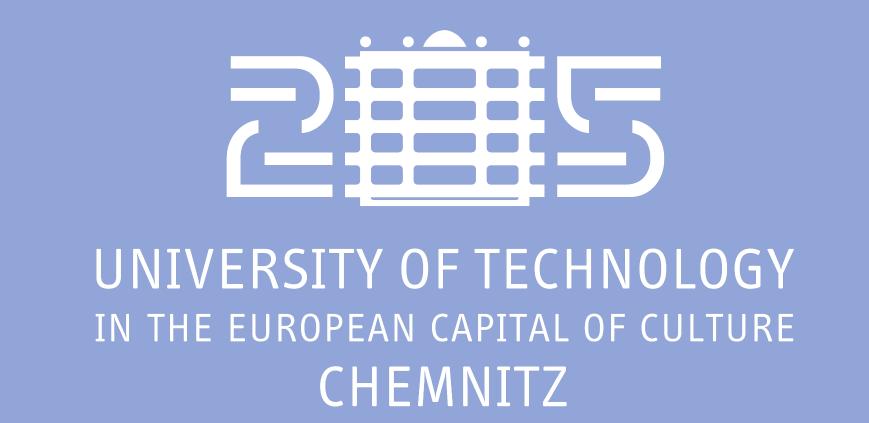


# The Impact of Personality on Solving Complex Problems

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#### Abstract

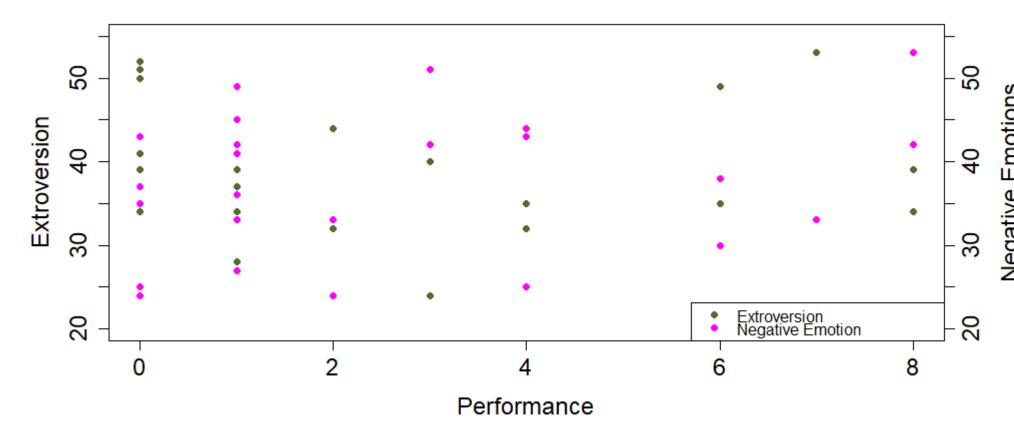
In our global and technical world, there is an increasing need for humans to solve complex, nontransparent and self-dynamic problems. There are vast differences between humans regarding their capability to solve such problems that go beyond classical intelligence and having an analytical mind. Factors such as personality, knowledge, and the motivation to engage in effortful cognitive problems can contribute to success. Only a few studies investigated the relationship between these 'soft' factors and complex problem-solving (CPS). In the following, we will investigate these factors in the CPS framework Tailorshop, a computer-based scenario to increase the company value by manipulating several variables. Results indicate that personality traits and Need for Cognition are no successful predictors. The present study points out the tendency of relevant personality traits as CPS predictors.

#### Instruction

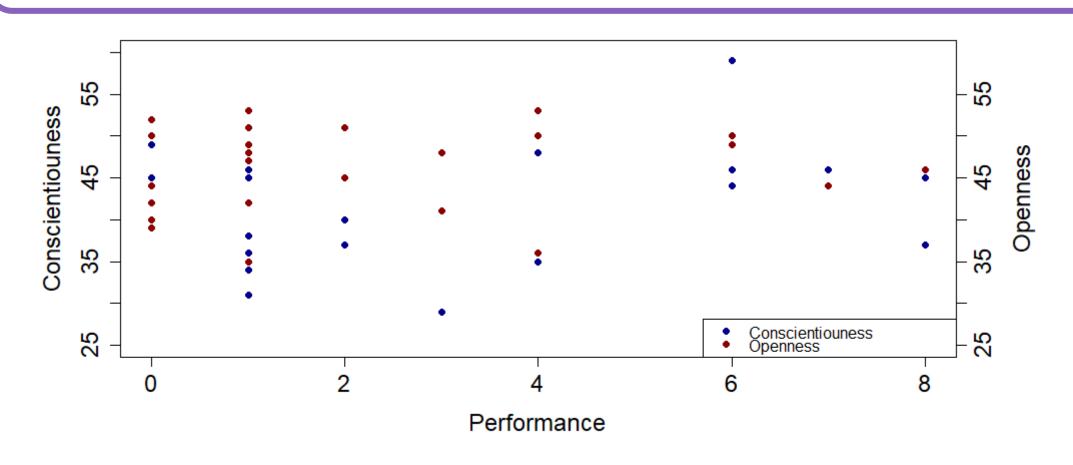
- Definition Problem-solving (Frensch & Funke, 2014): the (cognitive) process of transforming a given initial state into a goal state when no apparent solution method is available
- Characteristic of Complex Problems (Dörner, 1980): they are complex, connected, nontransparent, containing self-dynamic, and polytelie
- Only a few studies investigated the relationship personality and CPS
- Research question 1: How is Complex Problem-Solving (CPS) related to specific personality traits
- Unclear research about the relationship of Need for Cognition (NFC) and CPS
- Positive relationships have been found between NFC, sustained attention to a cognitive task (Osberg, 1987), and the tendency to seek, evaluate, and use relevant information for decision-making and problem-solving (Berzonsky & Sullivan, 1992).
- Research question 2: How is complex problem-solving performance related to Need for Cognition in individuals with limited experience?

