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Recruitment and selection: Using machine learning and psychometrics to pick the best talents

Digital Talent Ecosystem

bru_iscte
Business Research Unit

Lisb@20²⁰

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 UNIÃO EUROPEIA
Fundo Europeu
de Desenvolvimento Regional

Topics

Recruitment and selection: Using machine learning and psychometrics to pick the best talents

Jorge Sinal (Business Research Unit [BRU-IUL], Instituto Universitário de Lisboa [Iscte-IUL])

Behind the Curtain of HR Selection Tools: Situational Judgement tests

Beatriz Regina Trigo (Instituto Universitário de Lisboa [Iscte-IUL])

A new breed of resume

Hugo Amaro (Instituto Pedro Nunes), José Silva (Instituto Pedro Nunes), Paulo Rupino (University of Coimbra), & Paulo Almeida (Neotalent)

AI-powered recruitment

Hugo Amaro (Instituto Pedro Nunes), José Silva (Instituto Pedro Nunes), & Paulo Almeida (Neotalent)

The wind of (digital) change

Paulo Almeida (Neotalent)

Recruitment and selection (R&S)

- R & S are ubiquitous for organizations
- Key aspect to retain and contract the best talents
- Traditional paper-pencil format
- Fatigue

Some answers

- Digital transformation
- Gamification
- Modern Psychometrics
- Machine learning

The Project: Digital Talent Ecosystem

- Integrated digital platform
- User friendly interface both for candidates and managers
- Innovative instruments
- Feedback

A first glimpse

The screenshot displays a user interface for a training platform. On the left is a vertical navigation menu with icons for home, profile, calendar, and other functions. The main header shows the user's name 'CARLOS PEREIRA' and a search icon. Below the header, there's a breadcrumb 'HOME / CAREER' and a notification box that says 'REMEMBER TO KEEP YOU PROFESSIONAL INFORMATION UP TO DATE.' The main content area features a heading 'Carlos, check out these training modules for you.' followed by a sub-heading 'You can start, finish, pause and resume any training. When there's a new one for you we'll let you know.' Below this, four training modules are presented as cards: 'Visual Game' (APROX. 2 MINUTES, COMPLETE), 'Short term memory game' (APROX. 2 MINUTES, BEGIN TEST), 'Personality and skills quiz' (APROX. 10 MINUTES, RESUME TEST), and 'Multitask g...' (APROX. 2 MINUTES, BEGIN TEST).

A first glimpse



Your overall results.

Whenever you play a game or a quiz you'll be enriching your data dome and access better matched job opportunities.

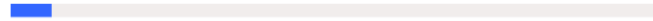
Honestidade - Humildade 0



Estabilidade Emocional 0



Extroversão 0



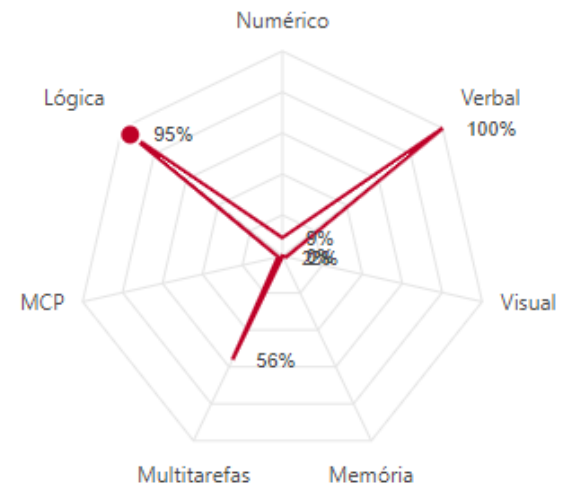
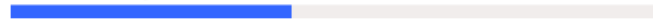
Amabilidade 0



