Influences of intelligence and openness on the acquisition of information-seeking skills

A two-wave longitudinal study

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Information-seeking skills / Information literacy: Set of skills required to search for (scholarly) information in order to satisfy an information need

Research question: How strong are the influences of intelligence and personality on the development of information-seeking skills in psychology students?
Background

- Information-seeking requires many abilities commonly measured by intelligence tests:
  - Analytical skills (Lenox & Walker, 1993)
  - Problem-solving skills (Brand-Gruwel, Wopereis, & Vermetten, 2005)
  - Cognitive flexibility (Stern & Neubauer, 2013)

- More search success for students with higher verbal intelligence
- Allows the development of information-seeking skills!
Background

• Information-seeking requires a certain amount of Openness for experience (Big Five):
  – Especially important since many students employ “a conservative information strategy, retaining established strategies as far as possible and completing tasks with minimum information seeking effort.” (Warwick, Rimmer, Blandford, Gow, and Buchanan, 2009, p. 2402)

• Motivational component: Higher openness leads to more frequent and differentiated information searches.

• Allows the development of information-seeking skills!
Hypotheses

• Hypothesis 1: Both verbal and fluid intelligence ...  
  – correlate positively with information literacy (H1a)  
  – predict the increase in information literacy in psychology freshmen over their first semester (H1b)

• Hypothesis 2: Openness for experience ...  
  – correlates positively with information literacy (H2a)  
  – predict the increase in information literacy in psychology freshmen over their first semester (H2b)
Participants and procedure

• Two-wave longitudinal field study
  – t1: beginning of first semester (baseline)
  – t2: beginning of second semester (six months later)

• N = 126 psychology freshmen from a large German university
• 81 % females, 19 % males
• Mean age: $M = 20.39$ years ($SD = 2.43$)
Measures

• **Information-seeking skills:** Procedural Information-Seeking Knowledge Test – Psychology Version (PIKE-P; Rosman, Mayer, & Krampen, 2015); scenario-based multiple-choice test

• **Fluid intelligence:** Raven’s Advanced Progressive Matrices (APM; Raven, Raven, & Court, 1998)

• **Verbal intelligence:** 20 verbal analogies from the IST-2000R (Liepmann, Beauducel, Brocke, & Amthauer, 2007)

• **Openness for Experience:** Big Five Personality Inventory (Costa & McCrae, 1989; German short version by Körner, Geyer, Roth, Drapeau, Schmutzer, Albani et al., 2008)
## Results

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<tr>
<td>1 PIKE-P – t1</td>
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<td>2 PIKE-P – t2</td>
<td>49.93</td>
<td>6.98</td>
<td>.42***</td>
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<td>3 PIKE-P – t1t2 (Residualized gain)</td>
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<td>4 Fluid Intelligence – t1</td>
<td>21.13</td>
<td>3.65</td>
<td>.10</td>
<td>.19*</td>
<td>.16*</td>
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<td>5 Verbal Intelligence – t1</td>
<td>13.00</td>
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<td>.20**</td>
<td>.30***</td>
<td>.24**</td>
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<td>6 Openness – t2</td>
<td>3.81</td>
<td>.76</td>
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*Note. N = 126; PIKE-P = Procedural Information-Seeking Knowledge Test – Psychology Version; t1 = first measurement point; t2 = second measurement point; M = mean; SD = standard deviation; * p < .05; ** p < .01; *** p < .001.*
Both intelligence and Openness for Experience play a major role in the acquisition of information-seeking skills.

Strong verbal component of information-seeking: Corresponding relationships seem more robust!

Other moderating variables? Need for cognitive closure? Working memory? Epistemic beliefs?

Students require distinct amounts of support to enhance their individual information literacy.


