TARTU ÜLIKOOL

1632

neuro

Kas tervest kehast terve vaimuni või tervest vaimust terve kehani?

EPL kongress
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Mis on tervis

Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

Vastand – kiirenenud vananemine

Vananemine varem kui peaks

- Näha nii väljastpoolt (nahatoonus)
- Kui ka seestpoolt (mitmesugused veremarkerid, ajukuva)
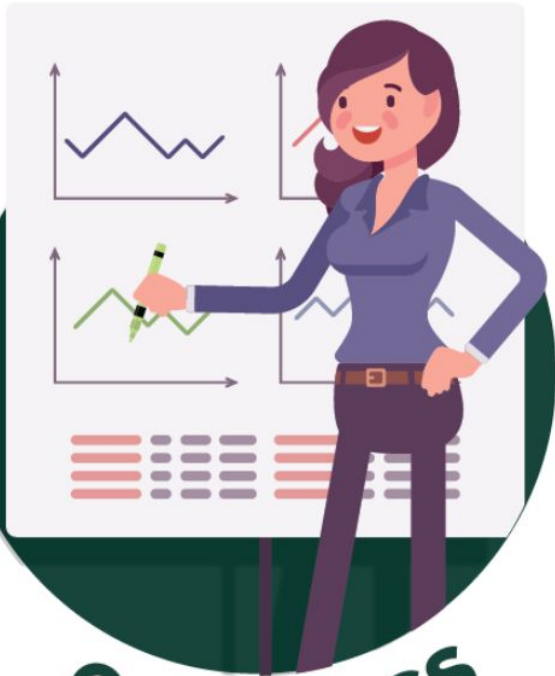
Võimalikud põhjused

- Suitsetamine
- Alkohol
- Kehv uni
- Stress
- **Ebatervislik toit**

Kas käitumine on sellega seotud?

Suur viisik

Sotsiaalsus

Ekstravertsus

Neurootilisus

Avatus

Meelekindlus

1

OPENNESS

High Five Tendencies	Low Five Tendencies
Imaginative	Practical
Curious	Narrow interest range
Experimental	Resists change
Embraces challenges	Conventional
Abstract thinker	

https://www.michiganstateuniversityonline.com/resources/leadership/lead-your-team-with-big-five-model/

High Five Tendencies	Low Five Tendencies
Disciplined	Spontaneous
Detail-oriented	Flexible
Dutiful	Procrastinates
Organized	Negligent
Reliable	Unreliable

CONSCIENTIOUSNESS

2

3

EXTROVERSION

High Five Tendencies	Low Five Tendencies
Social	Introverted
Enthusiastic	Self-sufficient
Assertive	Passive
Opinionated	Reserved
Adventurous	Quiet

High Five Tendencies	Low Five Tendencies
Empathetic	Independent
Cooperative	Uncooperative
Trustworthy	Overly Critical
Good-natured	Dominant
Straightforward	Antagonistic

4

AGREEABLENESS

5

NEUROTICISM

High Five Tendencies	Low Five Tendencies
Unstable	Composed
Anxious	Calm
Irritable	Even-tempered
Self-conscious	Confident
Worrier	Resilient

| Trait and Study (Ref. No.)	HR (95% CI)	Total No.	No. Deceased
Extraversion			
HILDA (19)	0.86 (0.75, 0.98)	11,091	276
BHPS (17)	1.03 (0.91, 1.16)	13,823	288
MIDUS (21)	0.92 (0.80, 1.05)	6,259	365
WLSS (22)	1.03 (0.93, 1.14)	3,969	454
WLSG (22)	0.95 (0.87, 1.03)	6,674	666
GSOEP (18)	1.01 (0.94, 1.10)	20,434	733
HRS (20)	0.85 (0.79, 0.92)	13,900	1,165
Subtotal	0.95 (0.89, 1.01)		
Neuroticism			
HILDA (19)	1.11 (0.95, 1.28)	11,091	276
BHPS (17)	0.94 (0.83, 1.06)	13,823	288
MIDUS (21)	1.13 (1.01, 1.25)	6,259	365
WLSS (22)	0.94 (0.85, 1.05)	3,969	454
WLSG (22)	0.97 (0.89, 1.06)	6,674	666
GSOEP (18)	1.08 (1.00, 1.17)	20,434	733
HRS (20)	1.07 (1.01, 1.14)	13,900	1,165
Subtotal	1.03 (0.98, 1.09)		
Agreeableness			
HILDA (19)	0.96 (0.83, 1.11)	11,091	276
BHPS (17)	1.03 (0.91, 1.17)	13,823	288
MIDUS (21)	1.19 (1.04, 1.37)	6,259	365
WLSS (22)	0.87 (0.79, 0.97)	3,969	454
WLSG (22)	1.03 (0.95, 1.12)	6,674	666
GSOEP (18)	1.03 (0.95, 1.11)	20,434	733
HRS (20)	1.09 (1.01, 1.17)	13,900	1,165
Subtotal	1.02 (0.96, 1.09)		
Conscientiousness			
HILDA (19)	1.00 (0.87, 1.14)	11,091	276
BHPS (17)	0.86 (0.76, 0.97)	13,823	288
MIDUS (21)	0.91 (0.81, 1.01)	6,259	365
WLSS (22)	0.97 (0.88, 1.07)	3,969	454
WLSG (22)	0.91 (0.83, 0.98)	6,674	666
GSOEP (18)	0.82 (0.76, 0.88)	20,434	733
HRS (20)	0.78 (0.74, 0.84)	13,900	1,165
Subtotal	0.88 (0.82, 0.94)		
Openness to Experience			
HILDA (19)	1.08 (0.95, 1.23)	11,091	276
BHPS (17)	0.99 (0.88, 1.11)	13,823	288
MIDUS (21)	1.03 (0.91, 1.17)	6,259	365
WLSS (22)	0.99 (0.90, 1.09)	3,969	454
WLSG (22)	0.99 (0.91, 1.08)	6,674	666
GSOEP (18)	0.85 (0.79, 0.91)	20,434	733
HRS (20)	1.04 (0.97, 1.12)	13,900	1,165
Subtotal	0.99 (0.93, 1.06)		