H1: Extraversion and Negative Emotions, with their corresponding

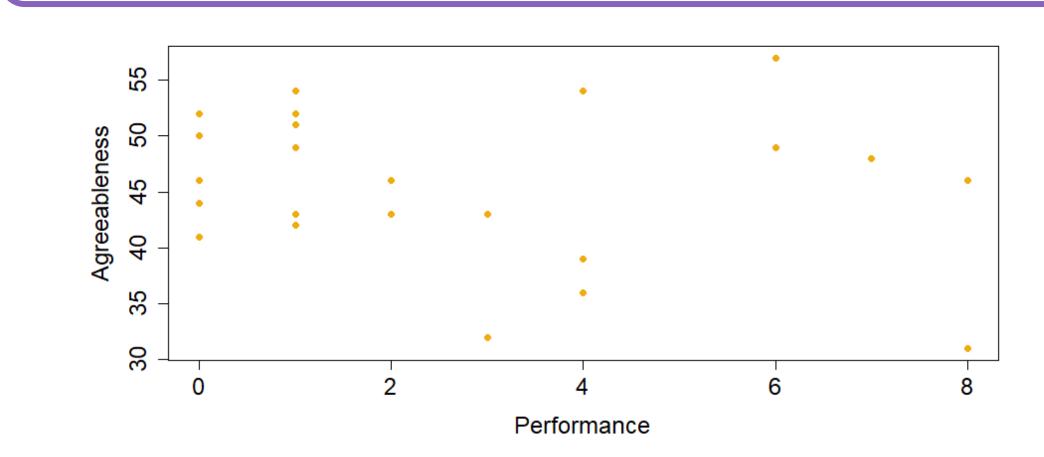
facets, are negatively related with CPS performance.



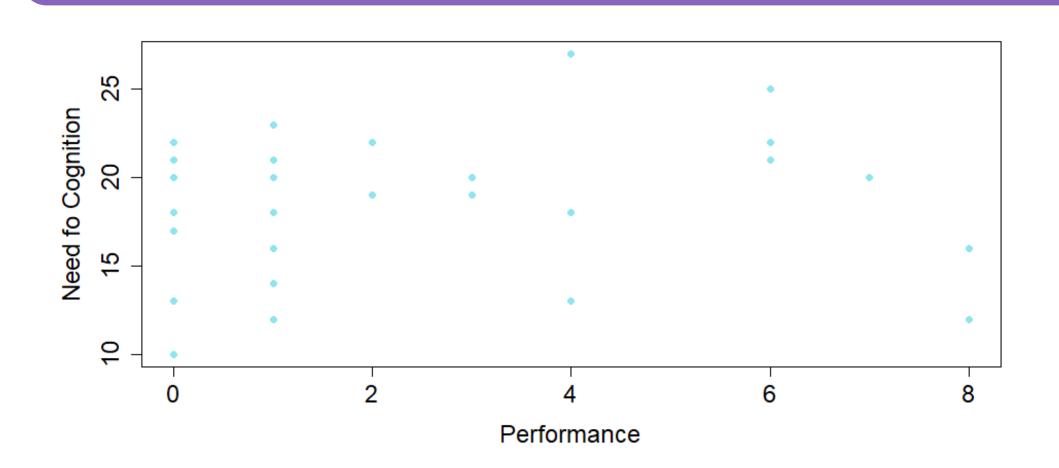
H2: Conscientiousness and Openness, with their corresponding facets, will positively affect CPS performance.

