Influence of Need for Cognition and Need for Cognitive Closure on Three Information Behavior Orientations

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ABSTRACT
Need for Cognition and Need for Cognitive Closure are two stable traits that can enlighten the understanding of inter-individual variations in information behavior. Following a qualitative phase, an information behavior scale was developed using items related to the ways in which information is needed, sought, used and shared. This scale was tested with 122 undergraduate students. Results of a factor analysis indicated three different and non-mutually exclusive aspects of information behavior: orientation to rule following, preference for familiarity and simplicity, and desire for intellectual independence. Analyses of variances for each factor, using scores for Need for Cognition and Need for Cognitive Closure as independent variables, indicated that these two traits produce significant effects on information behavior. A significant main effect of Need for Cognition was observed for the orientation to rule following and the desire for intellectual independence. A significant main effect of Need for Cognition was observed for the preference for familiarity and simplicity. Lastly, a significant interaction effect between Need for Cognition and Need for Cognitive Closure was also observed for the desire for intellectual independence.

Keywords
Information behavior, personality, need for cognition, need for cognitive closure.

INTRODUCTION
Variations in people’s interactions with information have been studied mainly in terms of specific occupations (e.g. scholars, managers), roles (e.g. patients, students) or demographic groups, but also in terms of specific personality characteristics (Case, 2007; Pettigrew, Fidel & Bruce, 2001). Individual differences, which have long been of interest to understand variations in the ways in which individuals think, feel and act (Pettigrew & Cherry, 2012; Revelle, Wilt & Rosenthal, 2010), have also been explored. These dispositions, while not fully determinative of behavior, are stable across situations, exerting their influence across a broad variety of contexts. They therefore affect, among many other things, information behavior, which remains essentially, according to Wilson (2000, p. 49), a subset of general human behavior “[…] in relation to sources and channels of information, including both active and passive information seeking and information use.”

Wilson (1981) suggested that individuals are likely to encounter barriers of different kinds in their searches for information. At the personal level, these barriers were shown to be physiological, affective and cognitive states. In a subsequent model, Wilson and Walsh (1996) replaced “barriers” by “intervening variables” indicating that their impact can be either positive or negative. Other general models of information behavior (e.g. Savolainen, 1995; Williamson, 1998; Bates, 2002) also recognize the influence of individual differences.

Individual differences can be studied from the macro-perspective of personality or the micro-level of a specific trait. Research using general models of personality, such the Five-factor model of personality (Costa & McCrae, 1985), the Myers-Briggs Type Indicator (Myers & McCaulley, 1985) and the Kirton Adoption-Innovation Inventory (Kirton, 1989), indicates that differences in personality variables have an influence on interaction with information. Heinström (2005), for instance, demonstrated that neuroticism, openness to experience and agreeableness (factors within the five-factor model of personality) have a significant effect on critical information judgment, information choice criteria, effort used, thoroughness in information seeking and information sources used.

Two other stable individual traits that can enlighten the understanding of inter-individual variations in information behavior are Need for Cognition (Cacioppo & Petty, 1982) and Need for Cognitive Closure (Kruglanski, 1989). The
goal of this research is to examine the impact of Need for Cognition and Need for Cognitive Closure on information behavior, not only in the ways information is sought, but also in the ways in which it is needed, used and shared. To do so, a two-phase exploratory mixed methods study was designed. Qualitative data were gathered during the first phase. They were then used to build an information behavior scale used in a second phase to verify whether the variations observed in the first phase could be demonstrated statistically. This paper reports the results of the second phase.

BACKGROUND

This study focuses on two traits with implications for information behavior that have been widely studied in psychology: Need for Cognition (the tendency to engage in and enjoy cognitive efforts) and Need for Cognitive closure (the desire for unambiguous information, as opposed to uncertainty or ambiguity). These traits can influence information needs, information seeking, information use and information sharing. While it is unusual that they would be studied together, there is reason to do so, since they (1) are distinct constructs (indicated by the low correlation between the two traits in studies populations; Petty & Jarvis, 1996; Webster & Kruglanski, 1994, p. 1055) and (2) both measure motivation for seeking and using information. Need for cognition is process oriented (taking pleasure in a cognitive task), while Need for Cognitive Closure is goal oriented (need for a well-organized world; Webster & Kruglanski, 1994, p. 1055).