Hazard Ratio

Jokela et al., (2013). Personality and All-Cause Mortality: Individual-Participant Meta-Analysis of 3,947 Deaths in 76,150 Adults
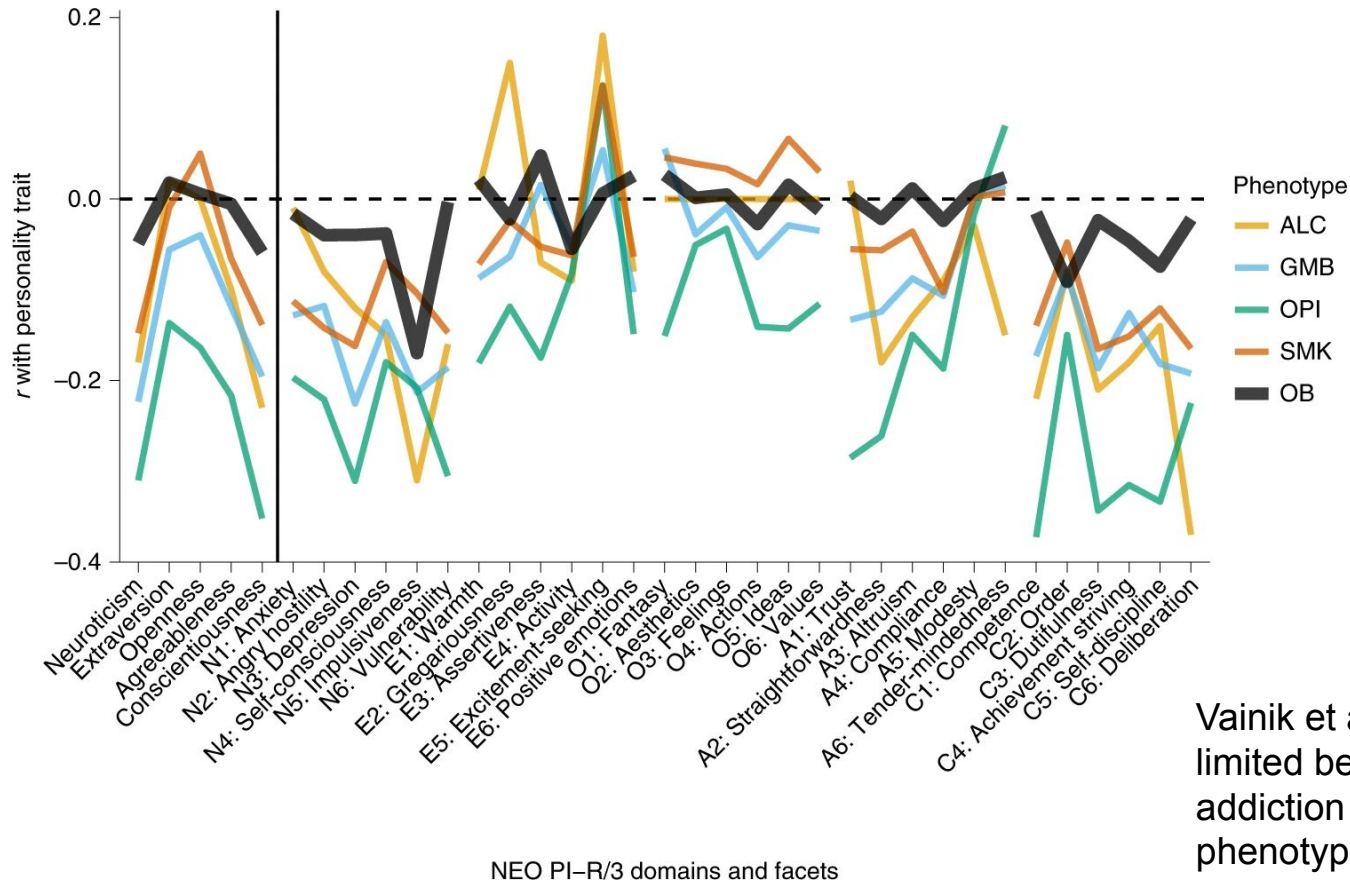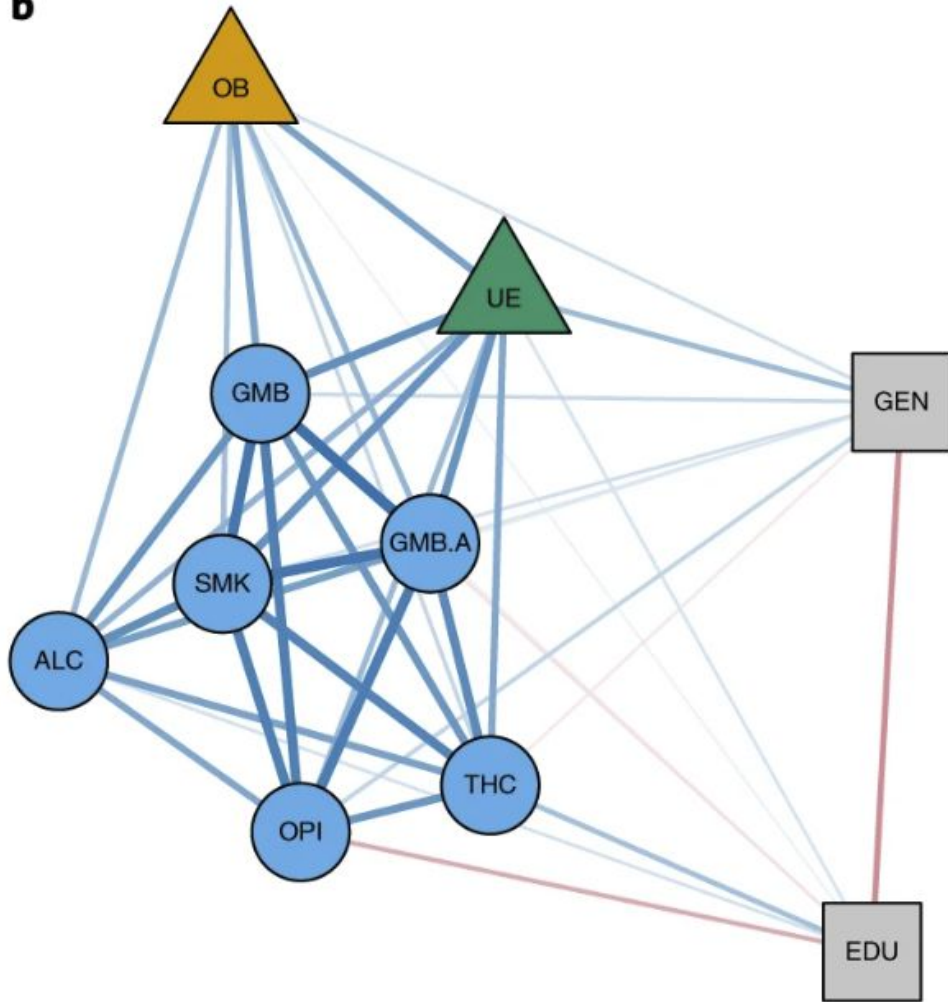
Isiksus ja elusündmused
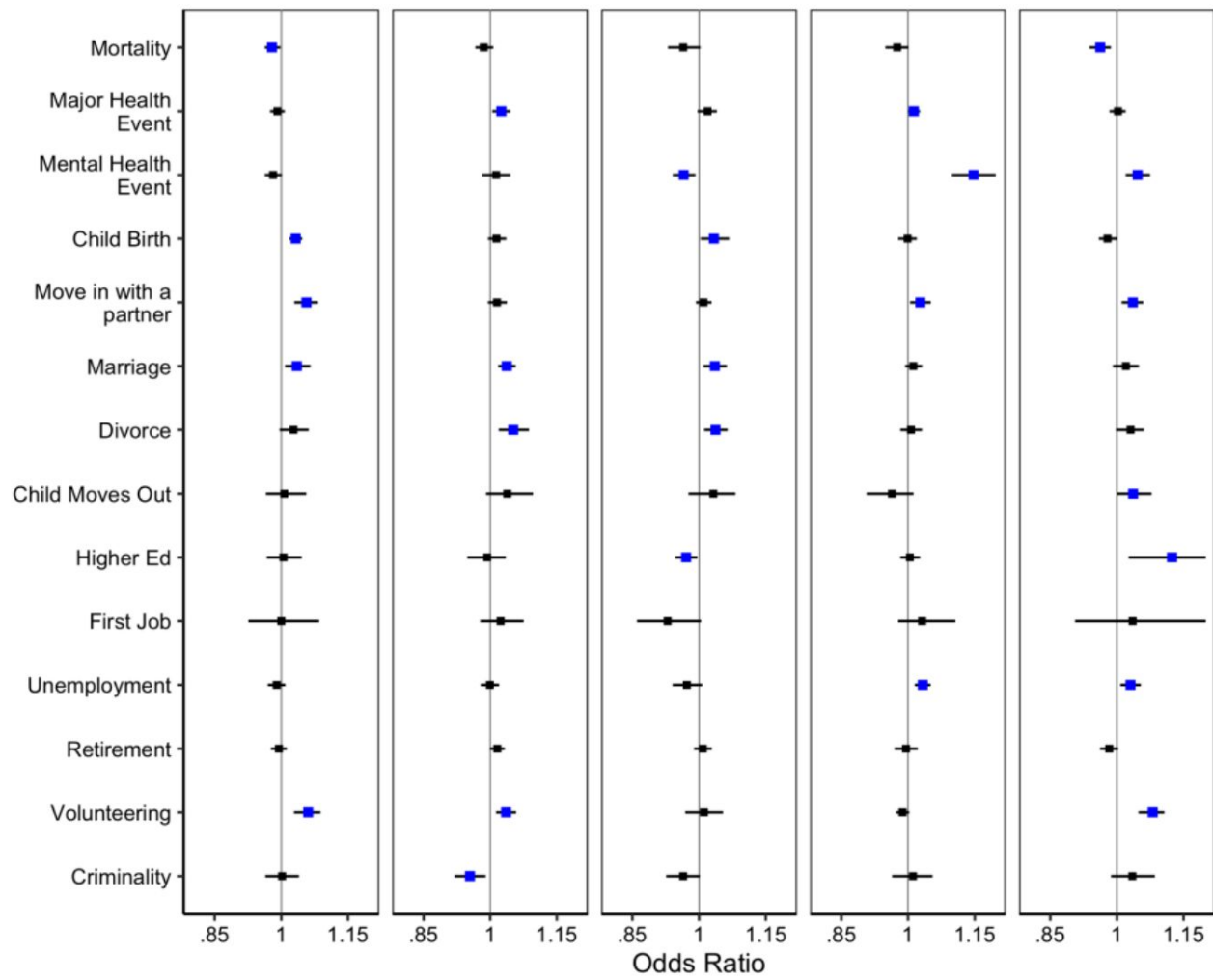
Beck & Jackson 2020
A Mega-Analysis of Personality
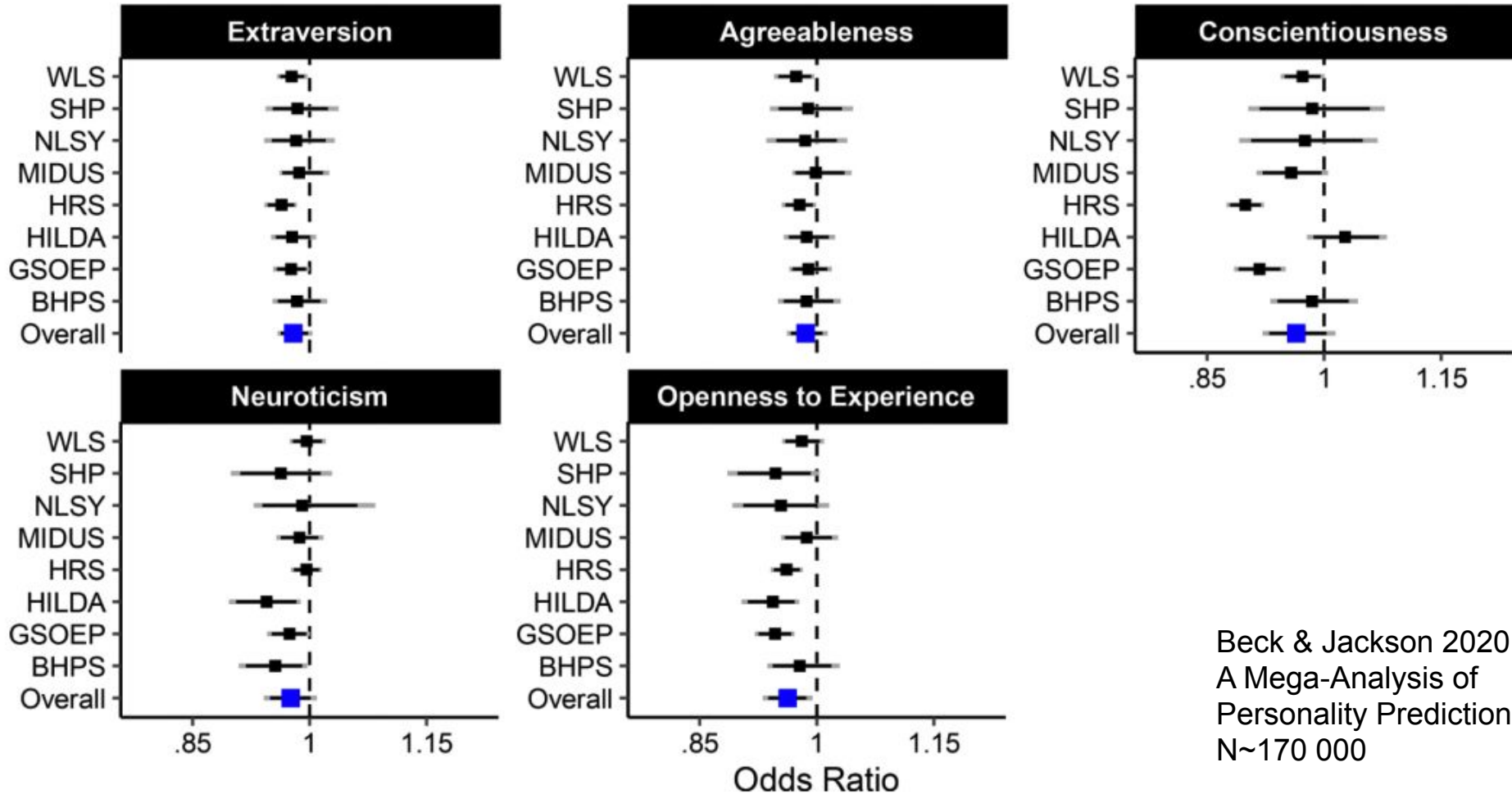Prediction

