Do Recruiters Select Workers with Different Personality Traits for Different Tasks?

A Discrete Choice Experiment

Caroline Wehner [BIBB, IZA, UM]

Andries de Grip [ROA, IZA]

Harald Pfeifer [BIBB, ROA]

Federal Institute for Vocational Education and Training (BIBB), Bonn, Germany
Institute of Labor Economics (IZA), Bonn, Germany
Research Centre for Education and the Labour Market (ROA), Maastricht University, The Netherlands.
Maastricht University (UM)

IZA Cedefop Eurofound, 20-21 August 2020

innovating training.
building futures.

www.bibb.de

Federal Institute for
Vocational Education
and Training

Motivation

- Task approach: Analytical and interactive tasks gain importance and yield employability and wage returns (Autor et al. 2003; Spitz-Oener 2006)

Motivation

- Task approach: Analytical and interactive tasks gain importance and yield employability and wage returns (Autor et al. 2003; Spitz-Oener 2006)

Selection employee side:

- Personality traits correlate with occupation and career choice (e.g., Caliendo et al. 2014; Wells et al. 2016)

- But also with selection into (e.g., Deming and Kahn 2017) and performance in tasks (e.g., Mount et al. 1998)

innovating training.
building futures.

Federal Institute for
Vocational Education
and Training

Motivation

- Task approach: Analytical and interactive tasks gain importance and yield employability and wage returns (Autor et al. 2003; Spitz-Oener 2006)

Selection employee side:

- Personality traits correlate with occupation and career choice (e.g., Caliendo et al. 2014; Wells et al. 2016)

- But also with selection into (e.g., Deming and Kahn 2017) and performance in tasks (e.g., Mount et al. 1998)

Selection employer side (our focus):

- Hiring preferences also related to personality (e.g., Moy and Lam 2004; Hoeschler and Backes-Gellner 2018; Piopiunik et al. 2018)

- Heterogeneity in recruiters' hiring preferences for personality traits with regard to tasks is less studies

Research Question and Study Design

Do Recruiters Select Workers with Different Personality Traits for Different Tasks?

Research Question and Study Design

Do Recruiters Select Workers with Different Personality Traits for Different Tasks?

BIBB Cost-Benet Survey 2018:

- Representative, cross-sectional survey of German firms

- Detailed information on firms' and decison makers' characteristics

- Assessment of tasks by firm and occupation

Research Question and Study Design

Do Recruiters Select Workers with Different Personality Traits for Different Tasks?

BIBB Cost-Benet Survey 2018:

- Representative, cross-sectional survey of German firms

- Detailed information on firms' and decison makers' characteristics

- Assessment of tasks by firm and occupation

Discrete Choice Experiment:

- Random sub-sample of 1,300 firms

- Recruiters are confronted with two hypothetical applicants

- Efficient choice design: 112 choice sets grouped in 16 blocks

- Each recruiter makes 7 choices

innovating training.
building futures.

Federal Institute for
Vocational Education
and Training

Example of the Discrete Choice Experiment:

Applicant Profil 1:

- Has average professional competence

- Shows active imagination and solves tasks in an original way

- Completes tasks thoroughly and efficently

- Seems to be reserved and quiet when dealing with others

- Seems to be considerate and kind

- Seems to be tense and nervous

- Receives a wage that equals the average skilled labor wage in your company

Applicant Profil 2:

- Has above average professional competence

- Shows little imagination and solves tasks in a conventional way

- Completes tasks carelessly and unorganized

- Seems to be communicative and sociable when dealing with others

- Seems to be cold and sometimes somewhat rude to others

- Seems to be relaxed and to handle stress well

- Receives a wage that is 15% above the average skilled labor wage in your company

innovating training. building futures.

Federal Institute for Vocational Education and Training

Example of the Discrete Choice Experiment:

Applicant Profil 1:

- Has average professional competence

- Shows active imagination and solves tasks in an original way

- Completes tasks thoroughly and efficently

- Seems to be reserved and quiet when dealing with others

- Seems to be considerate and kind

- Seems to be tense and nervous

- Receives a wage that equals the average skilled labor wage in your company

Applicant Profil 2:

- Has above average professional competence

- Shows little imagination and solves tasks in a conventional way

- Completes tasks carelessly and unorganized

- Seems to be communicative and sociable when dealing with others

- Seems to be cold and sometimes somewhat rude to others

- Seems to be relaxed and to handle stress well

- Receives a wage that is 15% above the average skilled labor wage in your company

innovating training.
building futures.

Federal Institute for
Vocational Education
and Training

Example of the Discrete Choice Experiment:

Applicant Profil 1:

- Has average professional competence

- Shows active imagination and solves tasks in an original way

- Completes tasks thoroughly and efficently

- Seems to be reserved and quiet when dealing with others

- Seems to be considerate and kind

- Seems to be tense and nervous

- Receives a wage that equals the average skilled labor wage in your company

Applicant Profil 2:

- Has above average professional competence

- Shows little imagination and solves tasks in a conventional way

- Completes tasks carelessly and unorganized

- Seems to be communicative and sociable when dealing with others

- Seems to be cold and sometimes somewhat rude to others

- Seems to be relaxed and to handle stress well

- Receives a wage that is 15% above the average skilled labor wage in your company

Example of the Discrete Choice Experiment:

Applicant Profil 1:

- Has average professional competence

- Shows active imagination and solves tasks in an original way

- Completes tasks thoroughly and efficently

- Seems to be reserved and quiet when dealing with others

- Seems to be considerate and kind

- Seems to be tense and nervous

➡ **LESS EMOTIONALLY STABLE**

Applicant Profil 2:

- Has above average professional competence

- Shows little imagination and solves tasks in a conventional way

- Completes tasks carelessly and unorganized

- Seems to be communicative and sociable when dealing with others

- Seems to be cold and sometimes somewhat rude to others

- Seems to be relaxed and to handle stress well

➡ **MORE EMOTIONALLY STABLE**

Example of the Discrete Choice Experiment:

Applicant Profil 1:

- Has average professional competence

- Shows active imagination and solves tasks in an original way

- Completes tasks thoroughly and efficently

- Seems to be reserved and quiet when dealing with others

- Seems to be considerate and kind

- Seems to be tense and nervous

➡ **Tense (BFI), nervous (GSOEP, BFI)**

Applicant Profil 2:

- Has above average professional competence

- Shows little imagination and solves tasks in a conventional way

- Completes tasks carelessly and unorganized

- Seems to be communicative and sociable when dealing with others

- Seems to be cold and sometimes somewhat rude to others

- Seems to be relaxed and to handle stress well

➡ **Relaxed (GSOEP, BFI), handle stress well (GSOEP, BFI)**

innovating training. building futures.

Federal Institute for Vocational Education and Training

Econometrics and Descriptives

The latent variable (utility) for alternative j in t is: $U_{njt} = \beta_n x_{njt} + \varepsilon_{njt}$;

- Recruiter n chooses $j = 1$ if $U_{n1t} > U_{n2t}$

- Mixed logit model using simulated maximum likelihood

innovating training.
building futures.