Need for Cognition

Need for Cognition is defined as the tendency to engage in and enjoy cognitive efforts (Cacioppo & Petty, 1982). This motivation varies along a bipolar continuum. An individual with a high Need for Cognition finds satisfaction in thinking whereas an individual with a low Need for Cognition perceives thinking as a chore, in which he or she engages only when some incentive is present (Cacioppo et al., 1996, pp. 198–217). Research in psychology has demonstrated clear links between variations in Need for Cognition and some aspects of information behavior studied in information science. Individuals with a high Need for Cognition are more likely to engage in information seeking activities than individuals with a low Need for Cognition (Cacioppo et al., 1996, pp. 239–242). An individual with a high Need for Cognition will also seek more information, evaluate more thoroughly the quality of the information found, be more likely rely on all of the pertinent information (as opposed to relying on simple cues) and use a wider variety of information sources, including sources that were previously unknown (Cacioppo et al., 1996, p. 239; Petty et al., 2009). Last, simple messages tend to be more accepted by individuals with a low Need for Cognition, but rejected by individuals with a high Need for Cognition, and vice versa (e.g. Williams-Piehota et al., 2003).

Need for cognition is a stable and gender-neutral variable (Cacioppo & Petty 1982, pp. 129–130; Cacioppo et al., 1996, p. 197, p. 217) with predictable consequences for information behavior. However, despite one’s level in Need for Cognition, behaviors can be moderated at times by situational factors such as personal relevance of the situation or external contingencies surrounding a task, as indicated by Lewin’s (1936) dictum on the importance of both the person and the environment. Literature indicates that differences between individuals low and high in Need for Cognition are more perceptible in situations with a moderate level of personal relevance (Cacioppo et al., 1996, p. 244). For instance, a message of high personal relevance or one with emotional content can motivate an individual with a lower need of cognition to scrutinize the information at hand more carefully (Petty et al., 2009, p. 321). In other circumstances, a message that is framed for people who do not like to think or one that is of no relevance at all might be simply ignored by an individual with a high Need for Cognition, as it would be maladaptive for one to think extensively about every stimulus in one’s daily life (Petty et al., 2009, p. 321; Cacioppo et al., 1996, pp. 244–245).

Need for Cognitive Closure

Need for Cognitive Closure, in contrast, is defined by a desire for unambiguous information, as opposed to uncertainty or ambiguity (Kruglanski, 1989). It is conceptualized as a stopping mechanism that allows one to stop generating and testing hypotheses, and to form a judgment. This mechanism differs among individuals: some people may form a definitive opinion based on limited information while others may always resist making up their minds, whatever the amount of evidence at hand (Kruglanski & Fishman, 2009, pp. 343–344). The motivation towards closure varies along a bipolar continuum, anchored at one end with a need to avoid closure and no such need at the other end (Webster and Kruglanski, 1994, p. 1049). Individuals with a high Need for Cognitive Closure see uncertainty as aversive, which translates into two tendencies in their behaviors. On the one hand, individuals with a high Need for Cognitive Closure want to quickly terminate a state in which they feel uncertain (urgency tendency), and, on the other hand, they want to keep that state from recurring (permanence tendency) by relying on past knowledge and avoiding new information (Kruglanski & Fishman, 2009, p. 345). These two tendencies have different implications for behaviors across many domains, including interactions with information. Information seeking is one aspect of information behavior that is clearly related to variations in Need for Cognitive Closure. Research in psychology has demonstrated in this regard that there is a correlation between a higher Need for Cognitive Closure and a lower number of information sources that are sought before reaching a given judgment and a higher reliance on early or incomplete information (see Kruglanski & Fishman, 2009, pp. 345–347). Another aspect of information behavior
related to variations in Need for Cognitive Closure is information use. Confidence in one’s decision is higher in individuals with a high Need for Cognitive Closure, as a result of the absence of extensive information processing (see Kruglanski & Fishman, 2009, p. 345). Finally, they also prefer abstract descriptions and category labels, as these can be applied across a variety of situations, thus providing a more permanent knowledge.

