What do I and what do others know about my talents ?

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- There are three things extremely hard: steel, a diamond, and to know one's self.

Benjamin Franklin, 1750

Relevance of the topic

- Before deciding on a professional education, an academic major, or a career to pursue, individuals may ask themselves:

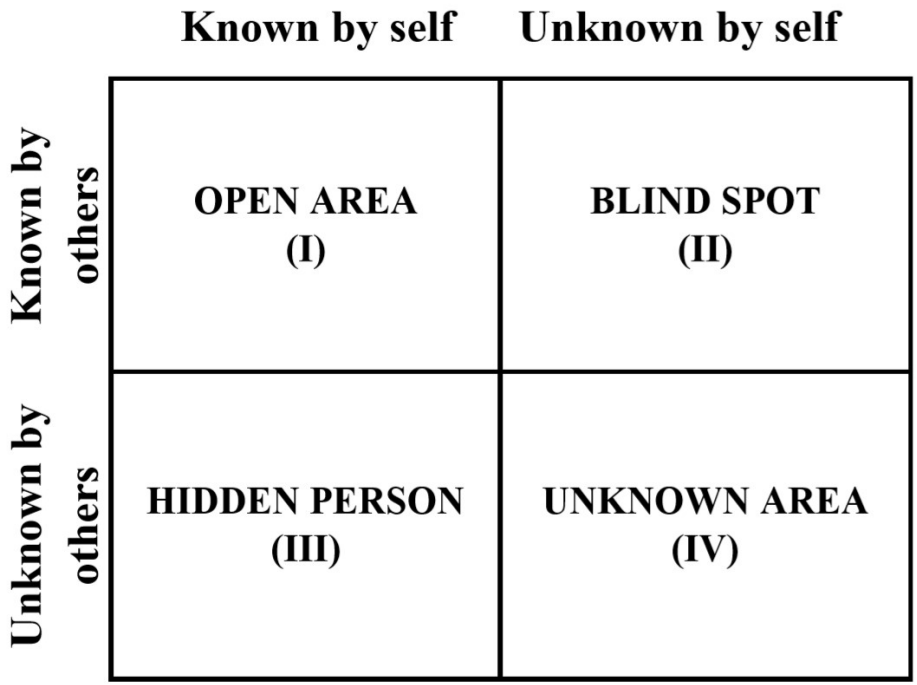
  "Do I have the necessary skills to be successful in this domain?"

- Thus, self-estimates shape important life choices (Ackerman & Wolman, 2007; Ehrlinger & Dunning, 2003)
- Despite the existence of a vast number of different objective measures of abilities, self-estimates are widely used in practical fields, such as career counseling (Freund & Kasten, 2012).
- Self-report measures are less time-consuming, easier to administer; overall more economical than psychometric tests (Herreen & Zajac, 2018).
- But people have rather invalid insight into their abilities ($r_{ability*self\text{-}estimate}$=.29)

  meta-synthesis by Zell & Krizan (2014; cf. also Freund & Kasten, 2012)

- In addition the perspective of others (peers, friends, teachers, parents) might be considered in career choice