Detailsem käitumine on põnevam

Vainik et al., (2020). Obesity has limited behavioural overlap with addiction and psychiatric phenotypes

b

Vainik et al., (2020). Obesity has limited behavioural overlap with addiction and psychiatric phenotypes

Mortality

Beck & Jackson 2020
A Mega-Analysis of
Personality Prediction
N~170 000

Isiksus ja covidi vaktsineerimine

- Geenivaramu isiksuseuuring
- 77 tuhat eestlast, iga 13-s täiskasvanu
- 90% of valimist vaktsineeritud
- 56,575 osalejat kes on alla 20% sugulased
- 15,244 teist hindajat

Kadri Arumäe

Arumäe et al., (2024). Self- and informant-reported personality traits and vaccination against COVID-19

Isiksus ja covidi vaktsineerimine
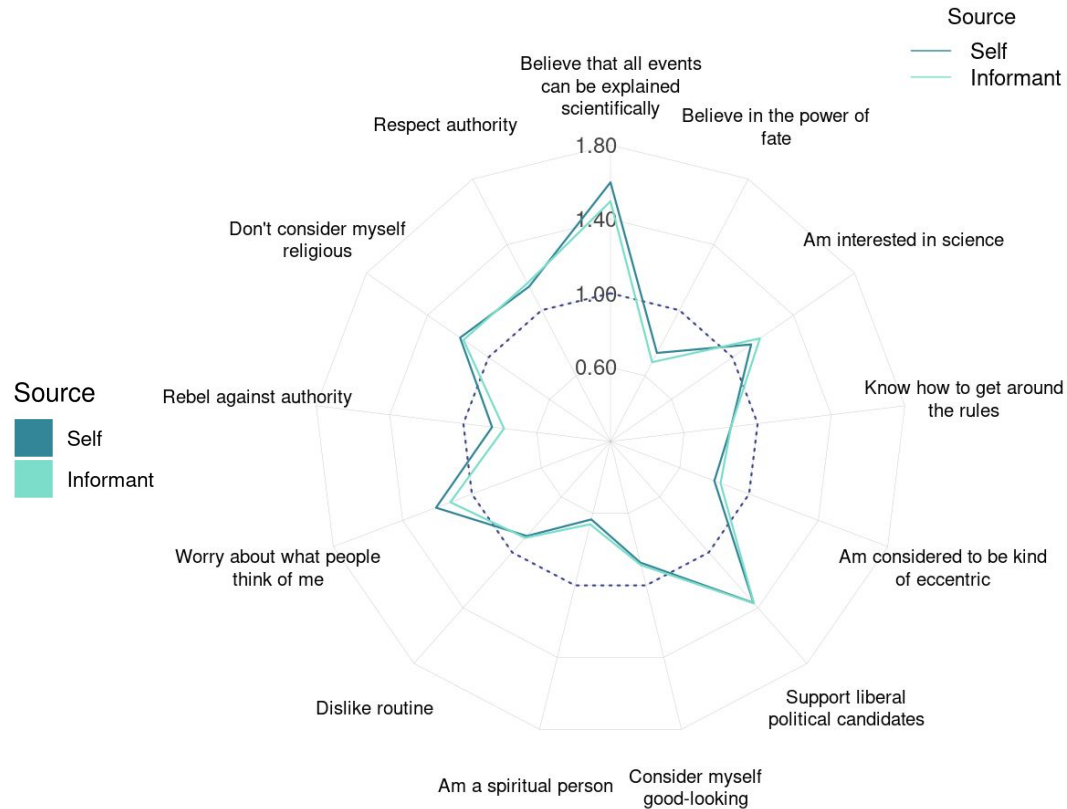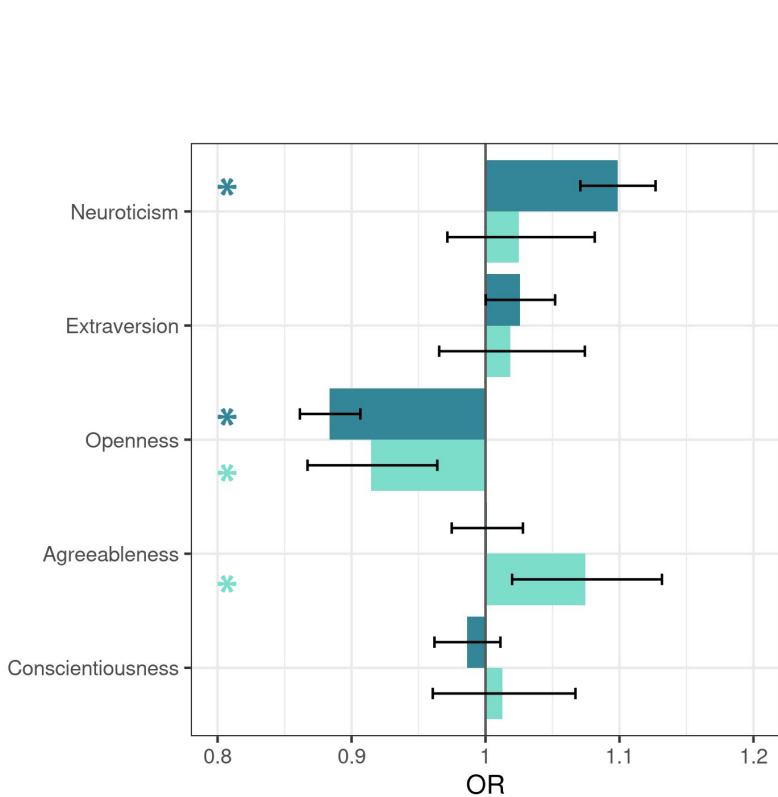
Isiksus ja arvutiga mängimine