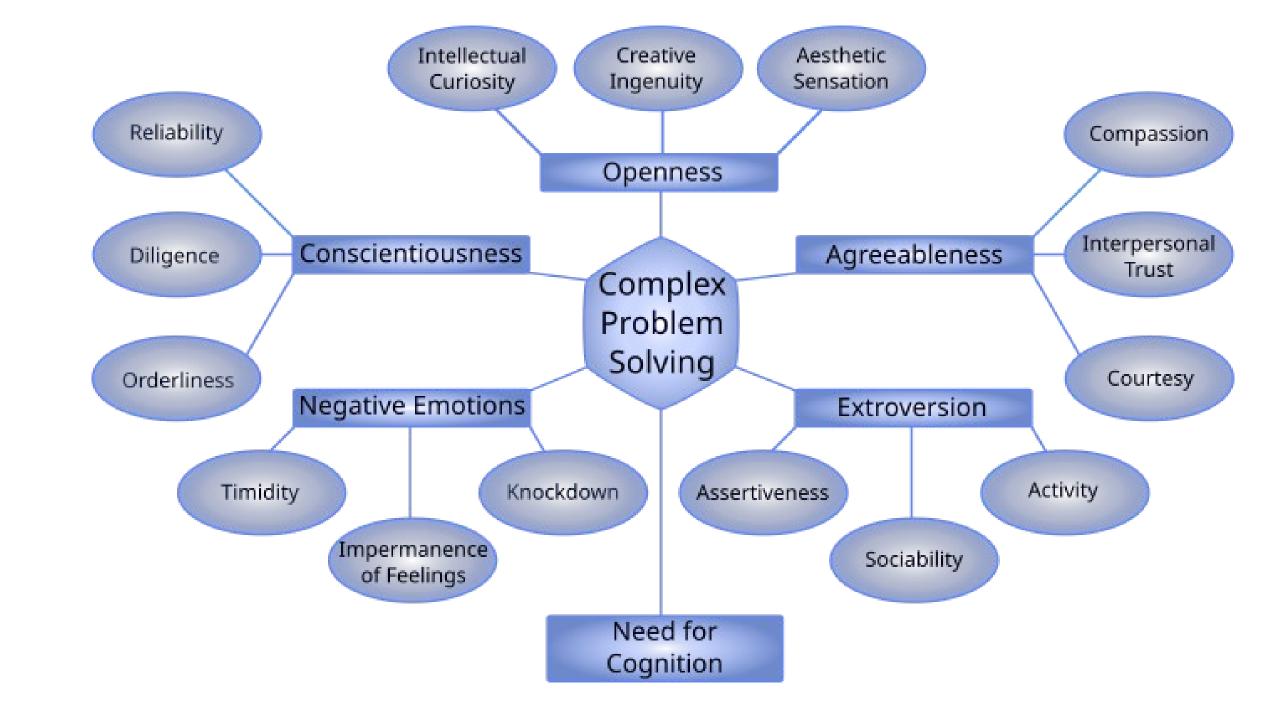


H3: Agreeableness and its facets will not significantly correlate with CPS performance.



H4: Need for Cognition will positively impact CPS performance in the Tailorshop scenario.





Dimension	Facets	ρ	p
Negative Emotions		.185	.345
	Impermanence of Feelings	.133	.498
	Knockdown	.194	.321
	Timidity	.103	.600
Extraversion		101	.601
	Assertiveness	.081	.680
	Activity	043	.827
	Sociability	236	.226

Facets	ρ	p
	.185	.370
Diligence	166	.399
Orderliness	264	.174
Reliability	.135	.495
	.080	.684
Creative Ingenuity	.135	.491
Intellectual Curiosity	.222	.256
Aesthetic Sensation	.139	.316
	070	.721
Compassion	139	.481
Courtesy	.051	.792
Interpersonal Trust	064	.746
	Diligence Orderliness Reliability  Creative Ingenuity Intellectual Curiosity Aesthetic Sensation  Compassion Courtesy	Diligence166 Orderliness264 Reliability .135 .080 Creative Ingenuity .135 Intellectual Curiosity .222 Aesthetic Sensation .139 Compassion139 Courtesy .051

#### Summary

Concerning successful predictors for CPS performance, the study shows that none of the examined personality traits have a significant relationship with CPS performance. The fact, that the results do not confirm hypotheses 1, 2, and 4, indicates that personality traits and NFC do not significantly impact CPS performance. However, the tendency in Aesthetic Sensation suggests a small effect may be present with a larger sample size

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#### Method and Procedure

A total of N = 32 participants(age: M = 26.82, 9 females and 13 males)

#### Step 1: Questionnaires and Demographics

- Personality Traits: Big Five Inventory 2 (BFI-2; Danner et al., 2016) that includes scores for 15 facets
- NFC: short version of the NFC-Scale (NFC-K; Beisert, Köhler, Rempel, & Beierlein, 2014)

#### Step 2: CPS-Task

- Tailorshop micro-world
- Goal: increase the company's value by adapting input variables
- Participants were unaware of the connectivity between the variables
- Performance: as changes in the company's value and calculated the trends of the company's value after each simulated month.

### Step 3:

 Tailorshop knowledge test: 12 tasks that presented the Tailorshop environment with given values