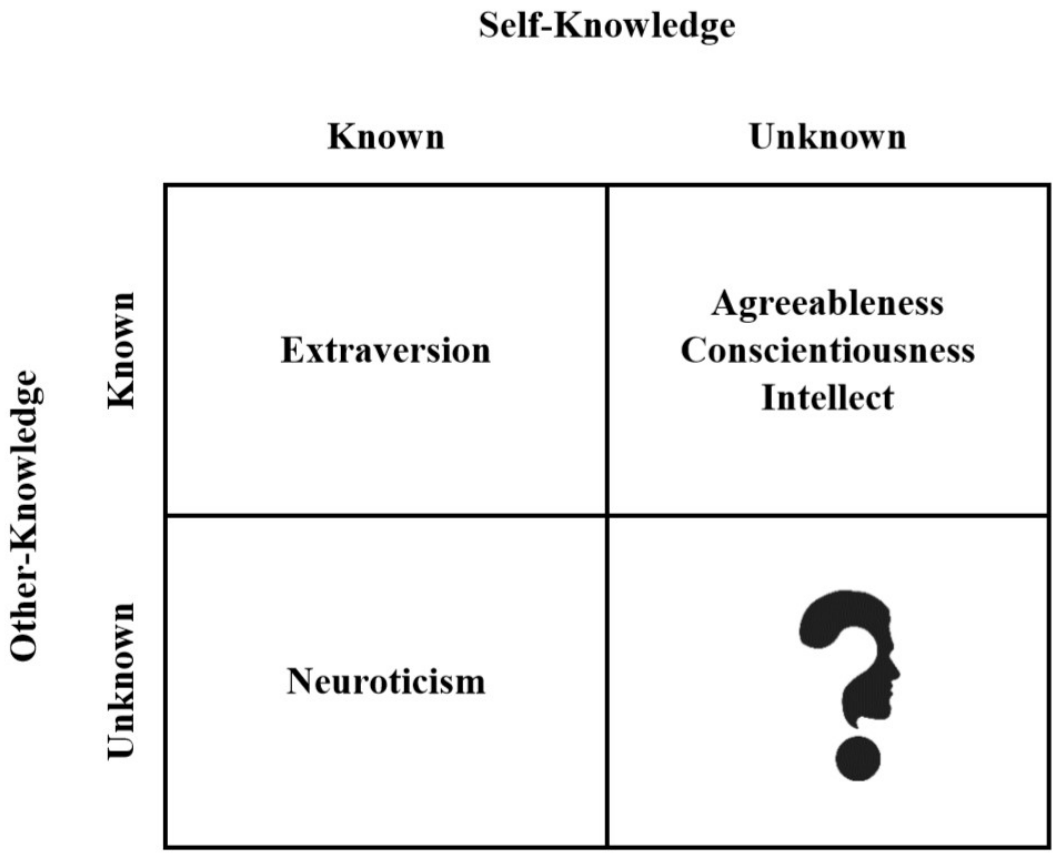
Johari-Window



(Joe Luft & Harry Ingham, 1955)

The Big 5 in the Self-Other-Knowledge-Asymmetry Model

(SOKA, Vazire, 2010)



(Bollich, Johannet & Vazire , 2011)

What do I and what do others know about my talents ?

- Self-perception/evaluation of abilities display low correlations with actual abilities. (Zell & Krizan, 2014; Freund & Kasten, 2012)
- Other-estimates (Neubauer & Hofer, 2020, Cambridge Handbook of Intelligence)
  - for intelligence zero-acquaintance research showed r's around .3 (Borkenau & Liebler, 1993)
  - parents can give rather valid estimates, from .21 up to almost .6, but moderated by gender and domain (Steinmayr and Spinath (2009)
  - peer-reports of intelligence are … weakly correlated with objective intelligence" (.3; Denissen et al., 2011)
- Hypothesis: Abilities are (partially) located in our blind spot.

	Known by self	Unknown by self
Known by others	OPEN AREA (I)	BLIND SPOT (II)
Unknown by others	HIDDEN PERSON (III)	UNKNOWN AREA (IV)

Where in Johari-window/SOKA-model are specific abilities and competencies?:

- **mathematical/numerical intelligence**
- **spatial intelligence**
- **verbal intelligence**
- **Intrapersonal emotional competency**
- **Interpersonal emotional competency**
- **creativity**

