to go to places where I have been before so that I know what to expect.	.488	
4	<b>I feel uncomfortable when I don't understand the reason why an event occurred in my life.</b>	.474	.501
5	<b>I feel irritated when one person disagrees with what everyone else in a group believes.</b>	.391	.419
1	I hate to change my plans at the last minute.	.688	
2	<b>I don't like to go into a situation without knowing what I can expect from it.</b>	.736	.744
3	<b>When I have made a decision, I feel relieved</b>	.440	.476
3	<b>When I am confronted with a problem, I'm dying to reach a solution very quickly.</b>	.521	.514
4	When I am confused about an important issue, I feel very upset.	.459	
3	<b>I would quickly become impatient and irritated if I would not find a solution to a problem immediately.</b>	.496	.516
3	I would rather make a decision quickly than sleep over it.	.275	
3	Even if I get a lot of time to make a decision, I still feel compelled to decide quickly.	.361	
2	I think it is fun to change my plans at the last moment. R	.529	
2	I enjoy the uncertainty of going into a new situation without knowing what might happen. R	.541	
1	My personal space is usually messy and disorganized. R	.420	
4	In most social conflicts, I can easily see which side is right and which is wrong.	.177	
3	I almost always feel hurried to reach a decision, even when there is no reason to do so.	.410	



1	I believe that orderliness and organization are among the most important characteristics of a good student.	.571	
5	When considering most conflict situations, I can usually see how both sides could be right. R	.019	
2	<b>I don't like to be with people who are capable of unexpected actions.</b>	.638	.655
2	I prefer to socialize with familiar friends because I know what to expect from them.	.570	
1	I think that I would learn best in a class that lacks clearly stated objectives and requirements. R	.027	
5	When thinking about a problem, I consider as many different opinions on the issue as possible. R	-.061	
4	I like to know what people are thinking all the time.	.239	
4	<b>I dislike it when a person's statement could mean many different things.</b>	.559	.587
4	It's annoying to listen to someone who cannot seem to make up his or her mind.	.397	
1	<b>I find that establishing a consistent routine enables me to enjoy life more.</b>	.703	.715
1	<b>I enjoy having a clear and structured mode of life.</b>	.772	.764
5	I prefer interacting with people whose opinions are very different from my own. R	.201	
1	I like to have a place for everything and everything in its place.	.648	
4	I feel uncomfortable when someone's meaning or intention is unclear to me.	.472	
5	I always see many possible solutions to problems I face. R	.087	
4	I'd rather know bad news than stay in a state of uncertainty.	.177	
5	<b>I do not usually consult many different opinions before forming my own view.</b>	.209	.240
2	<b>I dislike unpredictable situations.</b>	.743	.755
1	I dislike the routine aspects of my work (studies). R	.303	

Note: Column A indicates the facet scales: 1 = order, 2 = predictability, 3 = decisiveness (revised scale), 4 = ambiguity, 5 = closed-mindedness. Items indicated with R are reverse scored. Printed with permission of the authors.

Table 2

Descriptive statistics and correlations for the full and reduced NFC scale

	<i>N</i>	<i>M (SD)</i>	<i>α</i>	NFC 41 items	NFC 15 items	Steiger's <i>z</i>
NFC 41 items	1584	3.77 (.74)	.90			
NFC 15 items	1584	3.76 (.54)	.87	.95***		
RWA	628	2.77 (.67)	.83	.57***	.55***	1.11
SDO	763	2.23 (.67)	.87	.25***	.20***	3.79
Blatant Racism	635	2.15 (.84)	.90	.45***	.44***	1.03
Subtle Racism	681	3.20 (.58)	.82	.39***	.36***	2.91
Essentialist Entitativity	140	2.77 (.58)	.78	.50***	.48***	.86
SCL-90	310	1.47 (.49)	.98	.18**	.20***	-1.13
Agreeableness	219	3.61 (.49)	.70	-.11	-.10	-.22
Neuroticism	219	2.73 (.65)	.81	.21**	.24***	-1.06
Openness	219	3.21 (.59)	.75	-.50***	-.47***	-1.33
Conscientiousness	219	3.77 (.57)	.82	.33***	.31***	1.13
Extraversion	219	3.47 (.53)	.74	-.03	.01	-1.83
Need for Structure	320	3.60 (.74)	.89	.80***	.78***	1.73
Need for Cognition	317	3.93 (.71)	.86	-.29***	-.27***	-.73
Need for Affect	294	4.65 (.72)	.86	-.16***	-.17***	.22

Note: \*\*\*  $p < .001$ , \*\*  $p < .01$