Kadri Arumäe

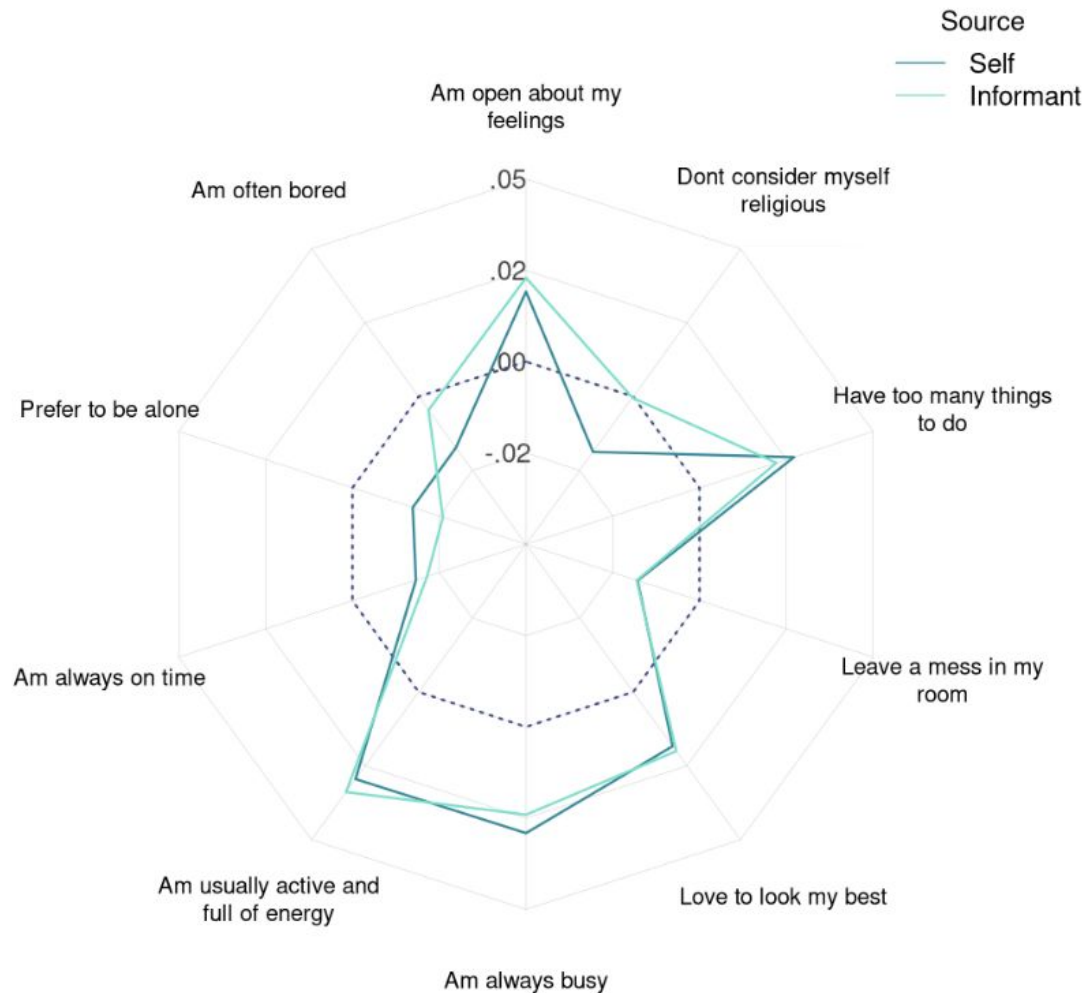| trait	label	b
conscientiousness10R	Leave a mess in my room	0,06
O.	Openness	-0,05
others12	Wear stylish clothing	-0,05
openness17	Love to think up new ways of doing things	0,05
conscientiousness09	Keep things tidy	-0,05
openness20	Like to solve complex problems	0,05
conscientiousness01	Love order and regularity	-0,05
openness21	Learn quickly	0,05
conscientiousness43	Spend more money than I should	0,04
C	Conscientiousness	-0,04
conscientiousness42	Am good at saving money	-0,04
openness24	Have a vivid imagination	0,04
agreeableness07R	Like to compete and do everything I can to win	0,04
agreeableness48R	Am likely to show off if I get the chance	0,03
others13	Love to look my best	-0,03
conscientiousness02	Am always prepared	-0,03
agreeableness29R	Am quick to correct others	0,03
neuroticism16R	Easily resist temptations	-0,03
conscientiousness28	Am good at many things	0,03
neuroticism41	Worry about my health	-0,03
others14	Consider myself good-looking	-0,03

Liikumine

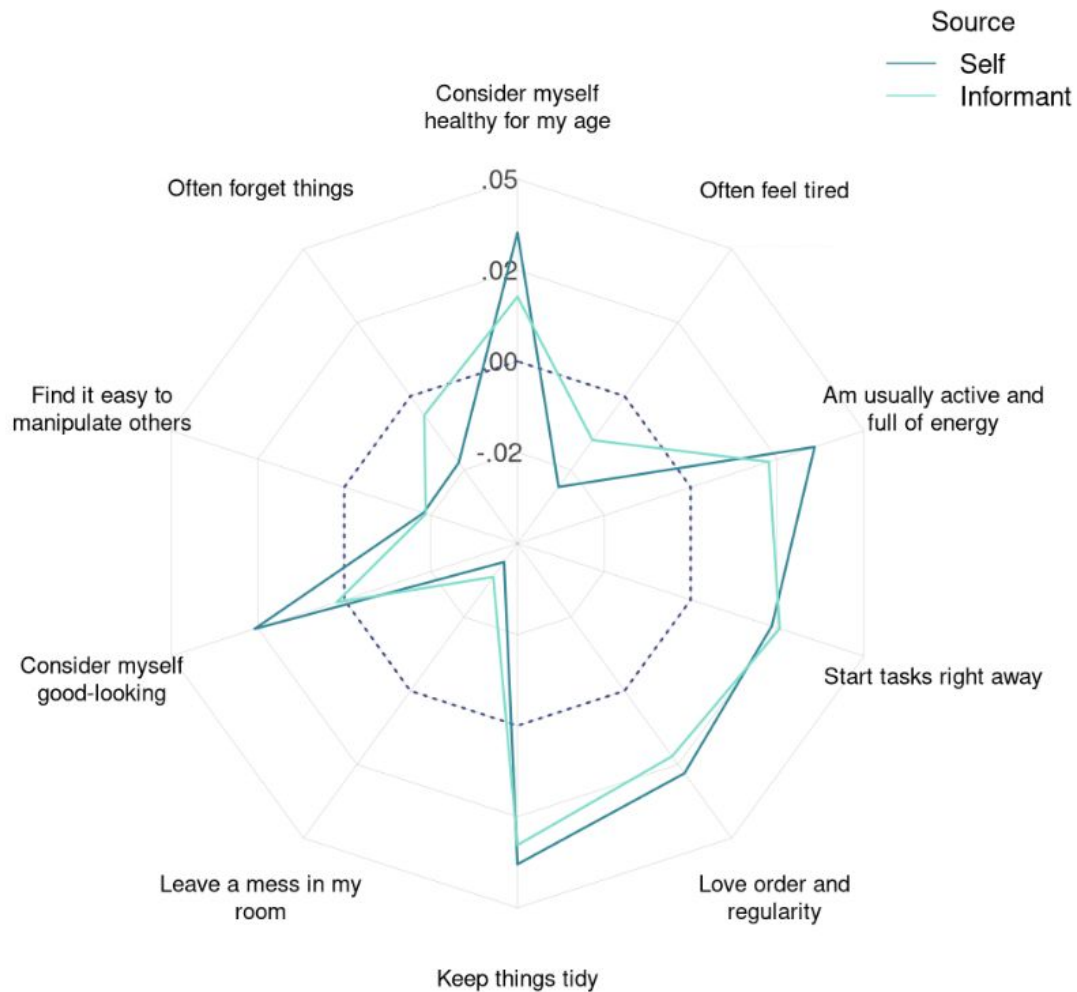Kadri Arumäe
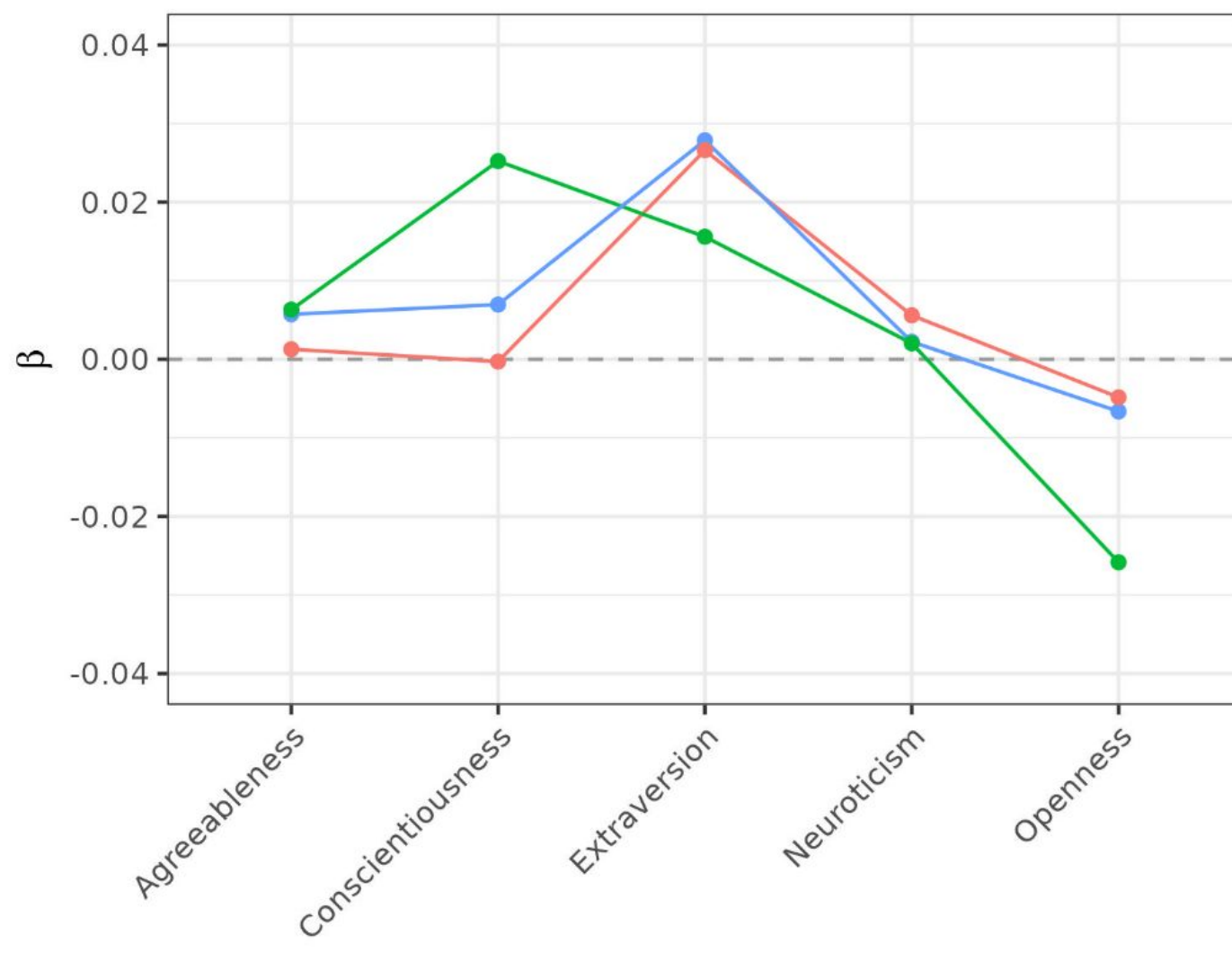
Üldine aktiivsus
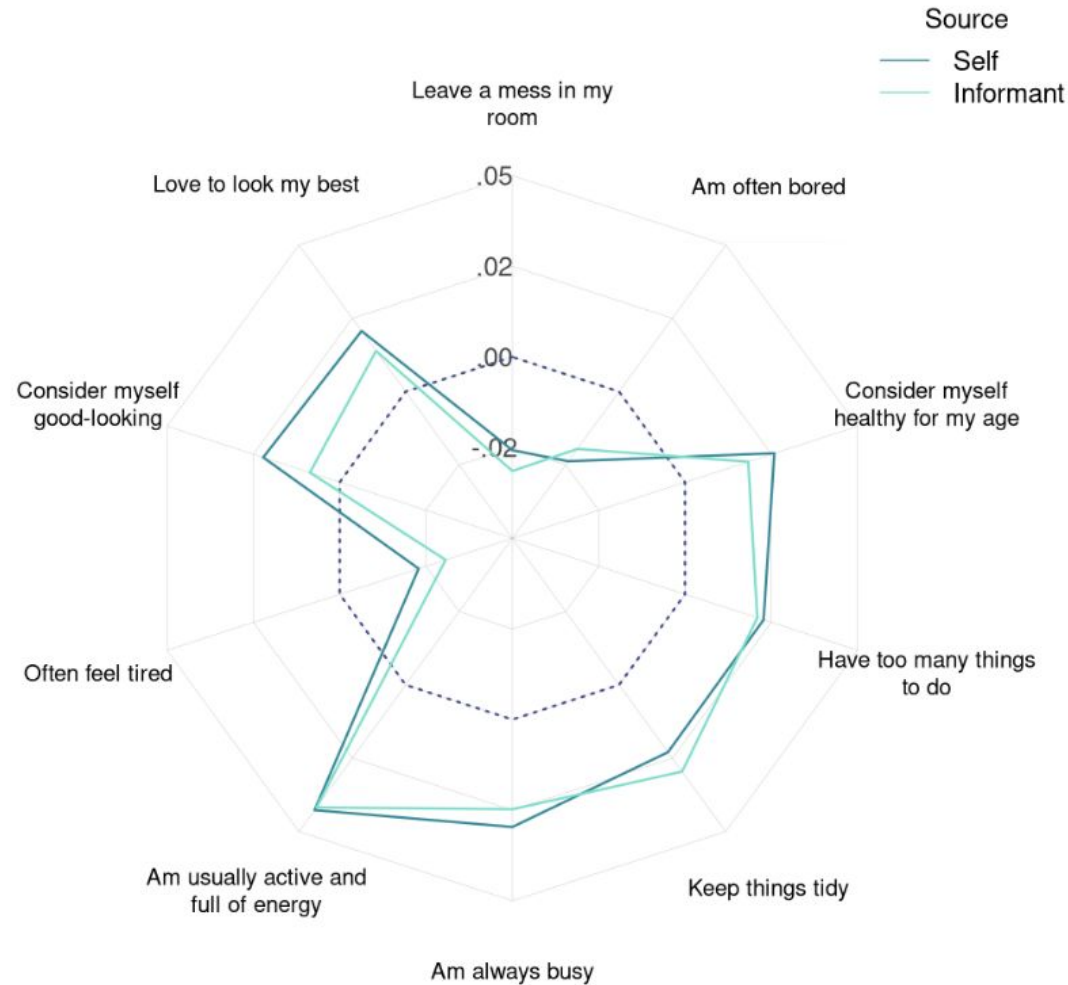
Gi et al., (2021) Genome-wide association studies of 27 accelerometry-derived physical activity measurements identified novel loci and genetic mechanisms