Overview

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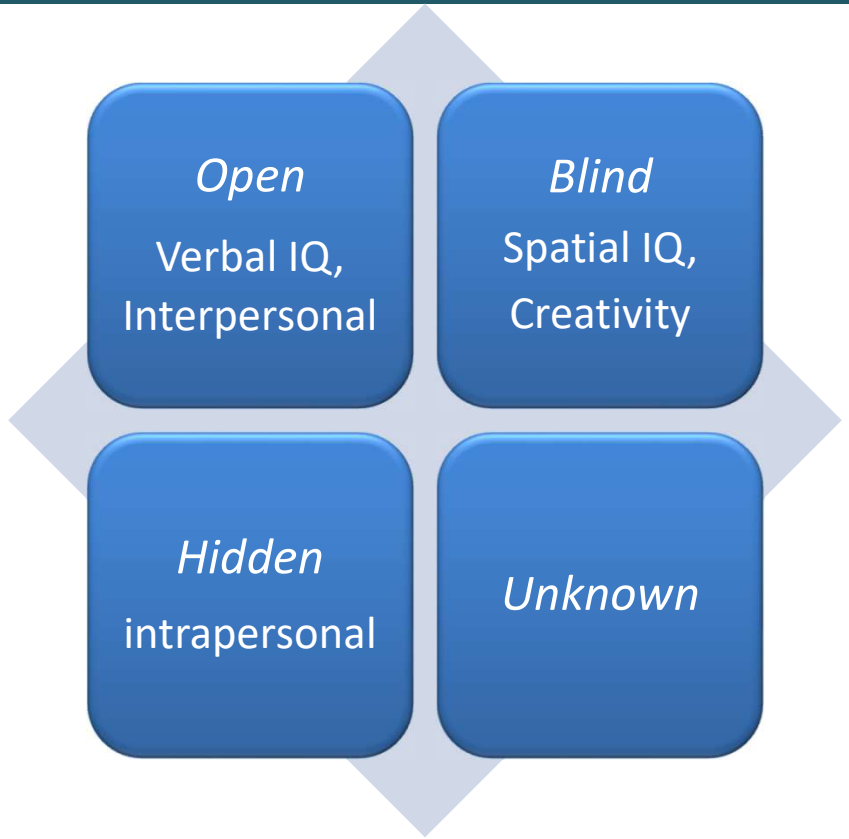
3. What determines self-estimates of abilities in school context: Grades, (psychometric) abilities and/or personality traits? (Studies 2b & 3)
4. Consequences of over-estimating one‘s own abilities (Study 2c)
5. Conclusions

Hypotheses in Johari-Window



No prediction for numerical ability! (not included in Zell & Krizan metasynthesis etc.)

Samples

Study 1: Lower Secondary School (13-15yrs)

- N = 233
- ♀ 124 (53 %) ♂ 108 (46 %)
- Age: M = 14.07, SD = .60

Study 1:
High(er Secondary) **School (17/18yrs)**

- N = 215
- ♀ 126 (59 %) ♂ 89 (41 %)
- Age: M = 17.99, SD = .70

Study 2 - Replication: High school (16-19yrs)

- N = 327
- ♀ 205 (63 %) ♂ 122 (37 %)
- Age: M = 16,77, SD = 1.23

Neubauer et al., 2018; replication: Neubauer & Hofer, 2021

Psychometric Performance Measures

Cognitive Abilities

Verbal, Numerical and Spatial Ability subtests from Intelligenz Struktur Analyse (ISA) (ITB & Gittler, 1998)

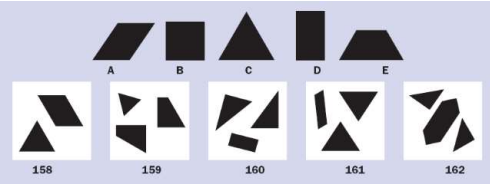
- **Verbal intelligence – similarities**

30. (A) Sämaschine (B) Egge (C) Melkmaschine (D) Pflug (E) Mähmaschine

- **Numerical intelligence – number series**

57 60 30 34 17 22 11 ?

- **Spatial intelligence – assembling figures**



‚Alternative Abilities'

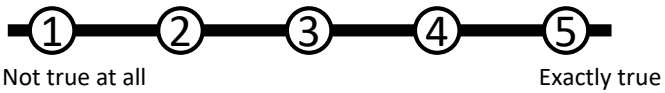
- **Creativity – divergent thinking**
  - 3 items / 3 minutes each (Jauk et al., 2013)
- **Intrapersonal competence &**
- **Interpersonal competence**

- (Test for Emotional Management Ability (EMA, inter- and intrapersonal; Freudenthaler & Neubauer 2005; 2008); situational judgement test;

- **Self-reports**
- **Peer-reports from class-mates**
- Big Five (PMBB; Weißenbacher & Neubauer, 2016)
- Narcissism (NPI-short form; Schütz et al., 2004)

Examples of Self-/Peer-estimation scales

9 – 10 items each scale



Verbal intelligence (*α = .82/.91),*

- Compared to others, I have a very broad vocabulary.