Conscienciosidade 0

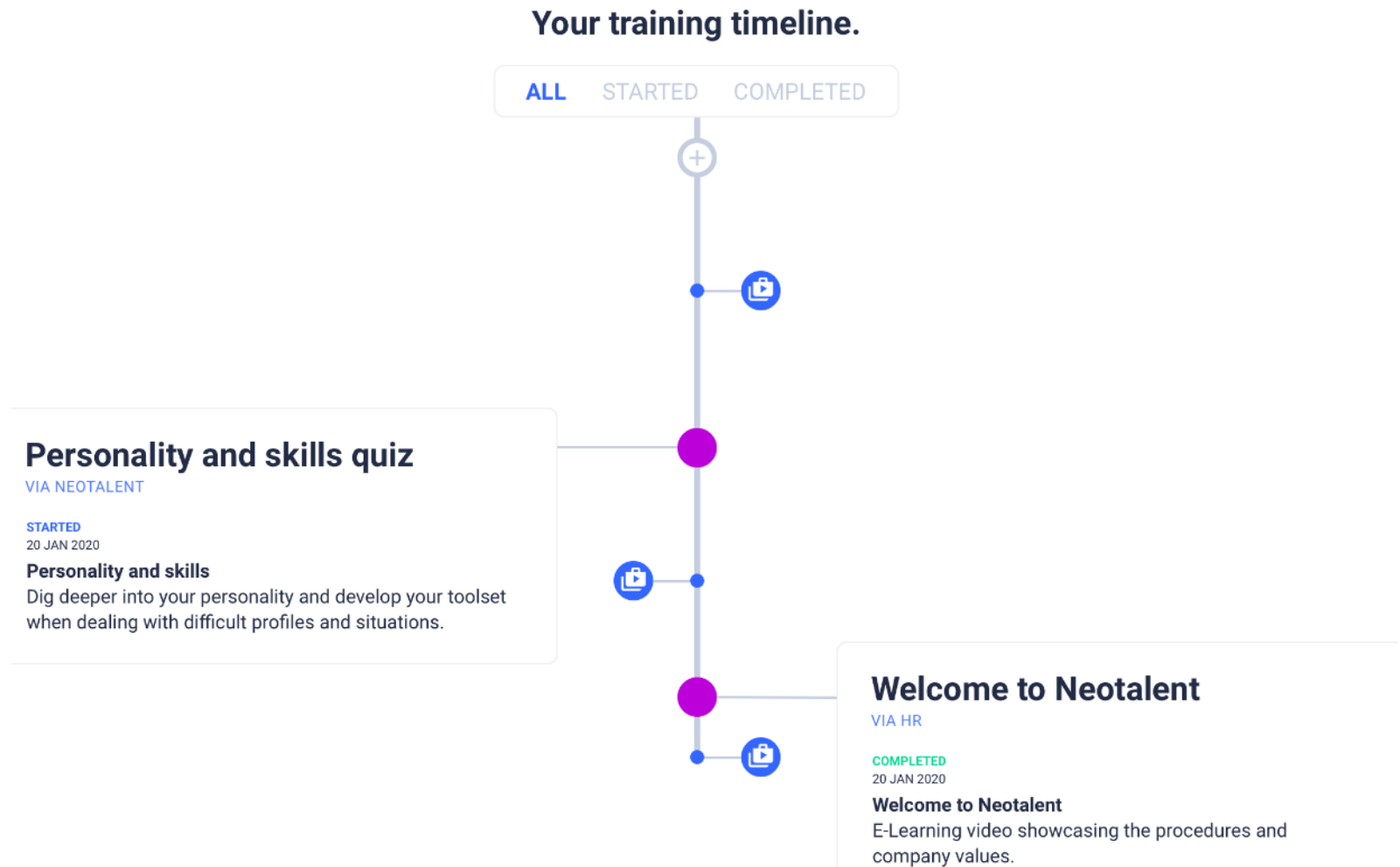


Abertura à Experiência 0



Based on your overall results you've appeared in **32 searches this month.**


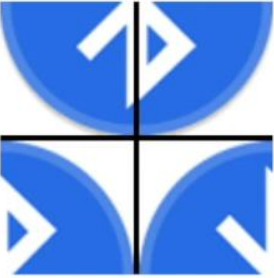
A first glimpse



Some measures: Visuo-spatial ability

Testes de desempenho e competências/ Jogo Visual

Some measures: Multitasking

<p>a, d, d, o</p> <input data-bbox="863 636 1182 694" type="text" value="Escreva a palavra"/>	<p>$X / 6 = 6$ $X + 7 = Y$</p> <input data-bbox="1327 636 1551 694" type="text" value="X="/> <input "="" data-bbox="1589 636 1814 694" type="text" value="Y="/>
<p>52 Km/h</p>  <input data-bbox="835 1239 1207 1268" type="range"/>	