Federal Institute for
Vocational Education
and Training

Econometrics and Descriptives

The latent variable (utility) for alternative j in t is: $U_{njt} = \beta_n x_{njt} + \varepsilon_{njt}$;

- Recruiter n chooses $j = 1$ if $U_{n1t} > U_{n2t}$

- Mixed logit model using simulated maximum likelihood

Only respondents directly involved in recruitment:

- 8,342 applicant profiles, 4,171 recruitment decisions, 634 recruiters

- 41% firm owners, 17% CEOs, 10% department heads, 15% HR heads, 8% heads of commerce, 3% heads of training, 7% other DMs

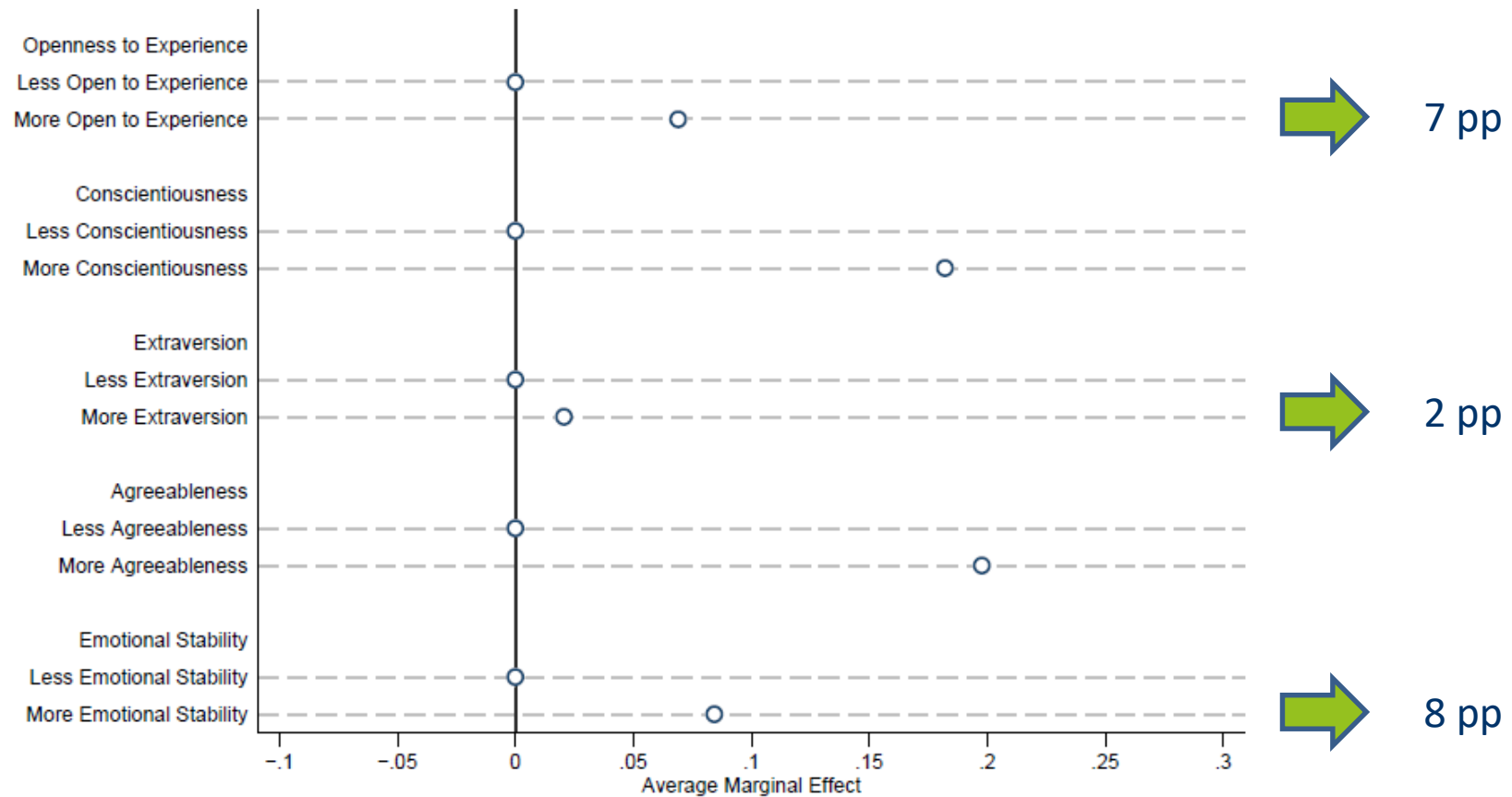- 62% male; 46% academic degree, 38% higher voc., 16% voc. degree
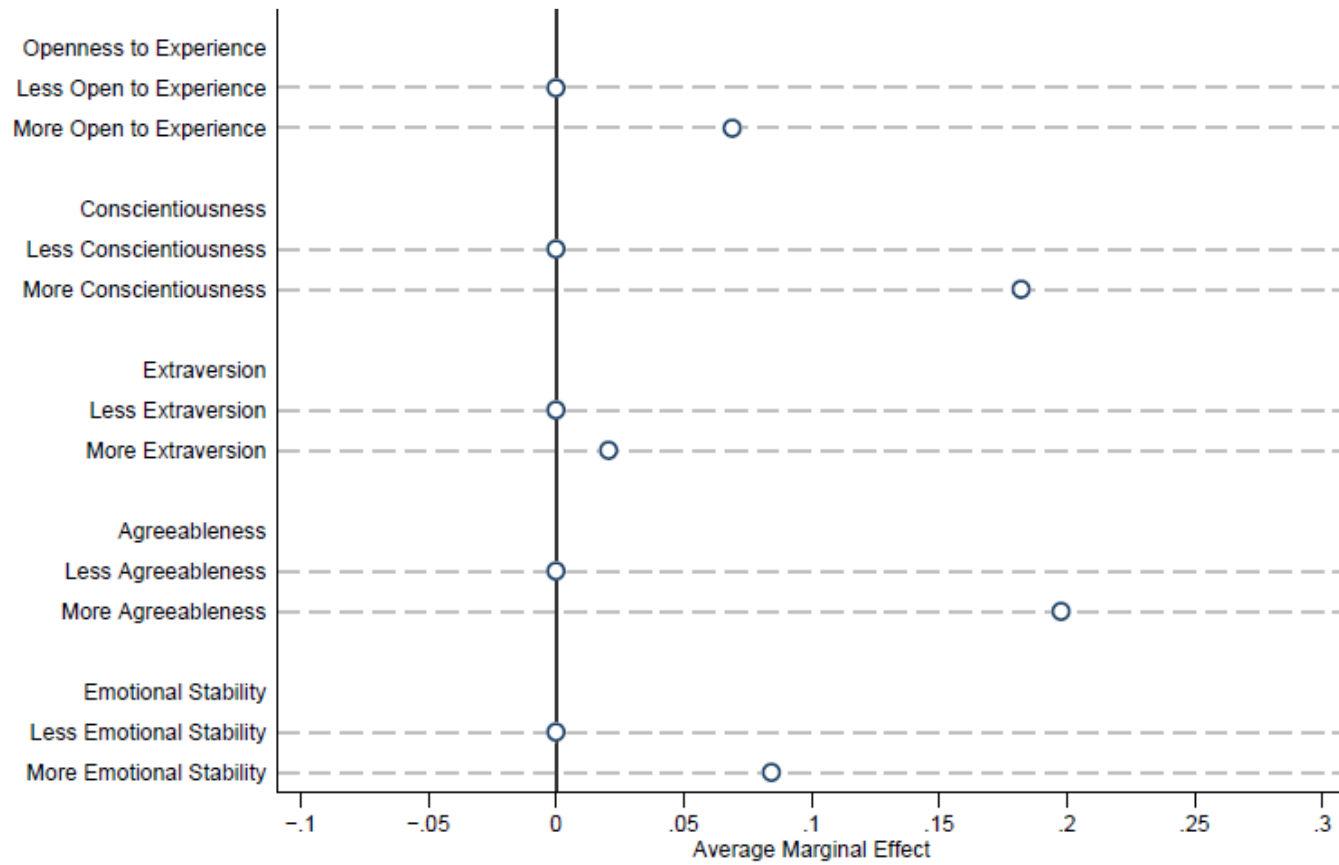
Federal Institute for
Vocational Education
and Training