Madal intensiivsus (LIPA)

Kesk-kõrg intensiivsus (MVPA)

Akkmeetriga liikumine

|	trait	label	b
57	extraversion17	Am usually active and full of energy	0.029627939
62	extraversion22	Am always busy	0.029045080
63	extraversion23	Have too many things to do	0.027338686
3	E	Extraversion	0.026595890
97	openness33	Am open about my feelings	0.019024510
188	others07R	Dont consider myself religious	-0.018665666
193	others13	Love to look my best	0.018256727
149	conscientiousness04	Am always on time	-0.018205686
154	conscientiousness10R	Leave a mess in my room	-0.017908674
44	extraversion01R	Prefer to be alone	-0.017526229
153	conscientiousness09	Keep things tidy	0.017275172
64	extraversion24R	Am often bored	-0.017273743
146	conscientiousness01	Love order and regularity	0.016753261
194	others14	Consider myself good-looking	0.016502908
189	others08	Am a spiritual person	0.016281697

Kadri Arumäe

Madal intensiivsus (LIPA)

	trait	label	b
57	extraversion17	Am usually active and full of energy	0.029627939
62	extraversion22	Am always busy	0.029045080
63	extraversion23	Have too many things to do	0.027338686
3	E	Extraversion	0.026595890
97	openness33	Am open about my feelings	0.019024510
188	others07R	Dont consider myself religious	-0.018665666
193	others13	Love to look my best	0.018256727
149	conscientiousness04	Am always on time	-0.018205686
154	conscientiousness10R	Leave a mess in my room	-0.017908674
44	extraversion01R	Prefer to be alone	-0.017526229
153	conscientiousness09	Keep things tidy	0.017275172
64	extraversion24R	Am often bored	-0.017273743
146	conscientiousness01	Love order and regularity	0.016753261
194	others14	Consider myself good-looking	0.016502908
189	others08	Am a spiritual person	0.016281697

Kesk-kõrg intensiivsus (MVPA)

	trait	label	b
154	conscientiousness10R	Leave a mess in my room	-0.043612462
153	conscientiousness09	Keep things tidy	0.038184836
57	extraversion17	Am usually active and full of energy	0.035746425
39	neuroticism43R	Consider myself healthy for my age	0.035256168
58	extraversion18R	Often feel tired	-0.030575352
146	conscientiousness01	Love order and regularity	0.028127070
194	others14	Consider myself good-looking	0.025855798
5	O.	Openness	0.025598077
2	C	Conscientiousness	0.025276773
157	conscientiousness14	Start tasks right away	0.023266416
107	agreeableness08R	Find it easy to manipulate others	-0.022641040
171	conscientiousness32R	Often forget things	-0.022485519
138	agreeableness48R	Am likely to show off if I get the chance	-0.021168765
181	conscientiousness44R	Avoid responsibilities	-0.020943076
113	agreeableness15R	Make enemies	-0.020842870

Isiksus lükkab vananemise käima??
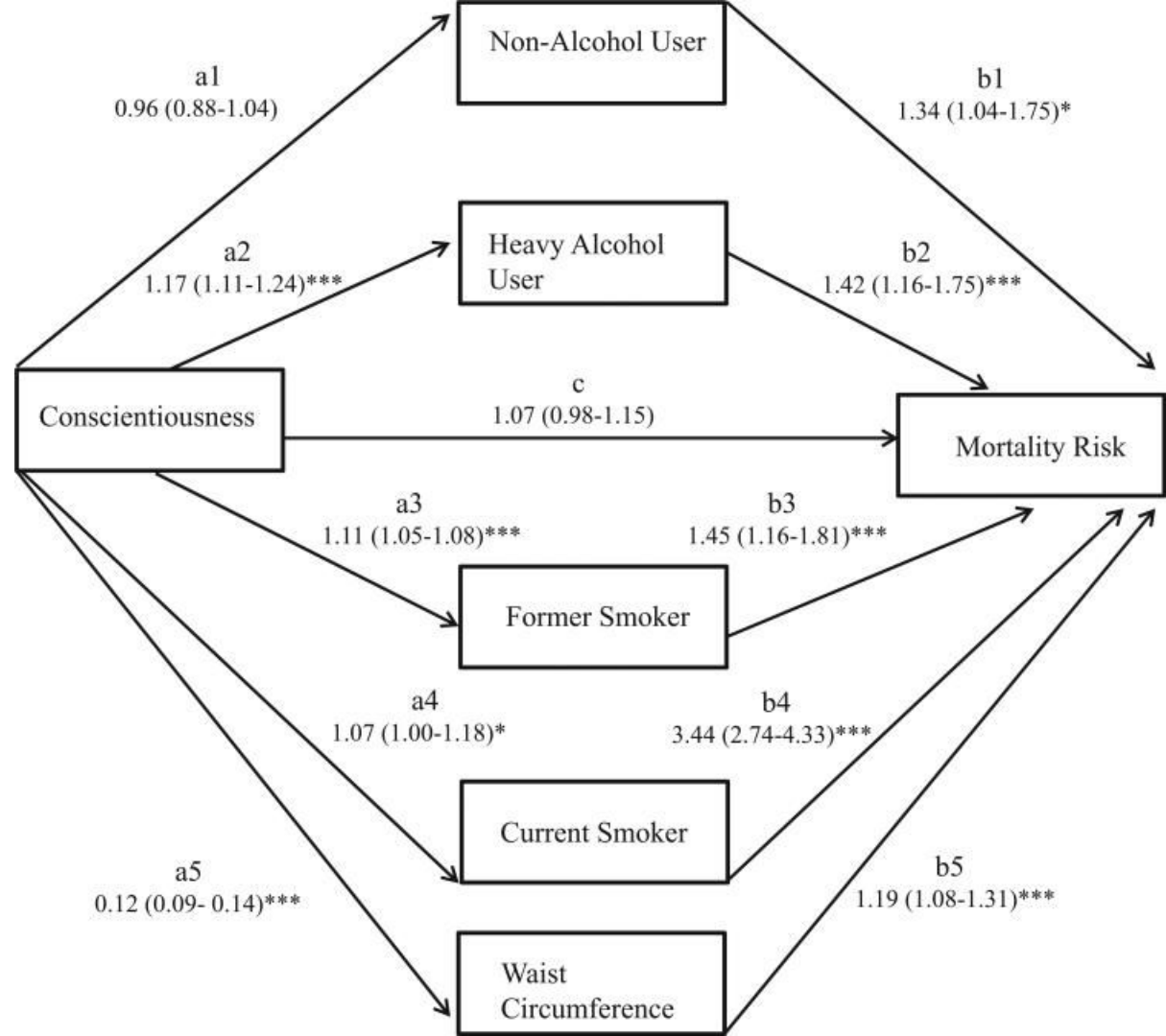
Turiano et al., (2015). Personality and the Leading Behavioral Contributors of Mortality