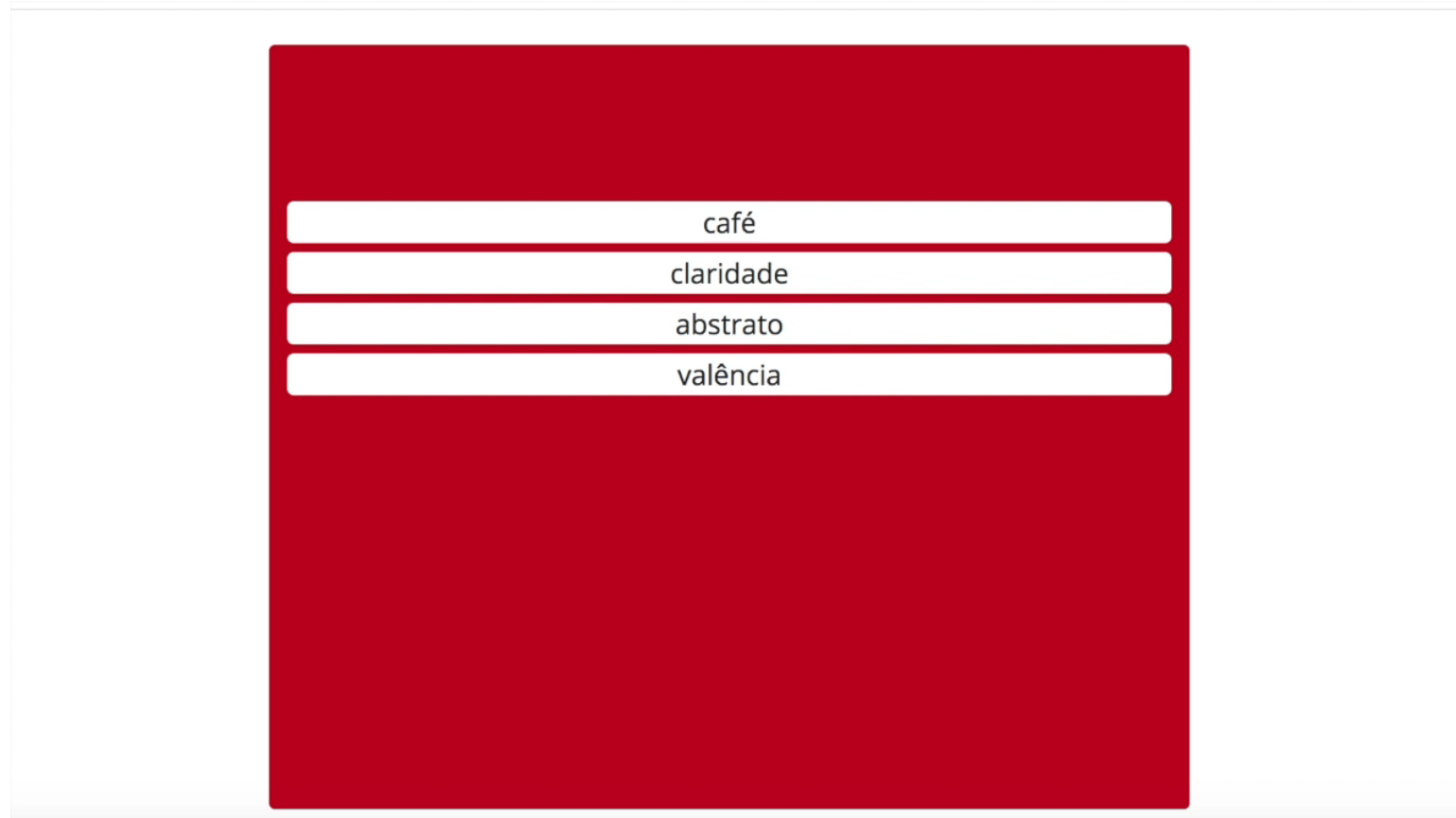
Some measures: Numerical reasoning

1/21. Qual é o valor que encaixa na sequência seguinte?