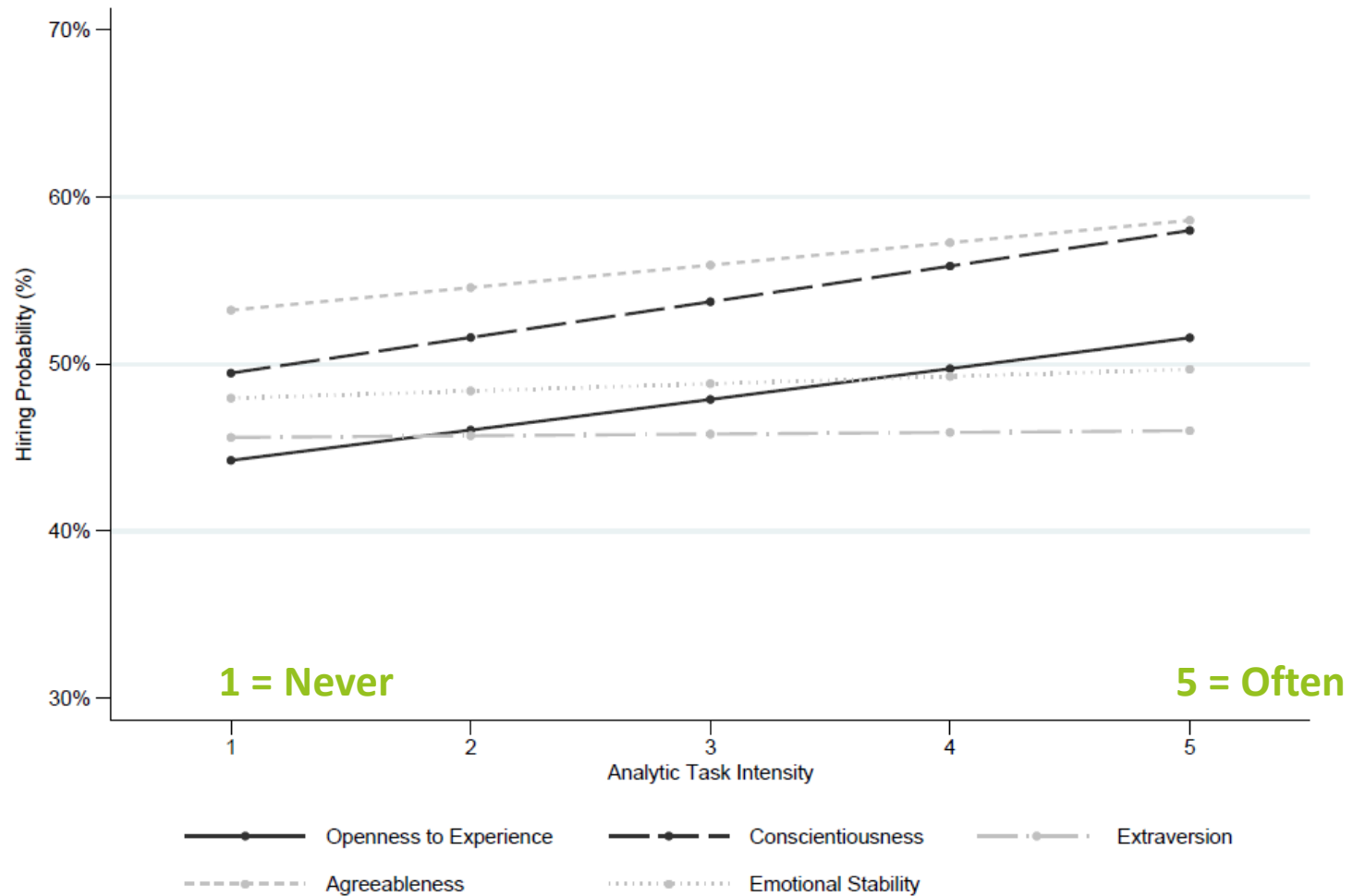# Average Marginal Effects of Personality of Being Hired