Neurootilisuse alatahud ja suremus

- Suremust ennustavad
  - Haavatavus, küünilisus, pessimism, ärevus ja depressiivsus
- Suremuse eest kaitsevad
  - Mitteadekvaatsus ja muretsemine
 - Võibolla ka impulsiivsus

Butler et al., (2023). Neuroticism facets and mortality risk in adulthood: A systematic review and narrative synthesis

Ok, aga vaatame põhjuslikkust

KMI & isiksus vanematel inimestel

- Wisconsin Longitudinal Study (N = 12,235)
  - 3 lainet üle 18 aasta 18 years (1993–1994; 2004–2005; 2011)
  - Wisconsin keskkooli lõpetajad ja nende õed-vennad
  - Ameeriklased, enamasti kaukaasia päritolu ja keskharidusega
- 53% naised
- Esmane vanus: 53.33 ± 4.30 a
- Esmane KMI: 26.77 ± 4.53 kg/m2
- Big Five Inventory - faktorid ja väited
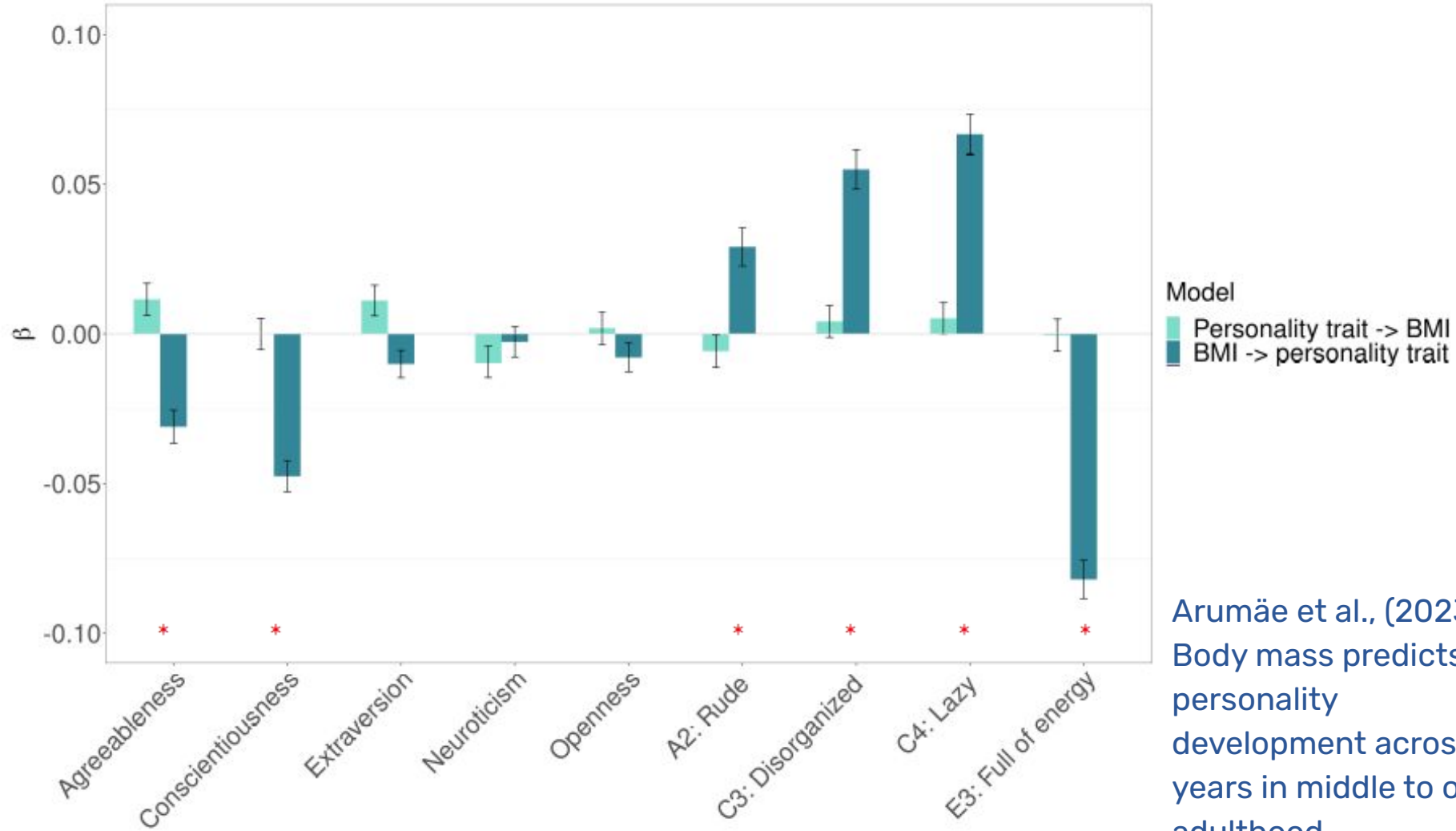 - rude, disorganized, lazy, full of energy
  - $|β| ≥ .06$ with BMI