7	11	13	17	19	?
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Insira a sua resposta aqui...

Some measures: Short-term memory



Some measures: Verbal reasoning and comprehension

2/4 - A Carlota presta atenção aos pedidos de toda a gente.

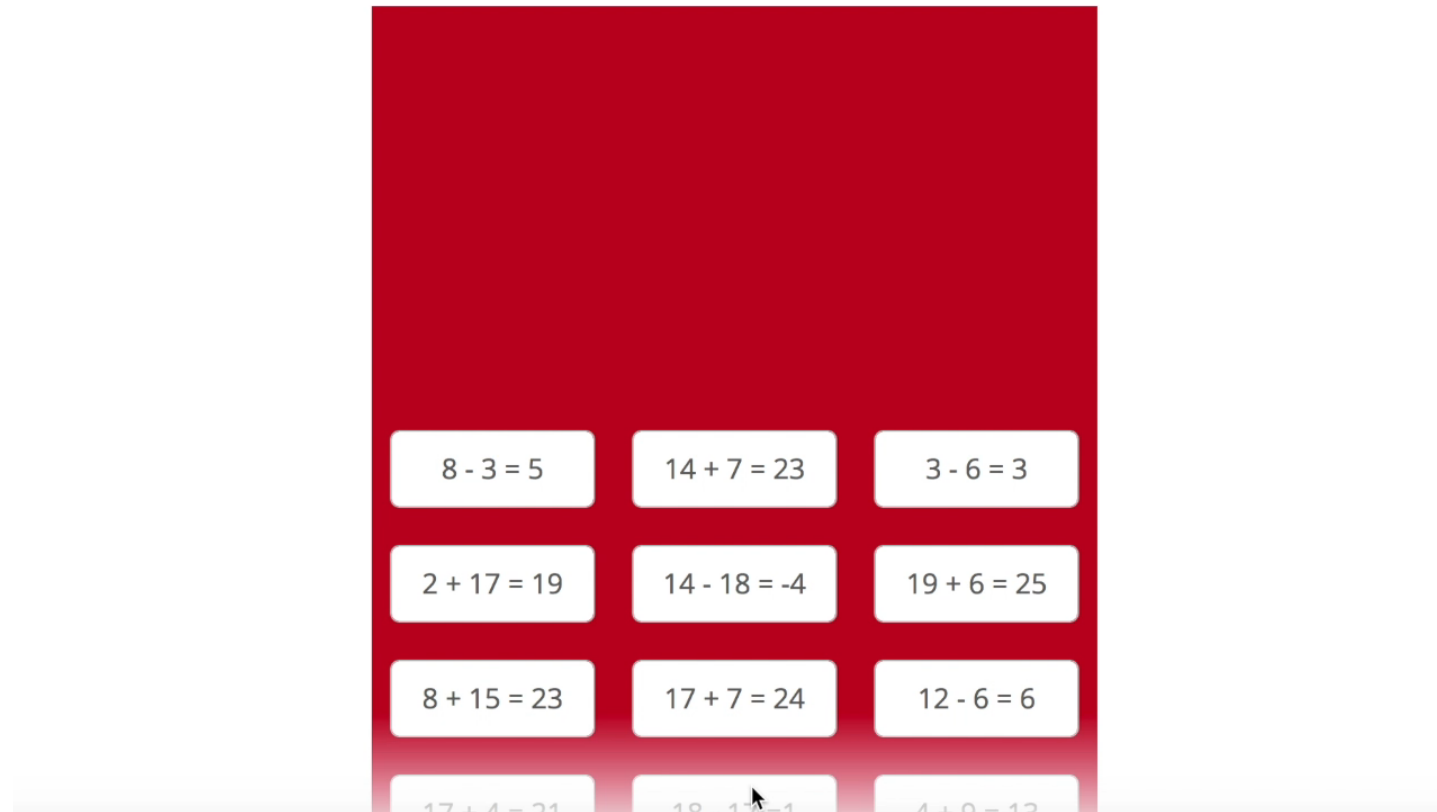
A. A Carlota é diligente com as pessoas.