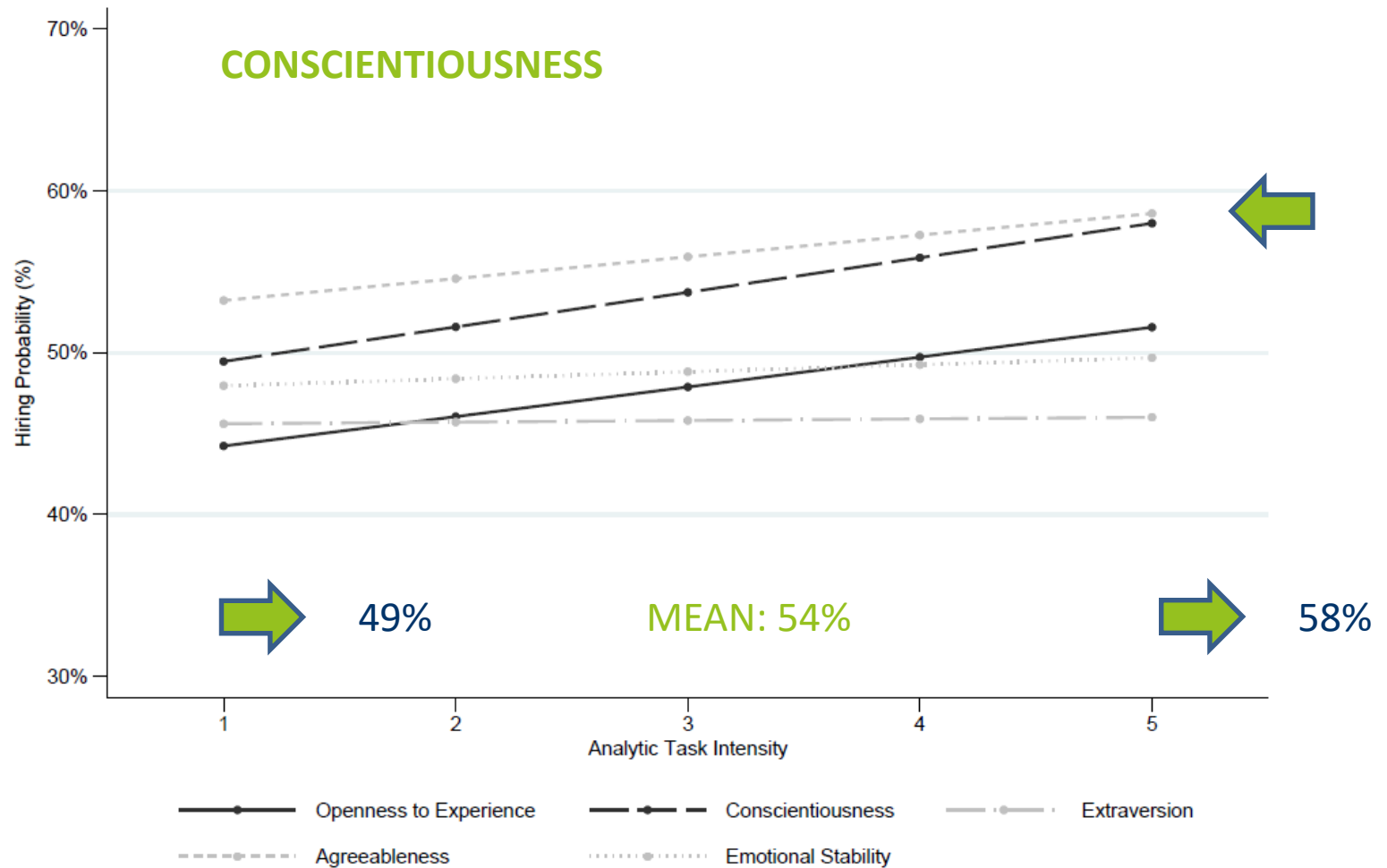# Average Marginal Effects of Personality of Being Hired
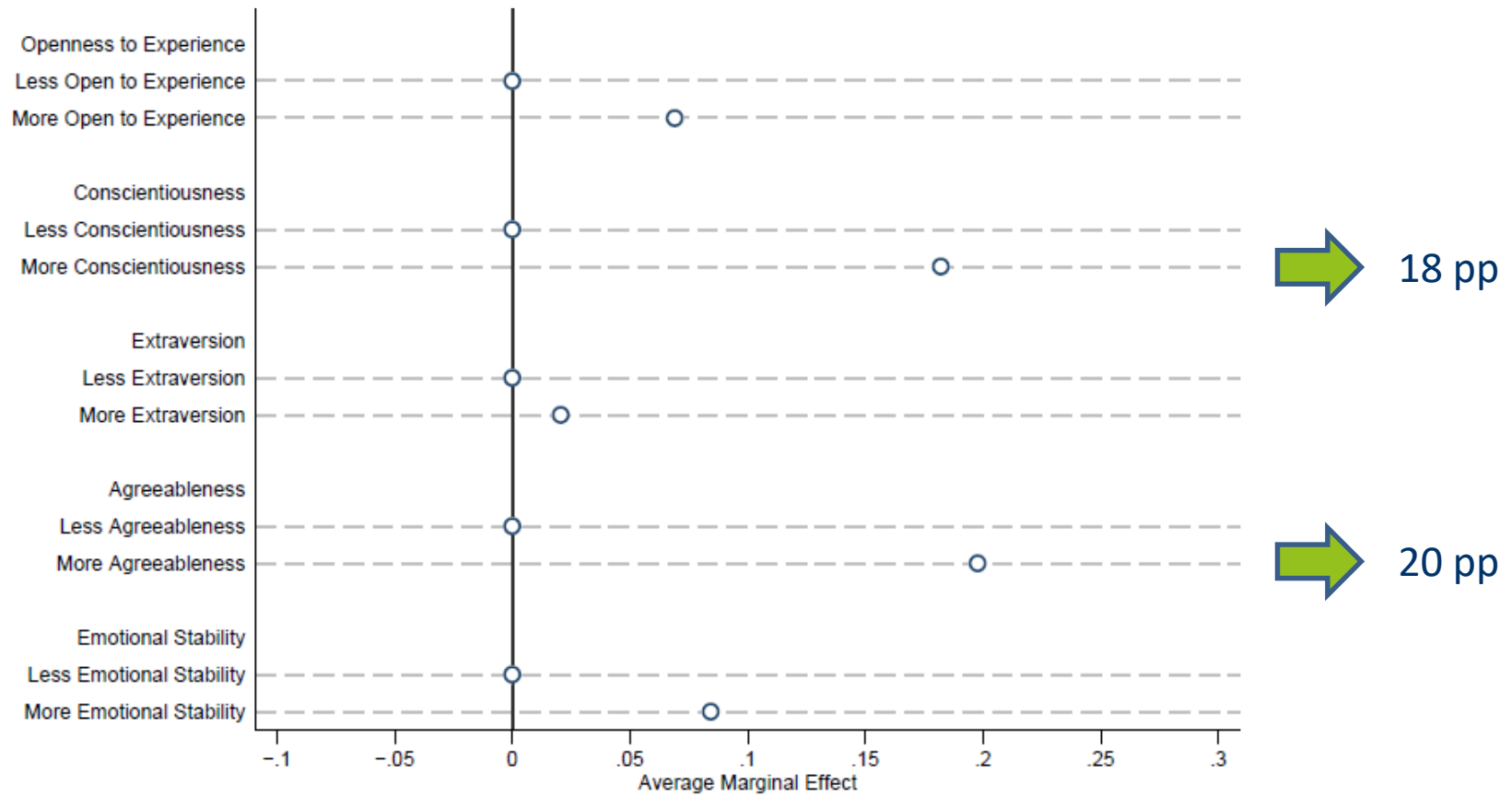
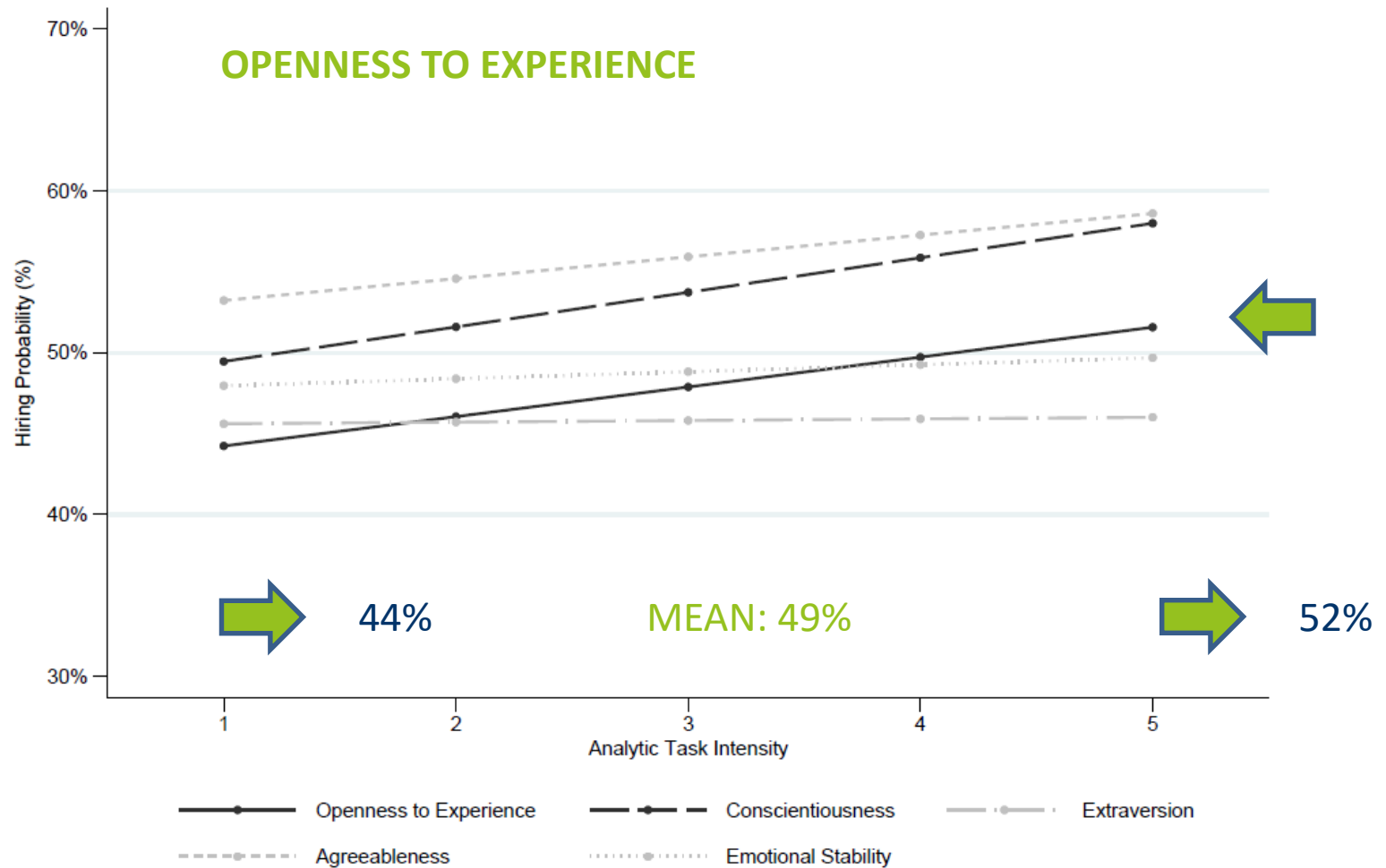# Average Marginal Effects of Personality of Being Hired