Spatial intelligence *(α = .84/.88)*

- I am good at finding my way in an unknown area.

Numerical intelligence *(α = .92/.94)*

- I am good at dealing with numbers and operators.

Creativity (*α = .82/.85)*

- It is very easy for me to find different possible solutions to a problem.

Intrapersonal emotional ability *(α = .64/.71)*

- I am very good at recognizing and differentiating my own feelings.

Interpersonal emotional ability *(α = .83/.82)*

- I am good at understanding the emotions of others and reacting to them in an appropriate way.

Correlations of performance measures with self- and peer-report scales

	13/14 year old pupils (lower secondary school)[a]		17/18year old pupils (high school)[b]		16-19-yr old pupils (Replication high school)[c]	
	SELF	PEERS	SELF	PEERS	SELF	PEERS
Verbal Int.	.08	.26**	.19**	.28**	.21**	.20**
Numerical Int.	**.43****	**.46****	**.53****	**.36****	**.41****	**.39****
Spatial Int.	**.10**	**.14***	**.31****	**.16***	**.22****	**.15***
Creativity	.34**	.22**	.32**	28**	.21**	24**
Intrapers. Comp.	.38**	.02	.39**	.13	.24**	.09
Interpers. Comp.	.46**	-.01	.48**	.19**	.49**	.33**

r≥.4 green; r≥.3 orange, r≥.2 yellow

<.2 no validity of self-/peer-estimates (Vazire criterion)

[a] [b]Neubauer et al., 2018; [c]replication: Neubauer & Hofer 2021

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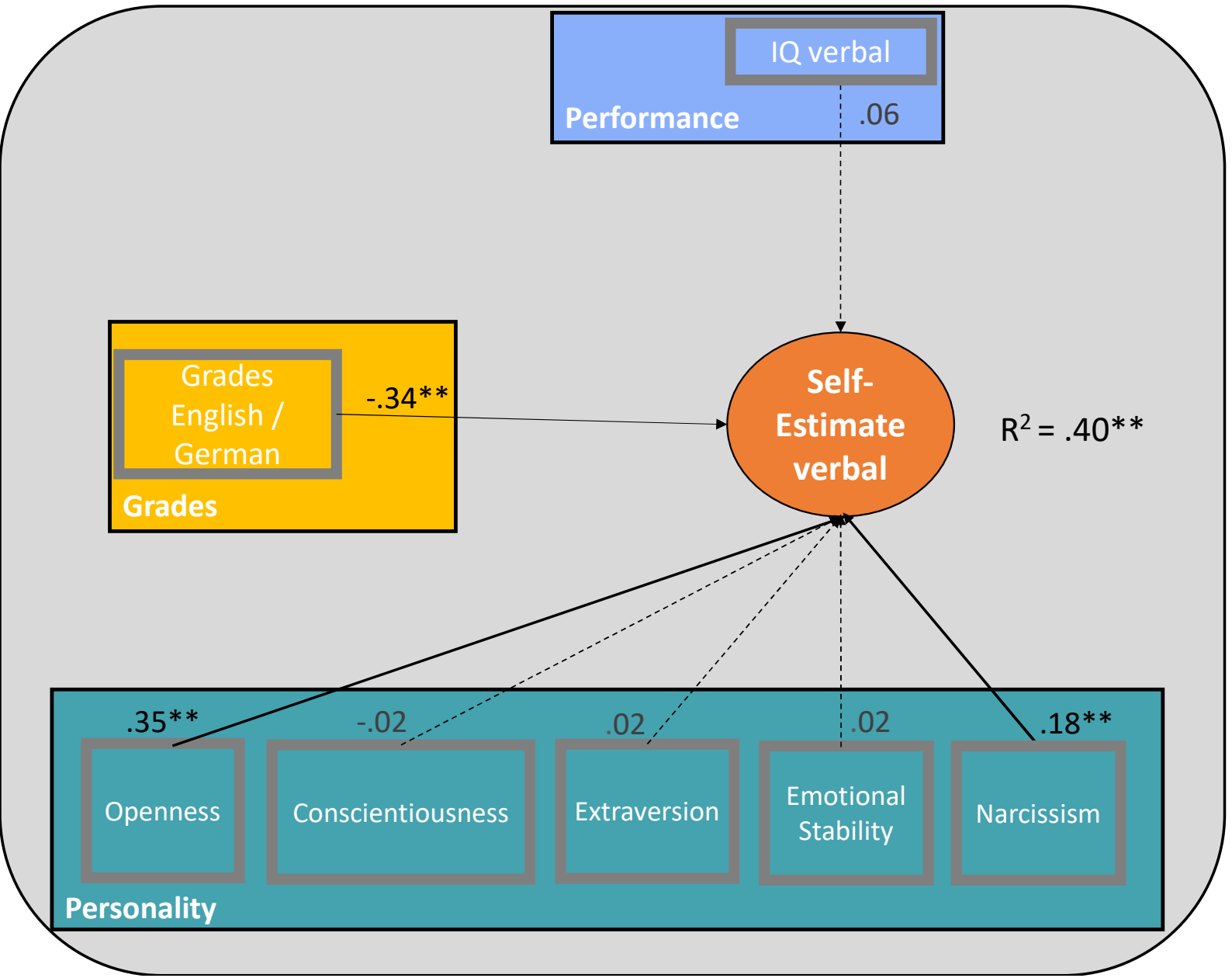
Research Questions