B. A Carlota despreza os pedidos de toda a gente.

C. A Carlota é negligente com os pedidos de toda a gente.

D. A Carlota é desleixada










Some measures: Numerical reasoning, processing speed and selective attention

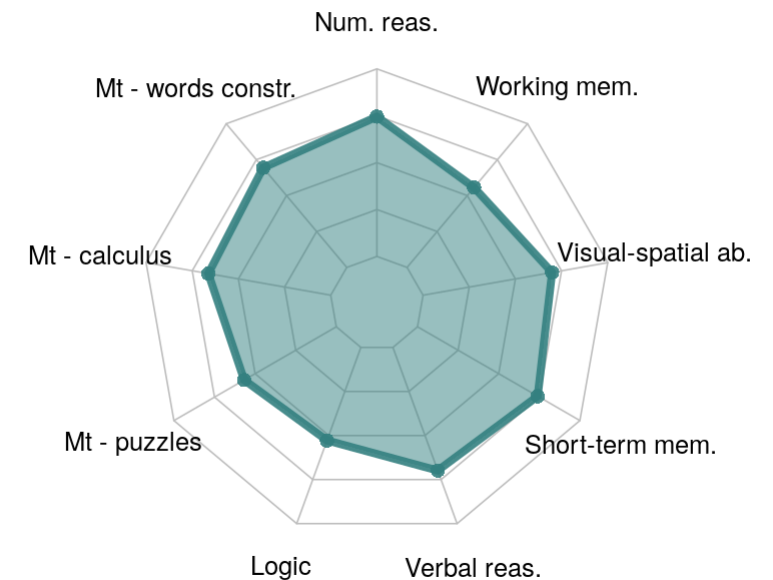


Some measures: Working memory



Feedback

Variable	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	Histogram
Numerical reasoning (scored from 0 to 1)	0.75	0.38	0.00	1.00	
Multitasking - words construction (scored from 0 to 1)	0.69	0.24	0.00	1.00	
Multitasking - calculus (scored from 0 to 1)	0.66	0.38	0.00	1.00	
Multitasking - puzzles (scored from 0 to 1)	0.57	0.31	0.00	1.00	
Logic (scored from 0 to 1)	0.53	0.17	0.00	0.81	
Verbal reasoning (scored from 0 to 1)	0.70	0.25	-0.13	1.00	
Short-term memory (scored from 0 to 1)	0.74	0.18	0.00	1.00	
Visual-spatial ability (scored from 0 to 1)	0.70	0.25	-0.13	1.00	
Working memory (scored from 0 to 1)	0.56	0.32	0.00	0.99	

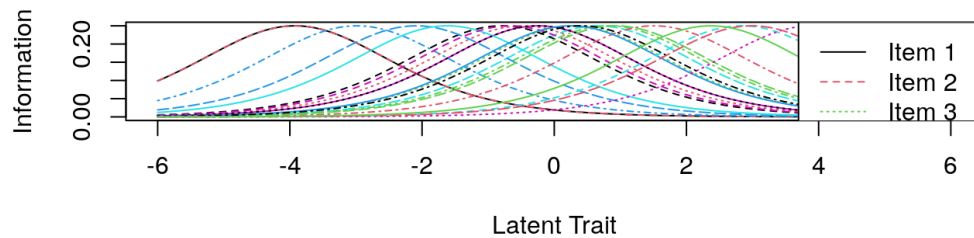


Analysis

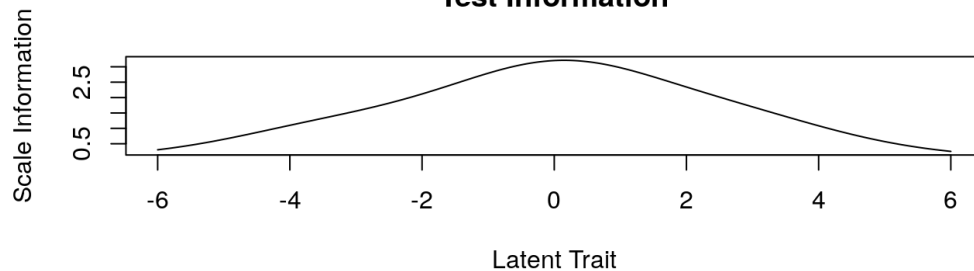
- Dichotomous and Polytomous Rasch Models
 - Person-fit
 - Item Separation Reliability
 - Person Separation Reliability
 - Residuals' analysis
 - Item information curves
 - Outfit (Unweighted fit)
 - Infit (Information-weighted fit)

Some results: Item Characteristic Curves (ICC) and Person-Item Map

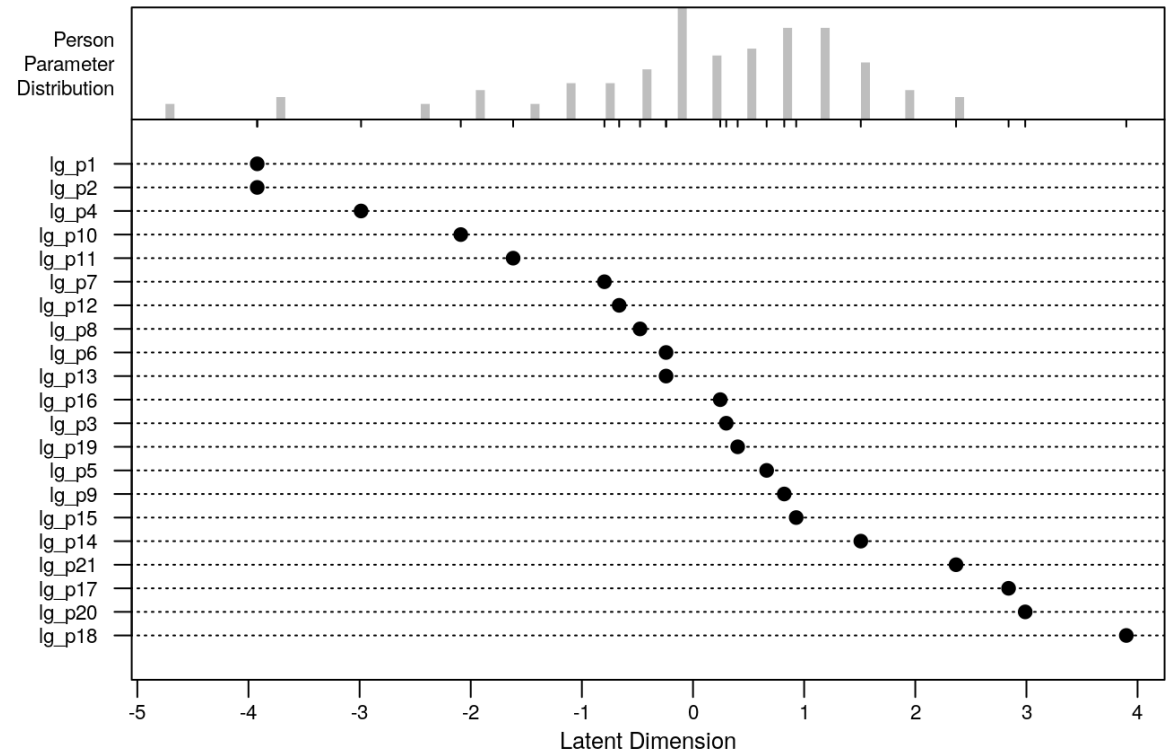
Item Information



Test Information

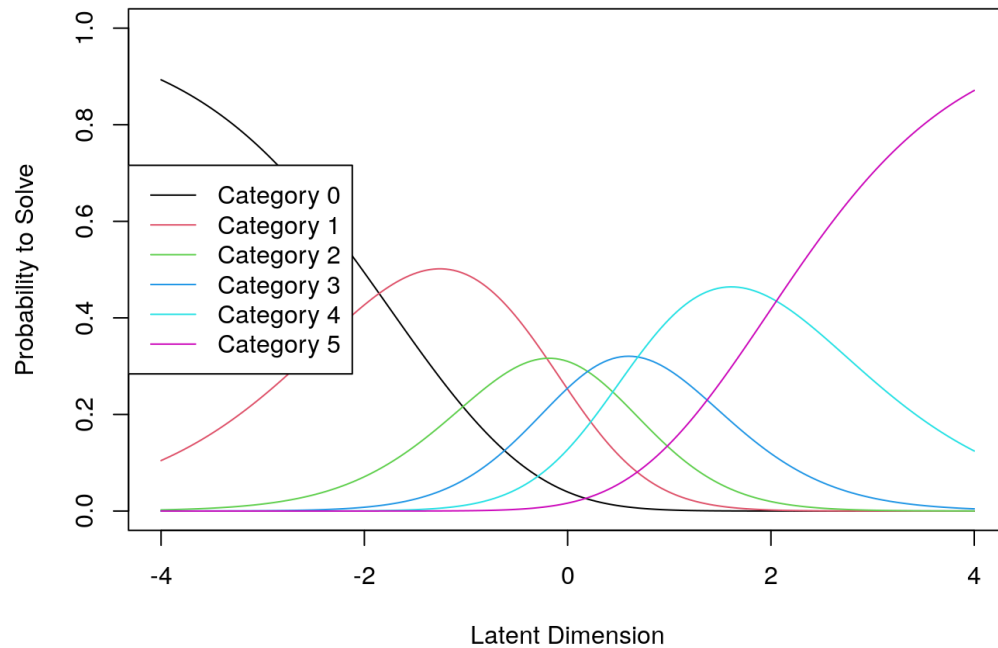


Person-Item Map

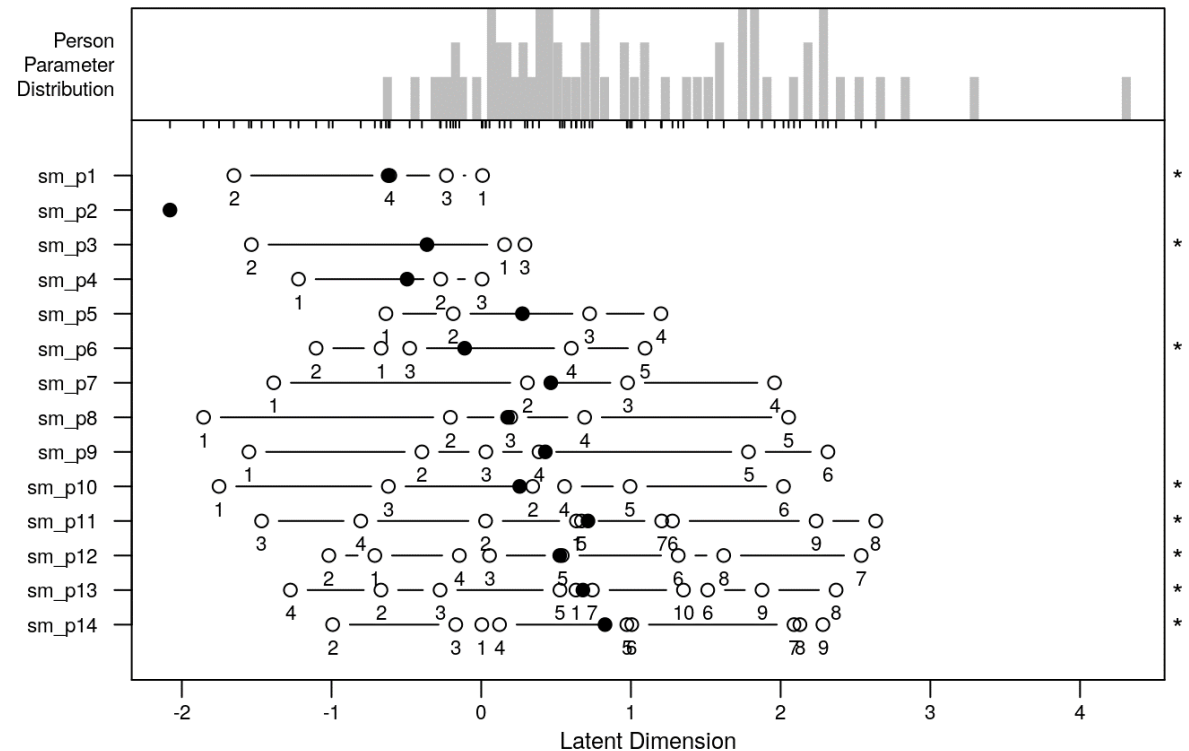


Some results: Item Characteristic Curves (ICC) and Person-Item Map

ICC plot for item sm_p8



Person-Item Map



Next steps

- Collect more data
- Test the refined items
- Analyze again

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Thank you!

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