Predicted Hiring Probabilities: Personality and Analytical Tasks
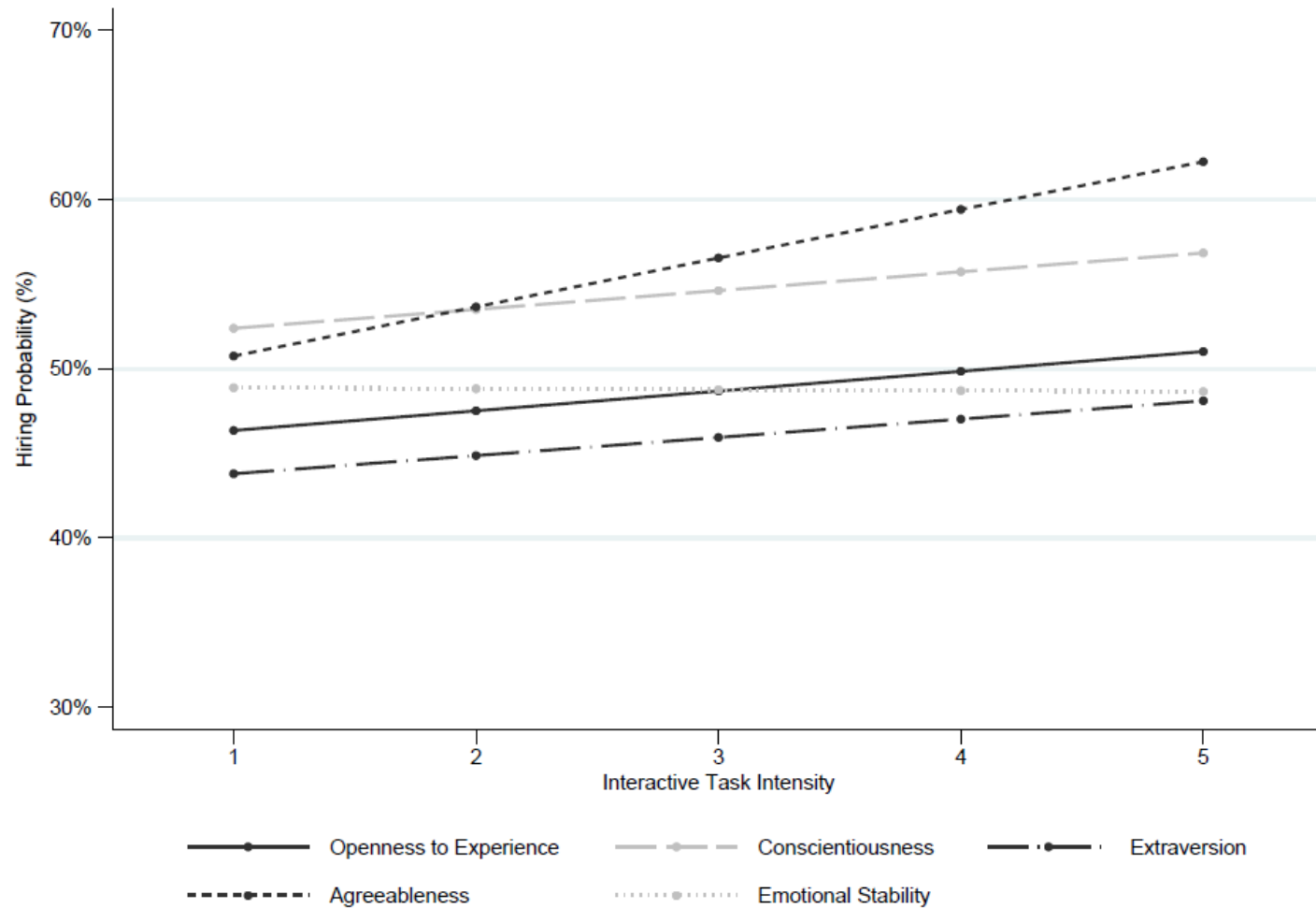
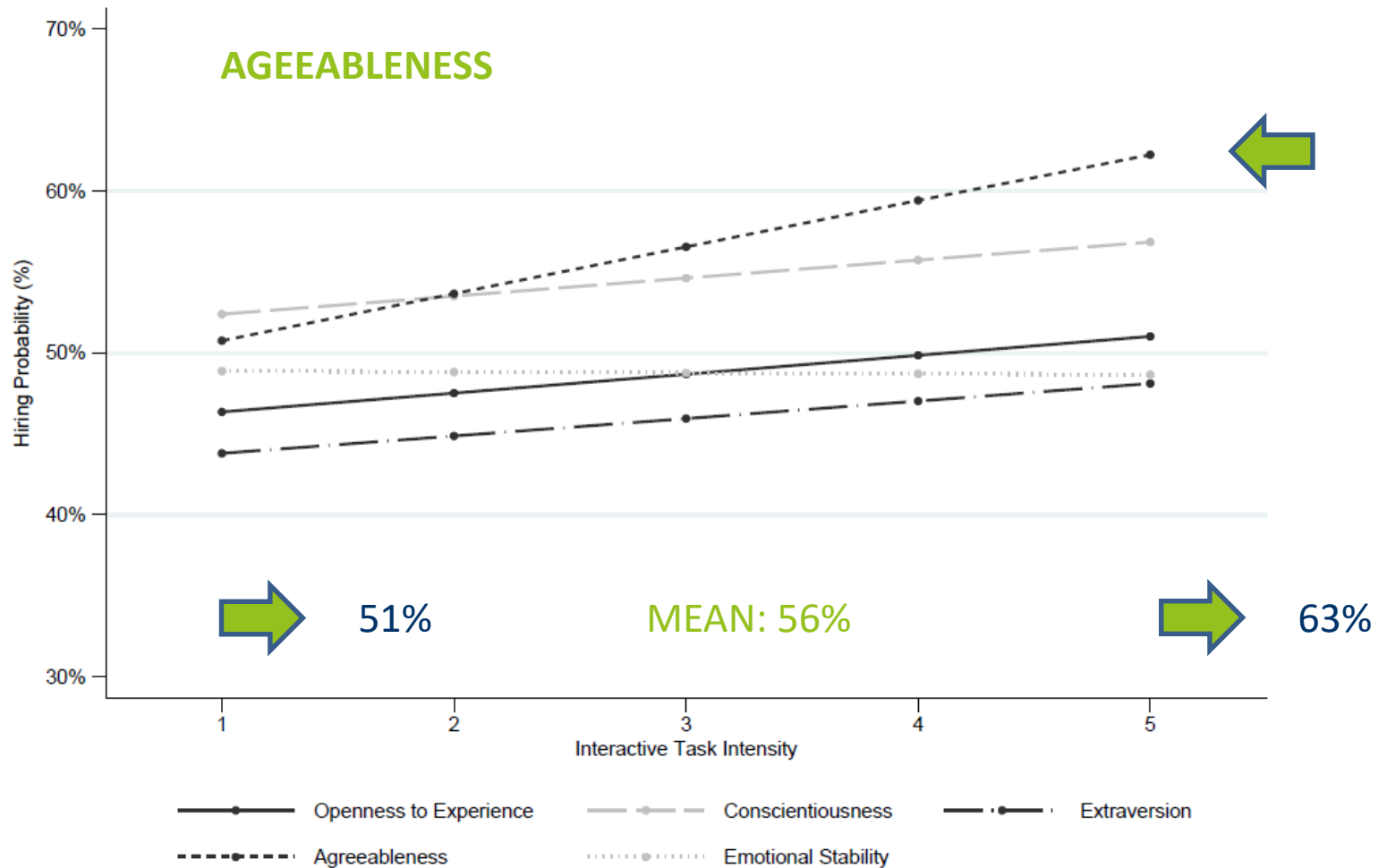# Predicted Hiring Probabilities: Personality and Analytical Tasks