Need for cognitive closure is also a stable characteristic (Webster & Kruglanski 1994, p. 1049) with predictable consequences for information behavior. As in Need for Cognition, behaviors can be moderated at times by situational factors despite one’s level in Need for Cognitive Closure. The influence of contextual determinants is related to the benefits and costs of closure that vary according to circumstances. Such situational factors are situations where the absence of closure might seem costly are time pressure (i.e. the danger of missing an important deadline), environmental noise, dullness of the cognitive task, fatigue or arduousness of information processing (see Kruglanski & Fishman, 2009, p. 344). The costs of closure, conversely, can be highlighted in situations where an individual apprehends to be evaluated or to commit a costly judgmental error (Kruglanski & Freund, 1983, p. 462).

METHODOLOGY
Respondents
The respondents of the present study were 122 undergraduate students at a large Canadian university, recruited through posters disseminated across campus. Seventy-four women (58 percent) and 47 men (37 percent) answered the questionnaires. Five participants did not indicate their gender. The age of the respondents varied between 18 and 27 years, with a mean of 20 years. Respondents were distributed across faculties: 51 students (42 percent) were from social science disciplines, 37 students from science and engineering disciplines (30 percent) and 34 students (28 percent) from the humanities.

Measure of Need for Cognition
Need for Cognition was tested using the abridged version of the Need for Cognition scale (Cacioppo et al., 1984), which consists in 18 items designed to assess the tendency of individuals to engage in and enjoy cognitive efforts. Participants were asked to indicate the degree to which they agree with each item using a 7-point Likert-type scale. Meta-analyses (see, for instance, Cacioppo et al., 1996, pp. 199–213) have confirmed that the abridged version of the scale has the same reliability as the original, 34-item scale developed by Cacioppo and Petty (1982).

Measure of Need for Cognitive Closure
Need for Cognitive Closure was tested using the 15-item abridged scale revised by Roets and Van Hiel (2011), and participants were asked to indicate the degree to which they agree with each item using a 7-point Likert-type scale. To measure differences in need for Cognitive Closure,
ambiguity, decisiveness, desire for predictability about the future, and closed-mindedness).

On this scale, however, the items for one of the facets, decisiveness, have been considered problematic, and Roets and Van Hiel (2007) demonstrated that, instead of probing into the motivation to achieve cognitive closure, they were taping into one’s ability to do so. Roets and Van Hiel (2007) provided alternative items in a revised scale, which has been acknowledged by Kruglanski and colleagues (2009, p. 151) as the “improved version of the scale”. Roets and Van Hiel (2011) have also validated a 15-item abridged scale that comprises three items from each facet and shows similar psychometric properties.

**Measure of Information Behavior**

The goal of this research is to examine the impact of Need for Cognition and Need for Cognitive Closure on information behavior. In order to do this, it was necessary to develop an information behavior scale, since there is no pre-existing, comprehensive measure of information behavior that encompasses the ways in which information is needed, sought, used and shared. For this purpose, a set of items describing various aspects of information behavior was designed (see Table 1 for the list of items). These items sought to reflect a range of behaviors and attitudes related to the major components of information behavior: information seeking, use and sharing (Savolainen, 2008, pp. 37–75). Each of the three components includes different “information actions” (Savolainen, 2008, pp. 28–29). Items related to motivations to look for information (“information needs”) were also included. These items, while they cannot be considered as information actions, were included because of their importance in the analysis of the qualitative results (Fortier, 2014). Participants were asked to indicate the degree to which they agree with each item using a 7-point Likert-type scale.

**Statistical Analysis**

In the first step of the analysis, factor analysis was used to examine the factor structure of the information behavior scale and the number and nature of the underlying dimensions reflected in its items. Following the recommendations of Furr (2011), a principal axis factoring extraction method was used with an oblique (“Promax”) rotation that allows for correlated factors. The factor analysis revealed three interpretable factors with an eigenvalue greater than one that were also defined by more than one variable with a strong loading. The factor analysis results and interpretation are presented in the results section.

Composite scores for each of these three factors were calculated by summing subject ratings (reversed in the case of negatively loading items) for those items with very strong loadings (above .70). These “coarse” factor scores uses the strongest items that define each factor (Grice, 2001).

### Table 2. Number of subjects in each combination

<table>
<thead>
<tr>
<th>Need for Cognition</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>35</td>
<td>31</td>
</tr>
<tr>
<td>Low</td>
<td>32</td>
<td>23</td>
</tr>
</tbody>
</table>

In the second step of the analysis, the influence of Need for Cognition and Need for Cognitive Closure on the composite factor scores was examined using a two-way analysis of variance. Scores for the two independent variables (Need for Cognition and Need for Cognitive Closure) were dichotomized to create “high” and “low” groups for each variable (see Table 2).

Three analyses of variance were completed, each including Need for Cognition (High, Low) and Need for Cognitive Closure (High, Low) as independent variables, and one of the composite factor scores as the dependent variable.

**RESULTS**

**Factor analysis**

The first stage of the analysis examined the factor structure of the set of items presented in Table 1 in order to identify the characteristics of information behavior. The factors emerging from this analysis represent different and non-mutually exclusive aspects of information behavior. Two items were removed from the scale prior to the factor analysis. A first problematic item (“I avoid information that is biased.”) was removed because it did not correlate with any other item, making impossible its integration in a factor structure. A second problematic item (“Looking for information is a pleasure for me.”) was removed because it was very highly correlated ($R < .9$) with another item (“Looking for information comes naturally to me.”), indicating an extreme multicollinearity between the two items (Tabachnick and Fidell, 1996). The three factors are described in this section.

**Factor 1: Orientation to Rule Following**

The first factor is characterized by elements that, traditionally, have been valued by instructors and information professionals alike to be characteristic of “good information behavior”: using a variety of information sources, paying attention to details about information sources, being persistent in the face of barriers, questioning the accuracy of information, thoroughly evaluating information sources and preferring authoritative sources. It is also characterized by a natural inclination toward looking for information. Finally, it is characterized by the sharing of information with family and friends. Factor 1 is composed of 9 items (items 4, 9, 11, 12, 13, 20, 21, 23 (reversed) and 28 in Table 3). The inter-item reliability of this composite is excellent ($\alpha = .968$).
The second factor is characterized by elements that are linked to critical thinking and intellectual independence: active looking for information challenging one’s opinions and values, consideration of the different sides of an issue and desire for more than simple factual information and numerous information needs. Factor 2 is composed of 6 items (items 2, 7, 10, 22, 24 and 27 (reversed) in Table 3). The inter-item reliability of this composite is excellent (α = .908).

**Factor 3: Desire for Intellectual Independence**

The third factor is characterized by elements that are linked to critical thinking and intellectual independence: active looking for information challenging one’s opinions and values, consideration of the different sides of an issue and desire for more than simple factual information and numerous information needs. Factor 3 is composed of 6 items (items 1, 3, 6 (reversed), 8, 18 and 28 in Table 3). The inter-item reliability of this composite is excellent (α = .911).

**Analyses of variance**

Each factor represents a non-mutually exclusive orientation in information behavior, and individuals display a level for each of them. The second stage of analysis examines whether Need for Cognition and Need for Cognitive Closure have an impact on each of these aspects of information behavior.

**Orientation to Rule Following**

The analysis of variance for the composite encompassing the orientation to follow rules indicates a significant main effect of Need for Cognition ($F(1, 117) = 49.997, p < .001$), with individuals high in Need for Cognition expressing a higher agreement with items related to this factor ($M = 54.001$) than those with a low Need for Cognition ($M = 39.973$).

Results indicate no significant main effect for Need for Cognitive Closure ($F(1, 117) = .016, p = .9$) and no interaction effect between Need for Cognition and Need for Cognitive Closure ($F(1, 117) = .318, p = .574$).

**Preference for Familiarity and Simplicity**

The analysis of variance for the composite encompassing items related to a preference for familiarity indicates a significant main effect of Need for Cognitive Closure ($F(1, 117) = 60.377, p < .001$), with individuals high in Need for Cognitive Closure expressing a higher agreement with items related to this factor ($M = 30.052$) than those with a low Need for Cognitive Closure ($M = 18.588$).

Results indicate no significant main effect for Need for Cognition ($F(1, 117) = .009, p = .924$) and no interaction effect between Need for Cognition and Need for Cognitive Closure ($F(1, 117) = .017, p = .897$).

**Desire for Intellectual Independence**

The analysis of variance for the composite encompassing items related to a desire for intellectual independence

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**Table 3. Factor analysis of the information behavior scale**

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I actively look for information that challenges my opinions and values.</td>
<td>0.573</td>
<td>-0.359</td>
<td>0.833</td>
</tr>
<tr>
<td>2. A lot of information overwhelms me.</td>
<td>-0.169</td>
<td>0.780</td>
<td>-0.355</td>
</tr>
<tr>
<td>3. For me, the world is never black or white: important issues have many sides that should be considered.</td>
<td>0.508</td>
<td>-0.207</td>
<td>0.870</td>
</tr>
<tr>
<td>4. I get my information from many different sources.</td>
<td>0.921</td>
<td>-0.174</td>
<td>0.625</td>
</tr>
<tr>
<td>5. Knowing what regular people have to say about an issue is as important as hearing from experts.</td>
<td>0.464</td>
<td>0.010</td>
<td>0.302</td>
</tr>
<tr>
<td>6. I am a person who wants just the facts, nothing but the facts.</td>
<td>-0.460</td>
<td>0.598</td>
<td>-0.795</td>
</tr>
<tr>
<td>7. Once I’ve found an answer, I don’t look anymore.</td>
<td>-0.322</td>
<td>0.857</td>
<td>-0.443</td>
</tr>
<tr>
<td>8. I prefer finding information by myself rather than asking for help.</td>
<td>0.394</td>
<td>0.092</td>
<td>0.736</td>
</tr>
<tr>
<td>9. I pass on information that interests me to my family and friends</td>
<td>0.880</td>
<td>-0.078</td>
<td>0.600</td>
</tr>
<tr>
<td>10. I prefer using information sources I already know.</td>
<td>-0.214</td>
<td>0.847</td>
<td>-0.060</td>
</tr>
<tr>
<td>11. I pay attention to details about where information comes from.</td>
<td>0.926</td>
<td>-0.119</td>
<td>0.653</td>
</tr>
<tr>
<td>12. I am persistent in looking for information, even when I encounter difficulties (such as an unavailable article or missing book).</td>
<td>0.915</td>
<td>-0.200</td>
<td>0.529</td>
</tr>
<tr>
<td>13. I question the accuracy of information.</td>
<td>0.879</td>
<td>-0.145</td>
<td>0.655</td>
</tr>
<tr>
<td>15. I am reluctant to give an opinion until I fully understand the issue.</td>
<td>0.160</td>
<td>-0.624</td>
<td>0.588</td>
</tr>
<tr>
<td>16. It is important for me to find an answer, not necessarily the best one.</td>
<td>-0.161</td>
<td>0.587</td>
<td>-0.301</td>
</tr>
<tr>
<td>17. I prefer information that uses everyday language.</td>
<td>-0.682</td>
<td>0.177</td>
<td>-0.225</td>
</tr>
<tr>
<td>18. The more I know, the more questions I have.</td>
<td>0.591</td>
<td>-0.252</td>
<td>0.790</td>
</tr>
<tr>
<td>19. I avoid sources that I find too complicated to use (such as library catalogues, databases, convoluted websites, etc.).</td>
<td>-0.539</td>
<td>0.380</td>
<td>-0.668</td>
</tr>
<tr>
<td>20. Looking for information comes naturally to me.</td>
<td>0.951</td>
<td>-0.176</td>
<td>0.605</td>
</tr>
<tr>
<td>21. I have criteria that I use to assess the quality of information.</td>
<td>0.786</td>
<td>-0.223</td>
<td>0.336</td>
</tr>
<tr>
<td>22. I look for sources that summarize things well without providing lots of details.</td>
<td>-0.289</td>
<td>0.845</td>
<td>-0.142</td>
</tr>
<tr>
<td>23. I find that lay people explain things better than experts.</td>
<td>-0.812</td>
<td>0.144</td>
<td>-0.406</td>
</tr>
<tr>
<td>24. I follow established routines when looking for information.</td>
<td>0.195</td>
<td>0.732</td>
<td>0.060</td>
</tr>
<tr>
<td>25. When I have a question, I rely on my friends and family for information.</td>
<td>-0.671</td>
<td>0.447</td>
<td>-0.248</td>
</tr>
<tr>
<td>27. I keep my opinions to myself.</td>
<td>0.176</td>
<td>-0.714</td>
<td>0.318</td>
</tr>
<tr>
<td>28. When I am interested in something, I have lots of questions.</td>
<td>0.811</td>
<td>-0.171</td>
<td>0.722</td>
</tr>
</tbody>
</table>