- Are self-estimates mostly dependent on performance in school (i.e. grades)?
- Or can I – independently of my grades – also have insight into my abilities; in which domain(s)?

- Do personality traits (e.g. narcisissm) influence self-estimates? self-estimates often higher correlated with Big 5 measures than ability tests? Herreen & Zajac, 2018)

- Two studies (2 & 3):
  - N = 327 high school students (16 - 19 yrs)
  - N = 249 high school students (16 - 21 yrs)
- Grades and (corresponding) IQ entered as step 1
- In step 2 Big Five personality traits and (Grandiose) Narcissism (NPI) were assessed

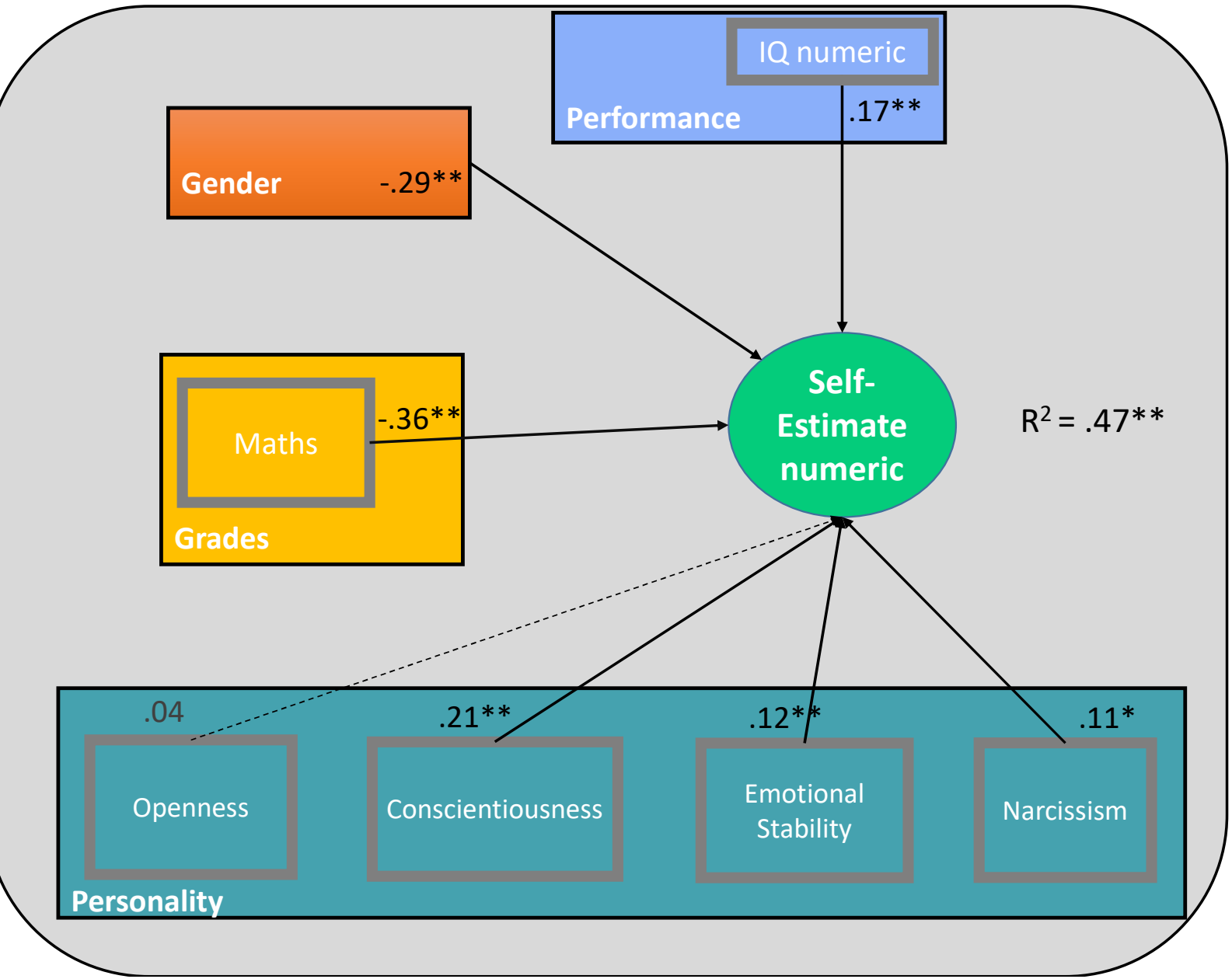


Step 1:
For self-estimates in verbal domain up to 40% of variance are explained

- mostly from German/English grades (β = -.43 and -.43);
- much less from verbal IQ (β = .12 to .14)

- Step 2: Adding personality adds 17% of variance explained – from Openn. & Narc. (β = .35 and .18)

- *but then no more influence of verbal IQ*



Step 1:
For self-estimates in numerical domain up to 47% of variance are explained

- to a higher extent from Math grades (β = -.41 and -.47)

- than from numerical IQ (β = .19 and .25)

Step 2: Adding personality adds 10% of
variance explained – from Consc, EmotStab. & Narc (β's = .21, .12, and .11)

- *but still influence of numerical IQ (ß =.17)*

Reasons for low validity of self-estimates

- #1: Lack of feedback
- #2: Attribution errors
- #3: The ‚Above Average‘-Effect
- #4: The Dunning-Kruger-Effect

Neubauer & Hofer, 2020, in: Cambridge Handbook of Intelligence, edited by R.J. Sternberg