Predicted Hiring Probabilities: Personality and Analytical Tasks

Predicted Hiring Probabilities: Personality and Interactive Tasks

Predicted Hiring Probabilities: Personality and Interactive Tasks

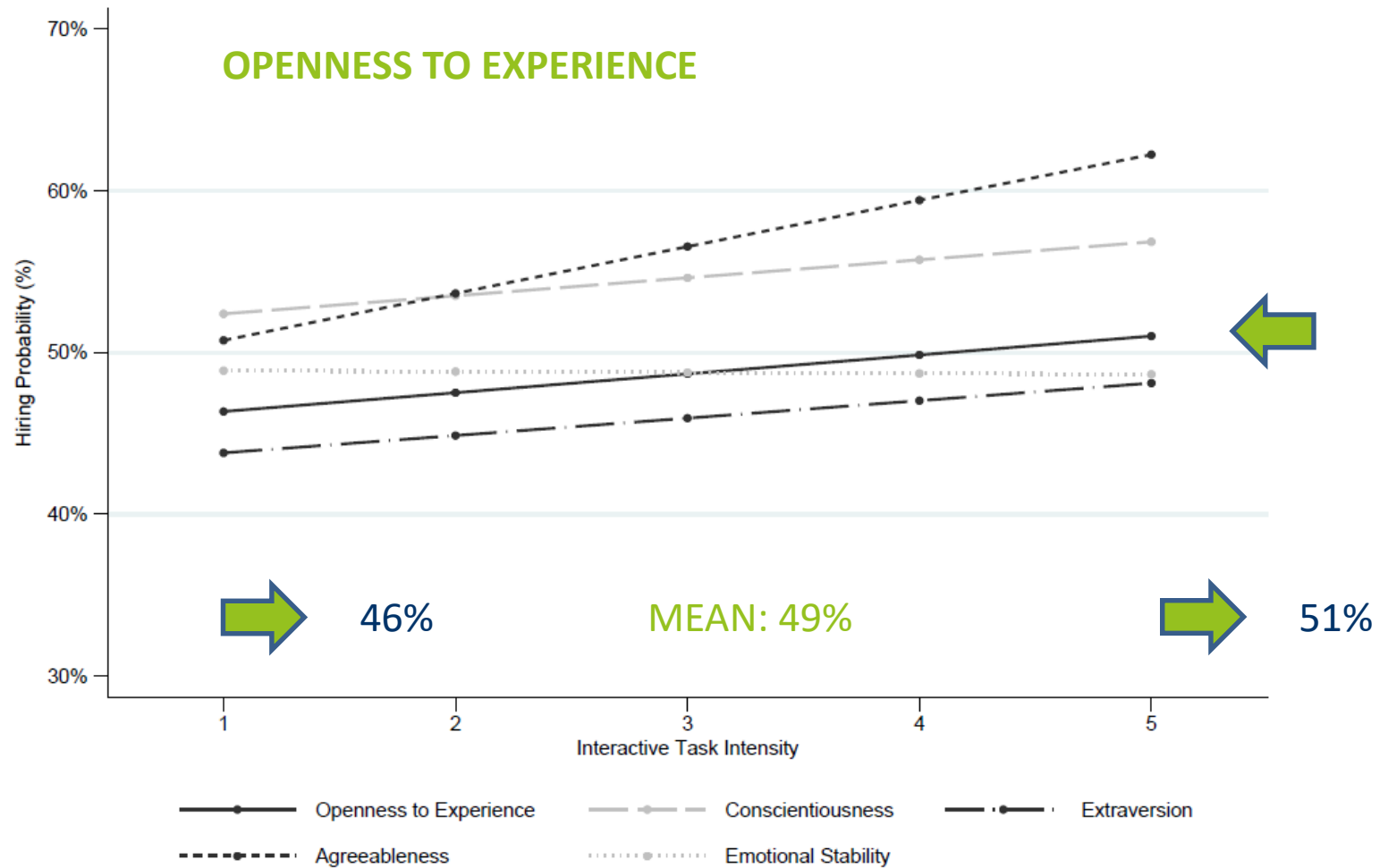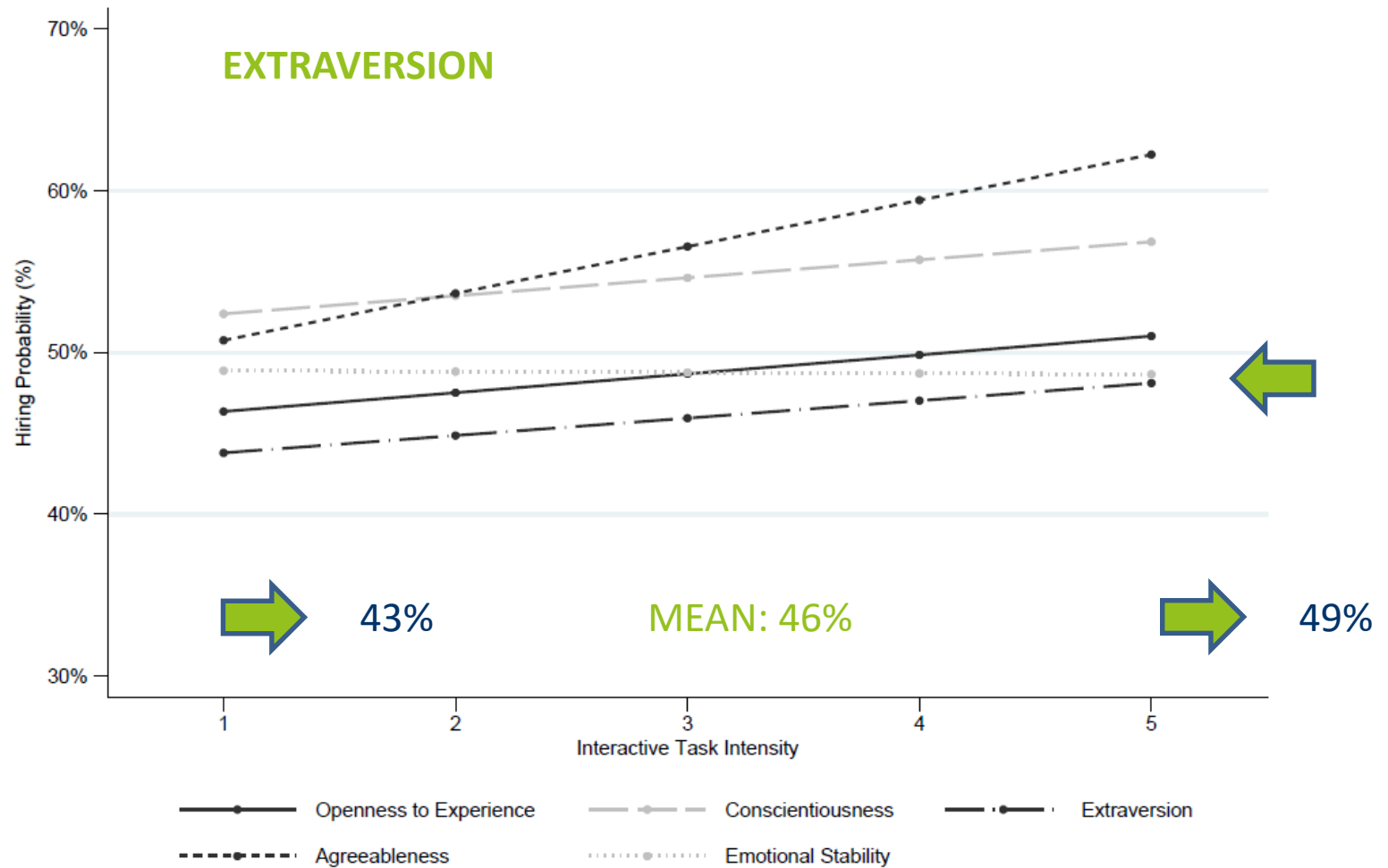# Predicted Hiring Probabilities: Personality and Interactive Tasks

Predicted Hiring Probabilities: Personality and Interactive Tasks

Conclusion

- Different tasks need different cognitive (e.g. Geel et al. 2011), but also different personality traits:
    - Analytical tasks = Conscientiousness, Openness
    - Interactive tasks = Agreeableness, Openness, Extraversion

Conclusion

- Different tasks need different cognitive (e.g. Geel et al. 2011), but also different personality traits:

    - Analytical tasks = Conscientiousness, Openness

    - Interactive tasks = Agreeableness, Openness, Extraversion

- Applicants who lack these personality traits are likely to face a labor market disadvantage even they wish to work in promising task jobs.

innovating training.
building futures.