Arumäe et al., (2023). Body mass predicts personality development across 18 years in middle to older adulthood
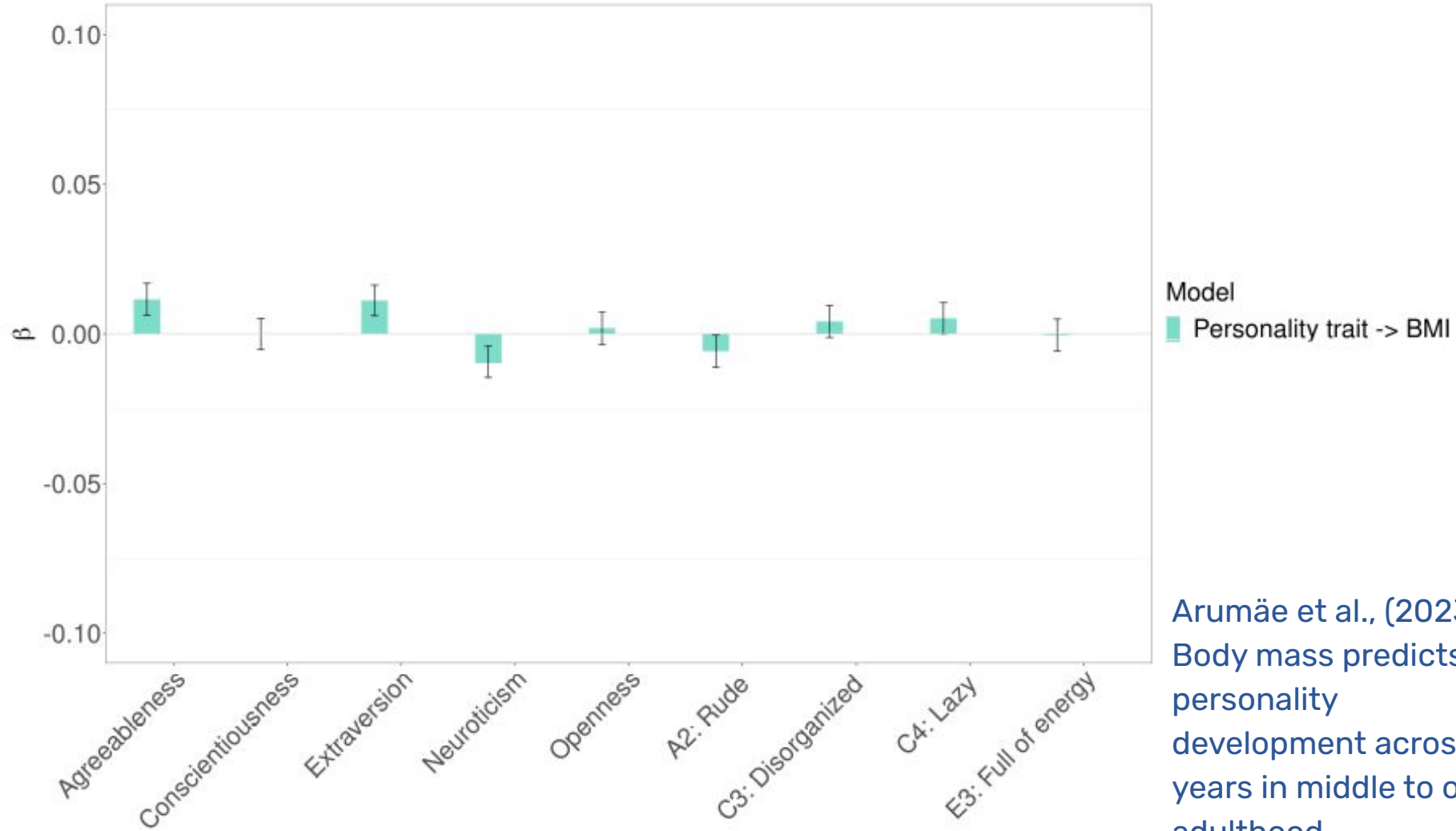
Arumäe et al., (2023). Body mass predicts personality development across 18 years in middle to older adulthood
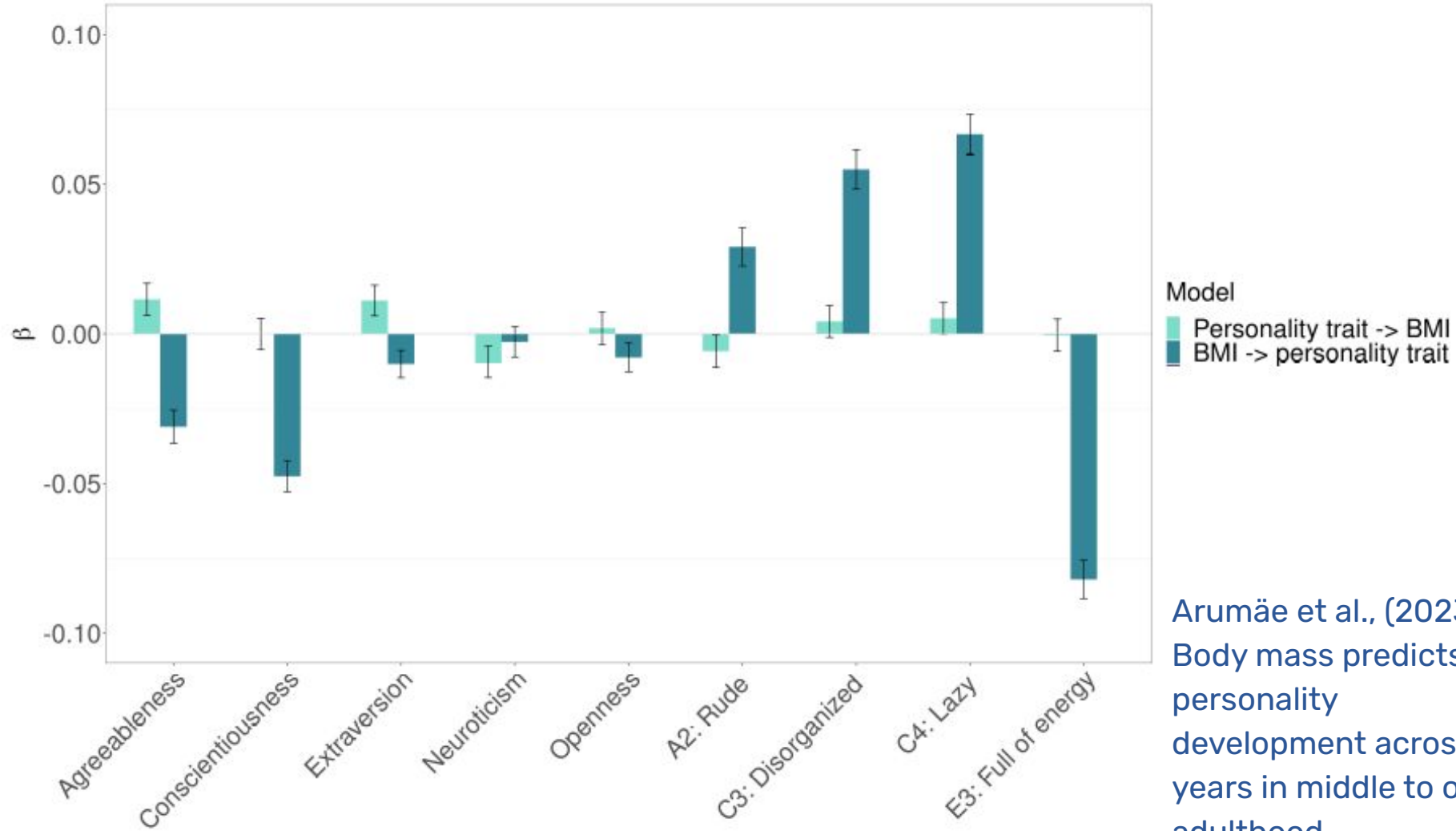
Arumäe et al., (2023). Body mass predicts personality development across 18 years in middle to older adulthood

Arumäe et al., (2023). Body mass predicts personality development across 18 years in middle to older adulthood

Isiksuse profiil on suuresti ülekaalu tagajärg

- Keskealiste varajasem ülekaal toob kaasa hilisemad isikusejooned
  - Arumäe et al., (2023). Body mass predicts personality development across 18 years in middle to older adulthood
- Täiskasvanute geneetiline ülekaal toob kaasa vastava isiksuseprofiili aga mitte vastupidi
  - Arumäe et al., (2021). Two genetic analyses to elucidate causality between body mass index and personality
- Laste ajustruktuur ja vaimsed võimed on põhjustatud ülekaalu poolt
  - Kulisch et al., (2023). Triangulating causality between childhood obesity and neurobehavior: Behavioral genetic and longitudinal evidence
- Isiksust ei tasu ülekaalu pärast muuta
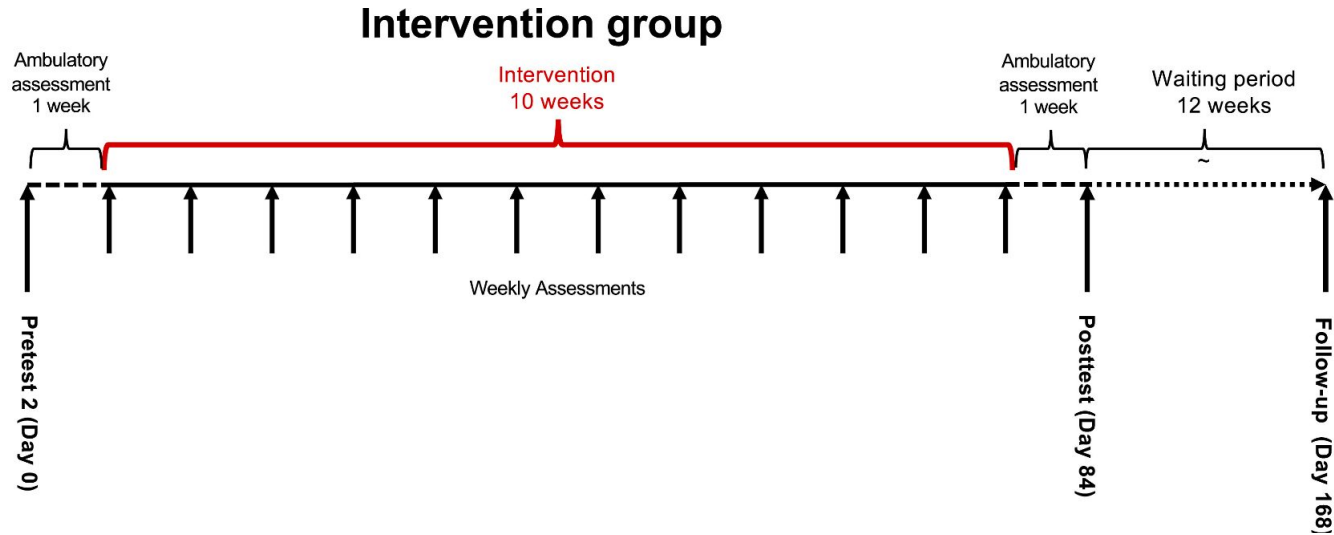- Terves kehas terve vaim!

Kas teiste tervisenäitajate pärast tasub isiksust muuta?

Outcome	Trait	Change	
		Estimate	CI
Health status	E	**0.06**	**[0.01, 0.12]**
	A	0.05	[−0.02, 0.11]
	C	**0.12**	**[0.02, 0.25]**
	N	**−0.09**	**[−0.19, −0.01]**
	O	**0.05**	**[0.02, 0.07]**