#4: The Dunning-Kruger Effect

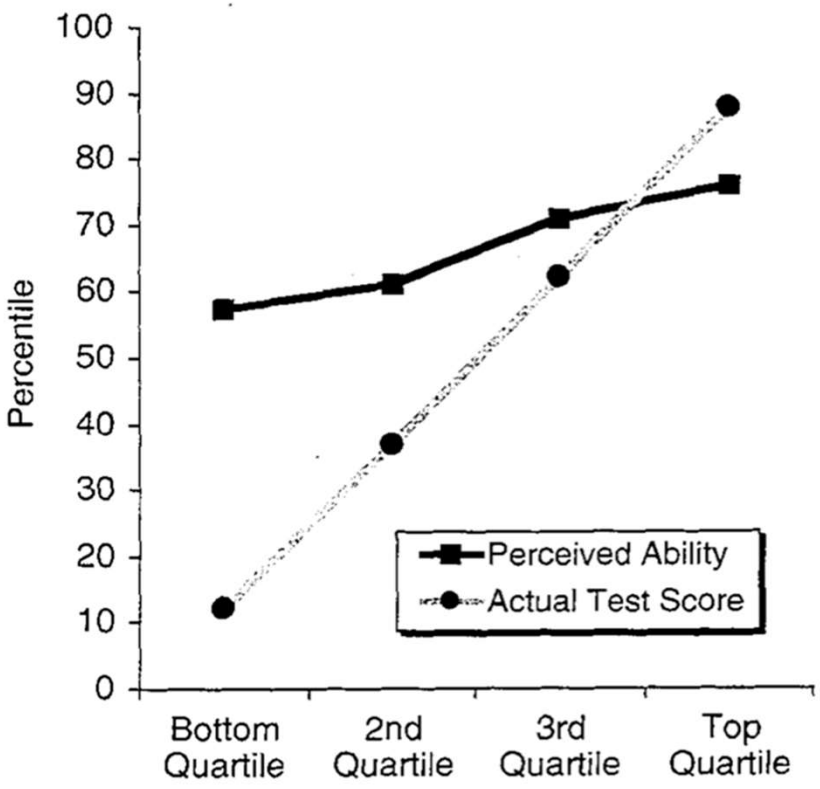


Figure 1. Perceived ability to recognize humor as a function of actual test performance (Study 1).

1. People over-estimate their abilities
2. Especially those with lower ability
3. People don‘t see talents of other people
3. And they don‘t recognize their own incompetence
4. Learning helps to become more competent and develop more valid self-estimates

Kruger & Dunning (1999)

- “The whole problem with the world is that fools and fanatics are always so certain of themselves, and wiser people so full of doubts.” (Bertrand Russel, 1957)

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Is over-estimation of abilities related to (professional) interests?

- Sample: N = 327 high school students (16 - 19 yrs)
- Interest questionnaire (BeBIT-M: nine (professional) interests with 4 items each on Likert 5point): α‘s = .73 - .91): commercial, health/social, science, IT/Tech, art/culture, tourism, justice/safety, handcraft, office
- Operationalization of Dunning-Kruger (D-K) effect:

$$z_{(\text{self-estimate})} - z_{(\text{performance})}$$

D-K > 0 = over-estimation; D-K < 0 = under-estimation

Study 2c: Dunning-Kruger-Effect and interests: Correlations between over-estimates of abilities and interests

	Commercial	Health/ Social	Science	IT/Tech	Art/ Culture	Tourism	Law/ Security	Assembly/ Handcraft	Office
verbal	***r* = .15****		***r* = .15****		***r* = .18****				
numerical	***r* = .18****		***r* = .27****	***r* = .15***				***r* = .22****	
spatial	***r* = .12***			***r* = .12***			***r* = .12***		
creativity					***r* = .25****				
intrapers	***r* = .13***								
Interpers		***r* = .13***							

grey= sig. after Bonferroni-correction

Dunning-Kruger-effect: z(self-estimate) – z(performance)

Conclusions Study 2c

- 13 out of 54 (almost 25%) correlations are sig., all in positive direction
- overestimating one‘s own abilities is correlated with higher interests in some domains (mostly intelligence factors: 10 out of 13)
- Not a single negative correlation

- Why might this be a problem?

How do abilities, interests and personality traits correlate with professional success?

- Abilities correlate 0.5 to 0.6 with professional success (e.g. Schmidt/Hunter, 1998, 2004; Strenze, 2007; Kramer, 2009)
- Interests at 0.2 to 0.35 (average = 0.3; Van Iddekinge et al., 2011; Nye et al., 2012)
- Big Five-Traits 0.1 to 0.3 max. (average = 0.2; Judge et al., 1999)

For References cf. Neubauer, 2018

Summary

- Self-estimates of verbal ability **and of spatial ability are of low validity**,
- **Self-estimates of numerical ability are of rather high validity (high corr with numerical IQ), but also more dependent on math grades than on numerical IQ,** and also depend on some personality traits
- Over-estimating some abilities (mostly intellectual) are related to professional interests; and might misguide vocational decisions

- Thank you for your attention
- and to my team: