

The Need for Cognition as it Relates to Personality Traits of Openness to Experience and Conscientiousness

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Abstract. The need for cognition has much promise in predicting academic success. This study examined the relationship between the need for cognition and the personality traits of openness to experience and conscientiousness. The goal was to show that openness to experience and conscientiousness were significant predictors of the need for cognition, while finding which one has stronger predictive power. The data was collected from 300 American users of the website Amazon Mechanical Turk who completed the study online in exchange for monetary compensation. The participants were composed of 154 males and 145 females, and one individual with unreported gender. The participants ranged from 20 years of age to 71 years of age, with an average age of 37.4. The need for cognition was measured using the Need for Cognition Scale. The two personality traits were measured using the Ten-Item Personality Inventory. The results of the study indicated that openness to experience was a stronger predictor of the need for cognition and predicted more variance in the need for cognition.

Keywords: Need for Cognition; Personality Traits; Openness to Experience; Conscientiousness.

1. The Need for Cognition as it Relates to Personality Traits of Openness to Experience and Conscientiousness

People who are high in need for cognition tend to enjoy thinking deeply about information they encounter and prefer to solve problems and mentally challenge themselves throughout each day. Studies have shown that need for cognition contributes to academic success (Grass et al., 2017). The importance of need for cognition lies in its measurement of desire to think deeply and be challenged cognitively. Academic courses would struggle to progress without students high in need for cognition. The world would be stagnant if no challenging and innovative ideas were brought about. Society needs people with personalities high in need for cognition to develop and create.

The Big Five Traits of personality is one of the most commonly used scale for measurement and description of personality. People who are open to experience tend to be imaginative and creative in their lives (McCrae & Costa, 1997). Therefore, the need for cognition and openness to experience seems to have a relationship. People who are high in need for cognition desire thinking cognitively and challenging themselves more, and are more open to experience. Sadowski & Cogburn (1997) found a positive direct relationship between the need for cognition and The Big Five domain of openness to experience. Since the two variables seemingly describe similar characteristics, it is hypothesized that the relationship between them would be significant and strong.

The Big Five Trait of conscientiousness indicates people's level of self-discipline (Roberts et al., 2014). Rather than acting without thinking, people high in conscientiousness tend to have a plan. People high in need for cognition also tend to think deeply and thoroughly. Conscientious individuals are more likely to set challenging goals for themselves and stay committed to those goals (Colquitt & Simmering, 1998). It was also observed that the need for cognition is a better predictive of goal-oriented behaviors (Fleischhauer et al., 2009). People high in need for cognition tend to set challenging goals and be goal-oriented, while conscientiousness presents hardworking and persevering characteristics. Therefore, it is hypothesized that there is a positive direct relationship between need for cognition and the personality trait of conscientiousness.

Critical thinking is being increasingly emphasized in today's world, especially as an academic goal. Previous research has shown a moderate positive relationship between need for cognition and critical thinking dispositions (Stedman et al., 2009). Therefore, there is of high importance and value

for society to learn more about need for cognition to have a further understanding of critical thinking. Currently, it is still unclear what can exactly lead to an increase in need for cognition. Therefore, the hypotheses made in this report aims at finding the predictive power of personality traits on the need for cognition.

Hypothesis 1 tested the relationship between the personality trait of openness to experience and the need for cognition, predicting that openness to experience is a significant predictor of the need for cognition over and above conscientiousness.

Hypothesis 2 tested the relationship between the personality trait of conscientiousness and the need for cognition, predicting that conscientiousness is a significant predictor of the need for cognition over and above openness to experience.

Hypothesis 3 tested which predictor was stronger and would predict more of the variance in the need for cognition, predicting that openness to experience would be a stronger predictor of the need for cognition when compared to conscientiousness.

Multiple regression analyses were conducted in this research to assess these hypotheses.

2. Method

2.1 Participants

The participant pool was comprised of 300 participants, including 154 males and 145 females, and one individual with unreported gender. The participants ranged from 20 years of age to 71 years of age, with an average age of 37.4 and standard deviation of 10.9. All participants were American users of the website Amazon Mechanical Turk who completed the study online in exchange for monetary compensation.

2.2 Materials

All scales implemented used English. Four variables were measured.

2.3 The Need for Cognition Scale

Need for cognition was measured using the Need for Cognition scale (Cacioppo, J. T et al., 1984). This scale consists of 18 items, with each containing 5 statements for participants to rate their agreement (1 = strongly disagree; 5 = strongly agree). Higher scores indicate greater need for cognition. An example of this scale is "I would prefer complex to simple problems." The Cronbach's α for the measure was .953, concluding that the scale is highly reliable in accurately measuring the need for cognition.

2.4 The Ten Item Personality Inventory

All three personality traits were measured using the Ten Item Personality Inventory (Gosling, S. D et al., 2003). This scale measures the Big Five personality domains and consists of a 10-item scale with two items each. There are 7 statements for participants to rate their agreement with (1 = strongly disagree; 7 = strongly agree). Higher scores indicate greater expression in a certain personality trait. An example of openness to experience measurement is "I see myself as being open to experience." An example of conscientiousness measurement is "I see myself as self-disciplined."

For Openness to Experience measurement, the Cronbach's α was .470, concluding that the scale is not reliable to a satisfying level.

For Conscientiousness, the Cronbach's α was .596, concluding that the scale is close to a satisfying reliability level.

2.5 Procedure

Participants were recruited from the website Amazon Mechanical Turk and completed the study online in exchange for monetary compensation. People interested in the online study, which was

being advertised on the Mechanical Turk website, were redirected to the website where they completed a series of surveys. The order in which they appeared consisted of first measuring the two personality disorders with the Ten Item Personality Inventory, then the need for cognition with the Need for Cognition Scale. Participants filled out surveys and then the online service company compiled the data and sent it to the researchers. Researchers then evaluated the personality traits and the need for cognition measures using SPSS. Each construct had items which were averaged to compute a total score before regression analysis were performed. All regressions were 2-tailed. Consent was confirmed from all participants before the study began. Monetary compensation was awarded to participants after they completed all measures in the study.

3. Results

After quantitative analysis, the means and standard deviations for all four variables were computed. For need of cognition, $M = 3.37$; $SD = .95$. For openness to experience, $M = 4.99$; $SD = 1.39$. For conscientiousness, $M = 5.51$; $SD = 1.33$.

Correlation analysis was also computed. Openness to experience was found to be significantly positively correlated to the need for cognition, $r(298) = .500$, $p < .001$. The correlation relationship was strong. Conscientiousness was found to be significantly positively correlated to the need for cognition, $r(298) = .239$, $p < .001$. The correlation relationship was moderate.

Eventually, a multiple regression analysis was done. Both openness to experience and conscientiousness explained 26.4% of the variance in the need for cognition, $R^2 = .264$, $F(297) = 53.257$, $p < .001$. Confirming Hypothesis 1, openness to experience is a significant predictor of the need for cognition over and above conscientiousness, $b = .321$, $t(297) = 9.136$, $p < .001$. Confirming Hypothesis 2, conscientiousness is a significant predictor of the need for cognition over and above openness to experience, $b = .087$, $t(297) = 2.368$, $p < .05$. Confirming Hypothesis 3, openness to experience would be a stronger predictor of the need for cognition as compared to conscientiousness, $\beta(\text{openness}) = .470$, which is larger than $\beta(\text{con}) = .122$.

4. Discussion

As academic success becomes more important in global society, understanding and finding strong predictors of academic success will gain importance. This research report aimed to find strong predictors of the need for cognition, a form of critical thinking that holds great promise in predicting academic success. As mentioned before, society needs people high in need for cognition to progress, develop, and create. This researcher hopes that the results found in this study will help further understanding of what personality traits to encourage and nurture when high need for cognition is the desired outcome.

The results of the surveys show that openness to experience is a strong predictor of the need for cognition. The zero-order correlation test also shows a significant positive relationship between the two variables. People who enjoy thinking deeply and embracing challenges tend to be more curious, creative and imaginative. As predicted above, the relationship between the two variables is very strong, and this result corresponds to (Sadowski & Cogburn, 1997)'s observation. There is one weakness about this finding. Since all participants are either from America or Canada where critical thinking has been emphasized in their culture since people's childhood (Ennis, 1993), it is reasonable to infer that the participants would be higher in need for cognition and openness to experience. However, in places where exam-oriented education was prevalent, situations might be different. Therefore, more research should be done to include participants from different cultures to make this result more reliable.

Conscientiousness usually is an indicator of self-discipline. People high in conscientiousness would not act in a hurry. Instead, they would prefer to set a goal and be goal oriented. People who are high in need of cognition tend to think thoroughly, and according to Fleischhauer et al. (2009),

need for cognition is a predictor of goal-oriented behaviors. Therefore, a hypothesis of the predictive power of conscientiousness on the need for cognition was made. The result indicates that there is a significant relationship, though not strong, between the two factors. This brings about the question why the relationship concluded is not as strong as predicted. Conscientiousness is a trait that mainly describes dependable and self-disciplinary traits in people, while the need for cognition measures more characteristics. When making the hypothesis, it might be better to connect conscientiousness to self-control instead of need for cognition. However, if a study targeting at the correlation between need for cognition and academic performance is being designed in the future, the correlation concluded from the need for cognition-conscientiousness can have reference value.

There was a critical problem with the Ten-Item Personality Inventory. Statistical tests show that the openness to experience scale does not reach a satisfyingly reliable value. For each personality, there are only two questions adopted for measurement. This may not be enough. The reliability level of this scale is not satisfying, and adding more questions to make the scale more comprehensive may be helpful.

Overall, this research report study supports the hypothesis that with an increase in the level of need for cognition, the level of personality traits of openness to experience, conscientiousness and emotional stability would also increase. When using need for cognition as a predictor of academic success, the personality traits assessed in this research report prove to also be good indicators. As society moves toward becoming one that globally encourages critical thinking, understanding what personality traits encourage this form of thinking will reach high levels of importance. As academic success has great value, so does need for cognition and better understanding traits that it correlates with.

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