**Variance explained by each factor**

| 11.610 | 4.755 | 2.346 |
indicates a significant main effect of Need for Cognition ($F(1, 117) = 45.948, p < .001$) for this factor, with individuals high in Need for Cognition expressing a higher agreement with items related to this factor ($M = 22.024$) than those with a low Need for Cognition ($M = 31.716$).

There is also a significant interaction effect between Need for Cognition and Need for Cognitive Closure ($F(1, 117) = 4.989, p = .027$). Among individuals with a higher level of Need for Cognition, those with a low Need for Cognitive Closure have a higher agreement with these items ($M = 34.564$) than individuals with a high Need for Cognitive Closure ($M = 28.870$). This difference is less evident when Need for Cognition is low ($M = 21.677$ and 22.371; see Figure 1).

There was no significant main effect for Need for Cognitive Closure ($F(1, 117) = 3.056, p = .083$).

![Figure 1. Interaction effect between Need for Cognition and Need for Cognitive Closure for Factor 3.](image)

**DISCUSSION / CONCLUSION**

The goal of this study was to examine the impact of Need for Cognition and Need for Cognitive Closure on information behavior. For this purpose, an information behavior scale was developed. These items sought to reflect a range of behaviors and attitudes related to the ways in which individuals need, seek, use and share information. A factor analysis indicated that this scale had an underlying structure reflecting three interpretable, non-orthogonal composites: orientation to rule following, preference for familiarity and desire for intellectual independence.

The influence of Need for Cognition and Need for Cognitive closure on information behavior on these three composites was analyzed with analyses of variance. Results of these analyses indicated a significant main effect of Need for Cognition on the factor related to the orientation to rule following and the factor related to the desire for intellectual independence. A significant main effect of Need for Cognitive closure was found for the factor related to the preference for familiarity. Lastly, results indicate a significant interaction effect between Need for Cognition and Need for Cognitive Closure for the factor related to the desire for intellectual independence.