Federal Institute for
Vocational Education
and Training

Conclusion

- Different tasks need different cognitive (e.g. Geel et al. 2011), but also different personality traits:
    - Analytical tasks = Conscientiousness, Openness
    - Interactive tasks = Agreeableness, Openness, Extraversion

- Applicants who lack these personality traits are likely to face a labor market disadvantage even they wish to work in promising task jobs.

- Curricula in education and training programms should include targeted support for personal development on the personality traits that are important for the profession.

innovating training.
building futures.

bibb
Federal Institute for
Vocational Education
and Training

Thanks for Your Attention and Feedback!

Dr. Caroline Wehner

Research Associate

Federal Institute for Vocational Education and Training (BIBB)

Division 1.3 "Economics of VET"

Robert-Schuman-Platz 3, D-53175 Bonn

wehner@bibb.de

innovating training.
building futures.

Federal Institute for
Vocational Education
and Training

References

Autor, D. H. and Handel, M. J. (2013). Putting Tasks to the Test: Human Capital, Job Tasks, and Wages, Journal of Labor Economics 31(2): S59–S96.

Caliendo, M., Fossen, F. and Kritikos, A. S. (2014). Personality Characteristics and the Decisions to Become and Stay Self-employed, Small Business Economics 42(2): 787–814.

Deming, D. and Kahn, L. (2017). Skill Requirements Across Firms and Labor Markets: Evidence From Job Postings for Professionals, NBER Working Paper Series 23328.

Geel, R., Mure, J. and Backes-Gellner, U. (2011). Specificity of Occupational Training and Occupational Mobility: An Empirical Study Based on Lazears Skill-weights Approach, Education Economics 19(5): 519–535.

Hoeschler, P. and Backes-Gellner, U. (2018). The Relative Importance of Personal Characteristics for the Hiring of Young Workers, Swiss Leading House WP 142.

innovating training.
building futures.

bibb
Federal Institute for
Vocational Education
and Training

References

Mount, M. K., Murray, R. B. and Greg, L. S. (1998). Five-factor Model of Personality and Performance in Jobs involving Interpersonal Interactions, Human Performance 11(2-3): 145–165.

Moy, J. W. and Lam, K. F. (2004). Selection Criteria and the Impact of Personality on Getting Hired, Personnel Review 33(5): 521–535.

Piopiunik, M., Schwerdt, G., Simon, L. and Woessmann, L. (2018). Skills, Signals, and Employability: An Experimental Investigation, CESifo Working Paper 6858.

Spitz-Oener, A. (2006). Technical Change, Job Tasks and Rising Educational Demands: Looking Outside the Wage Structure, Journal of Labor Economics 24(2): 235–270.

Wells, R., Hama, R. and Junankar, P. N. R. (2016). An Examination of Personality in Occupational Outcomes: Antagonistic Managers, Careless Workers and Extraverted Salespeople, Applied Economics 48(7): 636–651.

innovating training.
building futures.

www.bibb.de

Federal Institute for
Vocational Education
and Training

Example of Discrete Choice Experiment on Recruitment

The following is a question on the recruitment of skilled workers. Please imagine the following situation, regardless of whether your company is currently looking for professionals or not:

In your company there is an urgent need to occupy a full-time position in the profession (Prog.: Show selected profession). After reviewing the application documents there are only two people to choose from, of which you will in any case be hiring one.

- Both are 28 years old with German as their mother tongue.
- Both have a good educational degree and have five years of relevant professional experience in the initial training firm.
- All other unspecified decision criteria for recruitment, such as gender or additional qualifications, are the same for both professionals.

On the basis of the personal interview and a trial working day, you have received an impression of the professional competences as well as the personality of the two professionals. This information is presented below. Please indicate if you would hire skilled worker 1 or 2.

Please enter the appropriate number 1 or 2 and then click Return.

1: Profile Job Applicant 1

... has average professional competence.

... shows active imagination and solves tasks in an original way.

... completes tasks thoroughly and efficiently.

... seems to be reserved and quiet when dealing with others.

... seems to be considerate and kind to others.

... seems to be tense and nervous.

... receives a wage that equals the average skilled labor wage in your company.

2: Profile Job Applicant 2

... has above average professional competence.

... shows little imagination and solves tasks in a conventional way.

... completes tasks carelessly and unorganized.

... seems to be communicative and sociable when dealing with others.

... seems to be sometimes somewhat rude to others.

... seems to be relaxed and to handle stress well.

... receives a wage that is 15% above the average skilled labor wage in your company.

innovating training.
building futures.

Federal Institute for
Vocational Education
and Training

Overview of the Applicants' BIG-5 Personality Attributes

Openness to Experience:
(1) Applicant shows little imagination and solves tasks in a conventional way.
(2) … shows active imagination and solves tasks in an original way.

Conscientiousness:
(1) … completes tasks carelessly and unorganized.
(2) … completes tasks thoroughly and efficiently.

Extraversion:
(1) … seems to be reserved and quiet when dealing with others.
(2) … seems to be communicative and sociable when dealing with others.

Agreeabless:
(1) … seems to be cold and sometimes somewhat rude to others.
(2) … seems to be considerate and kind to others.

Emotional Stability:
(1) … seems to be tense and nervous.
(2) … seems to be relaxed and to handle stress well.

**innovating training.
building futures.**

www.bibb.de

Federal Institute for
Vocational Education
and Training

Measurement of Tasks

„How often does it occur in a working situation that the last hired skilled worker in the selected profession (show selected profession) …"

- … must face new challenges which require intense up-front thinking → Analytical tasks

- … must convince others or negotiate compromises with customers and colleagues → Interactive tasks

- … must repeat work steps that are characterized by the exact procedure → Routine tasks

- … must react to and solve problems → Non-routine tasks

Answer categories: 1 „Never" to 5 „Often"

innovating training.
building futures.

Federal Institute for
Vocational Education
and Training

Descriptive Statistics

Variable Names	N	mean	sd	min	max
Analytical Tasks	634	3.41	1.08	1	5
Interactive Tasks	634	2.82	1.23	1	5
Routine Tasks	634	3.08	1.33	1	5
Non-Routine Tasks	634	3.71	1.07	1	5
Recruitment: Alone	634	0.27	0.45	0	1
Recruitment: Together	634	0.73	0.45	0	1
Owner	634	0.41	0.49	0	1
CEO	634	0.17	0.37	0	1
Department Head	634	0.10	0.30	0	1
Head HR	634	0.15	0.35	0	1
Head Commerce	634	0.08	0.27	0	1
Head of Training	634	0.03	0.17	0	1
Other Position	634	0.07	0.25	0	1
Male	634	0.62	0.49	0	1
Tenure in Years	634	13.91	10.46	1	50
No Vocational Degree	634	0.00	0.04	0	1
Vocational Degree	634	0.16	0.37	0	1
Higher Voc. Degree	634	0.38	0.49	0	1
Academic Degree	634	0.46	0.50	0	1

Source: BIBB-CBS 2017/2018, own calculations.

