Demographic Characteristics and Personality Variables as Predictors of Health Information Literacy in Young Adults

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Why is HIL important in emerging adulthood?

Health information skills and information behavior are linked to

- positive health behavior (Yu & Wu, 2005)
- informed health decisions (Jayanti & Burns, 1998)
- treatment compliance (Hsu, Johnson, & Brooks, 2003)

Developmental tasks of late adolescence / emerging adulthood:

- developing independence from advice and support of parents
- taking over responsibility for health of others
- dealing with information overload

„Information age generation“ has problems in dealing with health-related information (Ivanitskaya, Boyle, & Casey, 2006; Schaeffer, Vogt, Berens, & Hurrelmann, 2016).
Factors influencing H(I)L and health information seeking

Demographic characteristics, e.g.,

- **Education** (e.g., Eriksson-Backa, 2014; Wang et al., 2013)
- **Gender** (e.g., Tong, Raynor, & Aslani, 2014; Ek & Heinström, 2011; Li, Theng, & Foo, 2015)
- **Vocation** (Hirvonen, Pyky, Korperlainen, & Houtari, 2015; Sommer & Kuhn, 2007)
- *(Other factors such as age, socioeconomic background, migration history or ethnicity)*

**Hypothesis:**

Higher HIL is associated with

- Higher level of education
- Working in health-related (compared to non-health-related) vocations
Personality Traits

**NEUROTICISM**
- calm, self-reliant, stable
- anxious, vulnerable, impulsive, instable

**EXTRAVERSION**
- quiet, reserved, withdrawn
- energetic, positive, outgoing, sociable

**OPENNESS TO EXPERIENCE**
- conventional, practical
- curious, creative, preferring novelty/variety

**AGREEABleness**
- suspicious, antagonistic, critical, competitive
- compassionate, cooperative, trusting

**CONCIENTIOUSNESS**
- impulsive, careless, disorganized
- disciplined, dutiful, thoughtful, planning
- calm, self-reliant, stable
Selected findings on information seeking

- **High openness and conscientiousness:**
  High-quality searches and broad approaches to searching.

- **High neuroticism:**
  Superficial searches, shorter queries, problems in assessing relevance of information.

- **High extraversion:**
  Broad and extensive but unsystematic searches. Difficulties with tasks requiring information competence.

  (Heinström, 2003 & 2005; Schmidt & Wolff, 2016):

**Hypothesis:**
Higher HIL is found in people with

- Higher degree of conscientiousness and openness to experience
- Lower level of neuroticism and extraversion
Empirical testing

Sample characteristics:

$N = 352$ adolescents and young adults (60 % female) aged 16 to 34 years ($M = 20.80, SD = 3.15$) from 3 vocational schools for:

1. Economic and administrative occupations
2. Technical occupations
3. Health-related occupations

Data collection:

- Demographic characteristics (assessed by questionnaire): Age & sex (control variables), level of education, vocation
- Personality traits (assessed by 30-Item-Version of Neo Five Factor Inventory NEO-FFI-30, Körner et al., 2008).
- Health information literacy knowledge (measured by HILK, Mayer & Holzhäuser, 2015).
Means $(M)$, standard deviations $(SD)$, internal consistencies (Cronbach’s $\alpha$, in italics on the diagonal), and intercorrelations of the measures used

<table>
<thead>
<tr>
<th></th>
<th>$M$</th>
<th>$SD$</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
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<tbody>
<tr>
<td>1 HILK</td>
<td>0.42</td>
<td>0.13</td>
<td>.72</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Neuroticism</td>
<td>2.77</td>
<td>0.91</td>
<td>-.07</td>
<td>.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Extraversion</td>
<td>3.55</td>
<td>0.62</td>
<td>-.14*</td>
<td>-.25**</td>
<td>.67</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>4 Conscientiousness</td>
<td>4.07</td>
<td>0.58</td>
<td>.03</td>
<td>-.32**</td>
<td>.32**</td>
<td>.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Agreeableness</td>
<td>3.79</td>
<td>0.69</td>
<td>.03</td>
<td>-.24*</td>
<td>.07</td>
<td>.22**</td>
<td>.70</td>
<td></td>
</tr>
<tr>
<td>6 Openness</td>
<td>3.00</td>
<td>0.89</td>
<td>.15**</td>
<td>.12*</td>
<td>-.08</td>
<td>-.20**</td>
<td>-.05</td>
<td>.76</td>
</tr>
</tbody>
</table>

* $p < .05$, ** $p < .01$

Note. $N = 317$. Range of values for HILK: 0-1, for all other scales: 1-5
### Prediction of HILK