**Orientation to Rule Following**

Items that define the factor related to an orientation to rule following are related to details that information professionals promote for effective information seeking: using a wide variety of information sources, paying attention to details about information sources, being persistent in the face of barriers, questioning the accuracy of information, thoroughly evaluating information sources and preferring authoritative sources. Such behaviors are consistent with differences described in the literature between individuals who have a high Need for Cognition, who find satisfaction in accomplishing intellectual tasks, and those with a low Need for Cognition, who perceives such tasks as a chore.

These results are also consistent with those gathered in the qualitative phase (Fortier, 2014). Individuals with a higher Need for Cognition interviewed for the first phase performed extensive information seeking: they used a great number of information sources, were able to recall many details about information sources they had used, had clear criteria for evaluating information and were always indicating solutions for barriers they had encountered. Conversely, individuals with a lower Need for Cognition had a minimalist approach. They consulted as few sources as possible and did not seem to notice many details about them. They were often referring to vague information sources such as “online” or “on television”, without being able to be more specific. They also did not appear to have criteria for selecting information sources outside of the perceived availability of a source: they consulted what was available when they needed it and stopped caring about when it became difficult to access. They showed preference for simple and easy information sources and did not bother with those that look complicated.

**Preference for Familiarity and Simplicity**

Items that define the factor related to a preference for familiarity and simplicity express a preference for an information environment that is easy to approach: preference for a limited amount of information, for factual sources, sources that provide a good summary without providing a lot of details and sources that are familiar, and also for established information-seeking routines. Such behaviors are consistent with differences described in the literature between individuals who have a high Need for Cognitive Closure, who avoid ambiguous situation and want to reach closure as quickly as possible, and those with a low Need for Cognitive Closure, who do not perceive ambiguity as aversive.

These results are also consistent with those gathered in the qualitative phase (Fortier, 2014). Individuals with a higher Need for Cognitive Closure interviewed in the first phase expressed strategies to accomplish information-related tasks as efficiently as possible. These strategies included keeping the number of information sources to a manageable number and relying primarily on information sources that had served them well in the past. They displayed an extensive
use of tertiary sources, which consolidate and synthesize information. Individuals with a lower Need for Cognitive Closure, on the other hand, did not display such behaviors. Their preference for information sources was not influenced by the familiarity of a source or any other characteristics highlighted by this factor.

**Desire for Intellectual Independence**

Items that define the factor related to a desire for intellectual independence are linked to critical thinking and go beyond traditional criteria used to evaluate information behavior: active looking for information challenging one’s opinions and values, consideration of the different sides of an issue and desire for more than simple factual information and numerous information needs. While a significant main effect was only observed with Need for Cognition, a significant interaction effect between Need for Cognition and Need for Cognitive Closure indicated that, among individuals with a higher level of Need for Cognition, those who also have a low Need for Cognitive Closure have a higher agreement with such behavior.

These results are also consistent with those gathered in the qualitative phase, where differences between individuals with high and low Need for Cognitive Closure were stronger among those who also had a higher Need for Cognition (Fortier, 2014). All participants with a higher Need for Cognition displayed extensive information seeking, but only those who also had a lower Need for Cognitive Closure expressed multiple information needs and appeared to develop new ones as they were finding information. Their behavior showed that uncertainty drove them to know more and that they liked to form their own opinions in the event they described. They expressed being reluctant to give an opinion before having gathered enough information on both sides while participants with a higher Need for Cognitive Closure were much more confident in their judgment. They often expressed opinions at the outset of a situation and concentrated on finding information sources that would confirm it.

**Implications of this study**

Results show that Need for Cognition and Need for Cognitive Closure affect the ways in which people need, seek and use information. From a methodological viewpoint, the approach that was used to develop and test an information behavior scale produced significant statistical results and allowed for triangulating qualitative results gathered in a first phase of interviews. The information behavior scale developed for this study could also be used to study other variables.

Understanding this phenomenon, as well as the influence of other individual differences, is necessary to fully understand the complexity of human information behavior, which is essential to build a global evidence base to guide information science practice.

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