**innovating training.
building futures.**

www.bibb.de

Federal Institute for
Vocational Education
and Training

Proportional Frequencies and Choices Made

Variable Names	N	mean	N	mean
Average Competencies	8342	0.50	4171	0.50
Above Average Competencies	8342	0.50	4171	0.50
Less Open to Experience	8342	0.50	4171	0.43
More Open to Experience	8342	0.50	4171	0.57
Less Conscientiousness	8342	0.50	4171	0.30
More Conscientiousness	8342	0.50	4171	0.70
Less Extraversion	8342	0.50	4171	0.47
More Extraversion	8342	0.50	4171	0.53
Less Agreeableness	8342	0.50	4171	0.28
More Agreeableness	8342	0.50	4171	0.72
Less Emotional Stability	8342	0.50	4171	0.43
More Emotional Stability	8342	0.50	4171	0.57
P 15 Percent Above Average Wage	8342	0.15	4171	0.13
P 10 Percent Above Average Wage	8342	0.14	4171	0.14
P 5 Percent Above Average Wage	8342	0.14	4171	0.14
Average Wage	8342	0.14	4171	0.16
P 5 Percent Below Average Wage	8342	0.14	4171	0.14
P 10 Percent Below Average Wage	8342	0.15	4171	0.15
P 15 Percent Below Average Wage	8342	0.14	4171	0.14

Source: BIBB-CBS 2017/2018, own calculations.

innovating training.
building futures.

www.bibb.de

Federal Institute for
Vocational Education
and Training

Basic Specification for Recruitment Decisions

	Conditional Logit	Mixed Logit MEAN	SD
Personal Attributes			
Above Average Competence	0.253***	0.341***	-0.387**
(Ref. Average Competence)	(0.043)	(0.059)	(0.141)
More Open to Experience	0.447***	0.625***	0.509***
(Ref. Less Open to Experience)	(0.046)	(0.067)	(0.132)
More Conscientiousness	1.114***	1.569***	0.844***
(Ref. Less Conscientiousness)	(0.054)	(0.100)	(0.100)
More Extraversion	0.133***	0.196***	-0.187
(Ref. Less Extraversion)	(0.040)	(0.055)	(0.193)
More Agreeableness	1.109***	1.581***	1.100***
(Ref. Less Agreeableness)	(0.055)	(0.100)	(0.098)
More Emotional Stability	0.538***	0.764***	0.644***
(Ref. Less Emotional Stability)	(0.047)	(0.072)	(0.107)
Wage Attributes: Ref. Average Wage			
15 Percent above Average Wage	-0.600***	-0.777***	
	(0.104)	(0.145)	
10 Percent above Average Wage	-0.309**	-0.319*	
	(0.110)	(0.151)	
5 Percent above Average Wage	-0.200*	-0.252	
	(0.096)	(0.134)	
5 Percent below Average Wage	-0.252**	-0.269*	
	(0.097)	(0.131)	
10 Percent below Average Wage	-0.186	-0.195	
	(0.110)	(0.149)	
15 Percent below Average Wage	-0.314**	-0.419**	
	(0.110)	(0.149)	
Observations; N	8342; 634	8342; 634	
Log-likelihood	-1960	-1877	

Source: BIBB-CBS 2017/2018, own calculations.

Note: Standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. ML with clustered standard errors based on 300 Halton draws.

**innovating training.
building futures.**

Federal Institute for
Vocational Education
and Training

Recruitment Decisions and Skilled Workers' Tasks

	Analytical	Interactive	Routine	Non-Routine
MEAN				
Personal Attributes				
Above Average Competence	0.347	0.484***	0.407**	0.446*
(Ref. Average Competence)	(0.196)	(0.144)	(0.144)	(0.204)
More Open to Experience	0.082	0.348*	0.571***	0.510*
(Ref. Less Open to Experience)	(0.196)	(0.152)	(0.148)	(0.218)
More Conscientiousness	0.994***	1.333***	1.507***	1.258***
(Ref. Less Conscientiousness)	(0.241)	(0.188)	(0.191)	(0.267)
More Extraversion	0.169	-0.060	0.258*	0.017
(Ref. Less Extraversion)	(0.181)	(0.135)	(0.130)	(0.194)
More Agreeableness	1.239***	0.964***	1.400***	1.191***
(Ref. Less Agreeableness)	(0.226)	(0.180)	(0.189)	(0.259)
More Emotional Stability	0.636**	0.777***	0.876***	0.729**
(Ref. Less Emotional Stability)	(0.207)	(0.159)	(0.166)	(0.238)
Interaction between Personal Attributes and Tasks (for each Task see Column Title)				
Above Average Competence	-0.001	-0.051	-0.022	-0.028
× Task	(0.057)	(0.049)	(0.043)	(0.053)
More Open to Experience	0.163**	0.103*	0.017	0.032
× Task	(0.056)	(0.051)	(0.045)	(0.058)
More Conscientiousness	0.173**	0.089	0.021	0.086
× Task	(0.065)	(0.060)	(0.051)	(0.069)
More Extraversion	0.009	0.097*	-0.020	0.049
× Task	(0.051)	(0.046)	(0.038)	(0.052)
More Agreeableness	0.104	0.224***	0.058	0.107
× Task	(0.062)	(0.061)	(0.054)	(0.068)
More Emotional Stability	0.038	-0.005	-0.038	0.010
× Task	(0.058)	(0.052)	(0.047)	(0.061)

innovating training.
building futures.

www.bibb.de

Federal Institute for
Vocational Education
and Training

Recruitment Decisions and Skilled Workers' Tasks

... Table A3 continued

	Analy-tical	Inter-active	Routine	Non-Routine
MEAN				
Wage Attributes: Ref. Average Wage				
15 Percent above Average Wage	-0.766***	-0.767***	-0.776***	-0.771***
	(0.145)	(0.144)	(0.146)	(0.145)
10 Percent above Average Wage	-0.311*	-0.313*	-0.322*	-0.315*
	(0.150)	(0.150)	(0.151)	(0.151)
5 Percent above Average Wage	-0.240	-0.241	-0.248	-0.249
	(0.134)	(0.133)	(0.134)	(0.134)
5 Percent below Average Wage	-0.269*	-0.266*	-0.268*	-0.266*
	(0.131)	(0.131)	(0.130)	(0.131)
10 Percent below Average Wage	-0.178	-0.194	-0.197	-0.190
	(0.148)	(0.148)	(0.149)	(0.149)
15 Percent below Average Wage	-0.405**	-0.403**	-0.421**	-0.415**
	(0.148)	(0.148)	(0.148)	(0.148)
SD				
Above Average Competence	-0.406**	-0.400**	-0.377**	-0.389**
	(0.137)	(0.130)	(0.144)	(0.136)
More Open to Experience	0.490***	0.495***	0.508***	0.510***
	(0.133)	(0.128)	(0.131)	(0.129)
More Conscientiousness	0.831***	0.833***	0.845***	0.848***
	(0.099)	(0.101)	(0.100)	(0.100)
More Extraversion	-0.182	-0.209	-0.178	-0.180
	(0.196)	(0.165)	(0.211)	(0.186)
More Agreeableness	1.103***	1.063***	1.094***	1.100***
	(0.099)	(0.100)	(0.098)	(0.098)
More Emotional Stability	0.636***	0.636***	0.640***	0.636***
	(0.108)	(0.105)	(0.107)	(0.108)
Observations; N		8342; 634		
Log-likelihood	-1869	-1864	-1875	-1874

Source: BIBB-CBS 2017/2018, own calculations.

Note: Standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. ML with clustered standard errors based on 300 Halton draws.

Predicted Hiring Probabilities for Personality and Task Interaction