<table>
<thead>
<tr>
<th>Block III</th>
<th>b</th>
<th>SE (b)</th>
<th>β</th>
<th>ΔR²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.53</td>
<td>0.10</td>
<td></td>
<td>0.022, p = .130</td>
</tr>
<tr>
<td>Gender (1 = male)</td>
<td>-0.03</td>
<td>0.02</td>
<td>-0.10</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
<td>0.04</td>
</tr>
<tr>
<td>Secondary modern school (dummy var.)</td>
<td>-0.12</td>
<td>0.02</td>
<td>-0.35**</td>
<td></td>
</tr>
<tr>
<td>Secondary school (dummy var.)</td>
<td>-0.08</td>
<td>0.02</td>
<td></td>
<td>-0.33**</td>
</tr>
<tr>
<td>Economic and administrative vocations (dummy var.)</td>
<td>-0.02</td>
<td>0.02</td>
<td>-0.07</td>
<td></td>
</tr>
<tr>
<td>Technical vocations (dummy var.)</td>
<td>-0.03</td>
<td>0.02</td>
<td></td>
<td>-0.11</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>-0.01</td>
<td>0.01</td>
<td></td>
<td>-0.10</td>
</tr>
<tr>
<td>Extraversion</td>
<td>-0.03</td>
<td>0.01</td>
<td></td>
<td>-0.12*</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>0.01</td>
<td>0.01</td>
<td></td>
<td>0.04</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>-0.00</td>
<td>0.01</td>
<td></td>
<td>-0.02</td>
</tr>
<tr>
<td>Openness</td>
<td>0.01</td>
<td>0.01</td>
<td></td>
<td>0.08</td>
</tr>
<tr>
<td>R² total</td>
<td></td>
<td></td>
<td></td>
<td>0.230, p &lt; .001</td>
</tr>
</tbody>
</table>

* p<.05, ** p <.01. Block I: ΔR² = .088, p < .001; Block II: ΔR² = .120, p < .001

Note. *b* = unstandardized regression weight, SE(b) = standard error of b, β = standardized regression weight; ΔR² = increase in variance explained by predictors. Reference group for education: high school; reference group for vocations: health vocations. Openness x education: F(2,316 = 5.80; p < .01) for highest education.
HILK differences subject to education and vocation
Summary

1. Education is a strong predictor of HIL.

2. Extraversion shows negative associations with HILK
   - Use of variety of sources rather than deep searches (Heinström, 2003)
   - Trust in social sources.
   - Similarity to learning research: lower extraversion correlated to higher achievement (De Raad & Schouwenburg, 1996)

   Extraversion influences health information skills regardless of education.

3. Openness is a relevant factor in lower education.
Conclusions

Use of sources that are not trustworthy might be a consequence of high extraversion, not of a lack of education.

- Need of information services that focus on interactive exchange and a variety of sources.

People with lower education tend to be less open to experience.

- Need of low-threshold services implemented in familiar sources of information.

Education in younger students might miss encouraging skills needed for successful searching and evaluating health information.

- Need of curriculum elements that rise familiarity with information seeking and awareness of the importance of health information skills.
Thank you!

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References


References


References


Health Information Literacy Knowledge Test
HILK

**Drawback of self-reports:**

- Measurement of beliefs about competence rather than objective skills.
- Experience needed as basis of reliable self-assessment (Kruger & Dunning, 1999).
- Type of experiences influences competence evaluation (e.g., dealing with information about dieting vs. handling instructions for coping with ulcerative colitis).

**HILK:** Objective test assessing knowledge in

- planning, and
- conducting health information searches, and
- checking the results
Health Information Literacy Knowledge Test
HILK

Item example

A friend of yours recommends roseroot capsules of a certain brand to minimize inner tension. Which questions would you ask to gain well-founded information about the effectiveness of these capsules?

<table>
<thead>
<tr>
<th></th>
<th>applies</th>
<th>does not apply</th>
<th>don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the producer initiated research by independent institutes</td>
<td></td>
<td></td>
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<tr>
<td>confirming the relaxing effect of the capsules?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there scientific proof for the relaxing effects of roseroot?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does your friend perceive an effect of the capsules on his well-being?</td>
<td></td>
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</tbody>
</table>
Health Information Literacy Knowledge Test
HILK

Item example:
Which book likely contains well-balanced information (including possible advantages and disadvantages) about health-related effects of sports on well-being?

<table>
<thead>
<tr>
<th>applies</th>
<th>does not apply</th>
<th>don't know</th>
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</thead>
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</tbody>
</table>

Book 1

Book 2

Book 3
Summary and conclusions

4. Correlation between openness and HILK associated with education
   - Openness for experience goes along with higher education, this in turn positively affects HILK.

5. No relationship of HILK to conscientiousness and neuroticism
   - Both traits gain importance in situations when personal interest arises and may thus be stronger related to searching behavior than to objective skills:
     - thorough searches in a personal matter in high conscientiousness
     - information avoidance in high neuroticism
   - Contrast to research on information seeking using self-reports (Heinström, 2005; Halder, Roy, & Charaborty, 2010), but in line with research using objective tasks (Schmidt & Wolff, 2016).