Tasub, küll, aga tervisega tuleb ka tegeleda

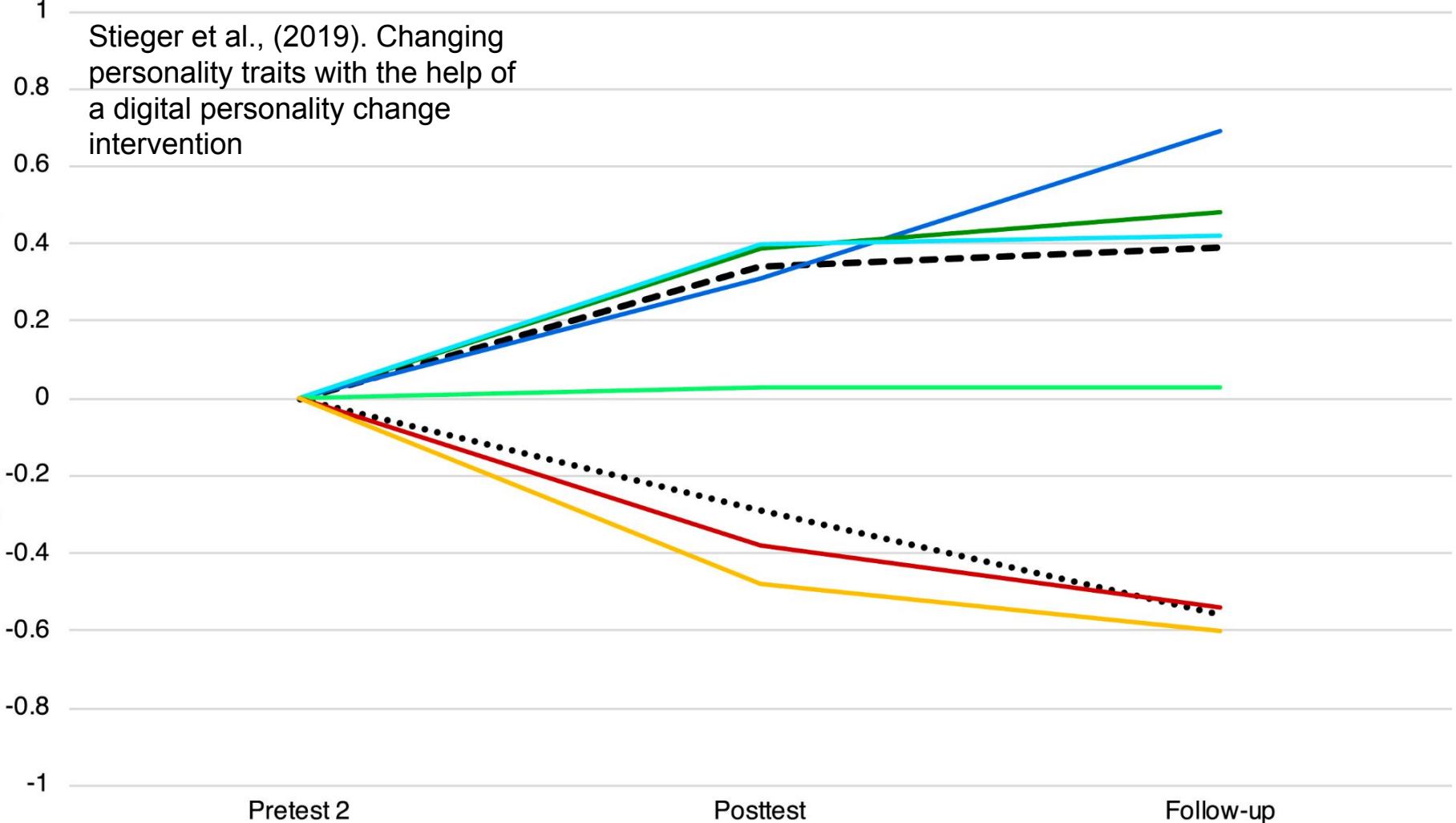Wright & Jackson (2023) Do Changes in Personality Predict Life Outcomes?

Kuida muuta vaimu? Äpiga!

Stieger et al., (2019). Changing personality traits with the help of a digital personality change intervention

Stieger et al., (2019). Changing personality traits with the help of a digital personality change intervention

Äpiga saame kätte poole efektist

Outcome	Trait	Change	
		Estimate	CI
Health status	E	**0.06**	**[0.01, 0.12]**
	A	0.05	[−0.02, 0.11]
	C	**0.12**	**[0.02, 0.25]**
	N	**−0.09**	**[−0.19, −0.01]**
	O	**0.05**	**[0.02, 0.07]**
BMI	E	0.00	[−0.03, 0.16]
	A	−0.01	[−0.02, 0.01]
	C	0.00	[−0.01, 0.01]
	N	0.00	[−0.00, 0.01]
	O	0.00	[−0.01, 0.01]
Physical problems	E	−0.02	[−0.03, −0.00]
	A	−0.02	[−0.04, 0.01]
	C	−0.03	[−0.08, 0.00]
	N	0.02	[−0.00, 0.03]
	O	−0.01	[−0.03, 0.01]
Mental problems	E	**−0.04**	**[−0.07, −0.02]**
	A	−0.05	[−0.18, 0.06]
	C	−0.11	[−0.38, 0.19]
	N	0.05	[−0.04, 0.15]
	O	−0.04	[−0.09, 0.02]
Health limitations	E	−0.05	[−0.11, 0.01]
	A	−0.08	[−0.21, 0.04]
	C	−0.22	[−0.54, 0.08]
	N	**0.04**	**[0.02, 0.05]**
	O	**−0.03**	**[−0.06, −0.01]**
Exercise	E	1.07	[0.93, 1.21]
	A	1.23	[0.94, 1.64]
	C	1.41	[0.92, 2.24]
	N	0.97	[0.90, 1.02]
	O	1.08	[0.98, 1.20]

Wright & Jackson (2023) Do Changes in Personality Predict Life Outcomes?

Näidis. Change factor:

- Actuating discrepancy awareness:
- This change principle is based on the assumption that personality can be most effectively targeted for change when people explore possible gaps between their desired and actual personality.

Allemand et al., (2022) Personality Change Through Digital-Coaching Interventions

Example microinterventions

- Miracle questions promote focus on change goals and update perceptions of the discrepancy between desired and actual personality.
- Progress feedback helps raise awareness of discrepancies between the current and desired status.

Allemand et al., (2022) Personality Change Through Digital-Coaching Interventions

Example SMS

- "Imagine that from tomorrow on you always and everywhere show your desired personality. What would your life look like in 5 years? What would be different?"
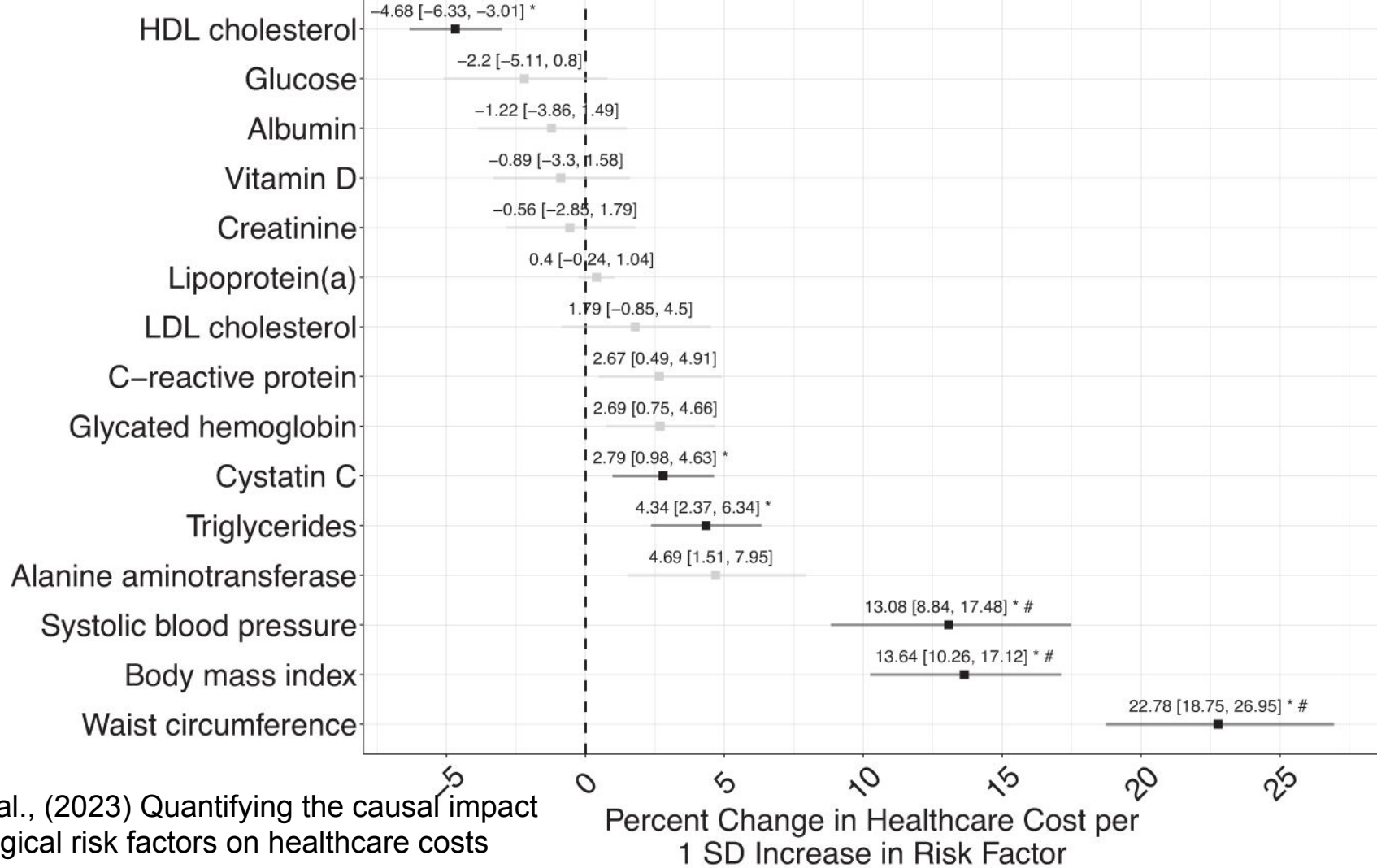- "Compared with last month, you've improved on your self-set change goal."

Allemand et al., (2022) Personality Change Through Digital-Coaching Interventions

|		
Activating strengths and resources: This supportive change factor capitalizes on existing personality traits, motivations, skills, interests, and social relationships as strengths and resources to promote personality change and achieve change goals.	• A *resource diary* promotes the change process by helping participants to identify their strengths and resources (e.g., what they already do best). • A *change team* provides social support throughout the intervention to help the participant achieve change goals.	• "Let's say you're making a film about a beautiful moment last week. What would you see in this film?" • "Your task for tomorrow is to tell three people close to you about this coaching and tell them your change goal."
Targeting thoughts and feelings to achieve insight: This learning-oriented change factor promotes personality change through reflection on behaviors and experiences.	• *Systematic reflection* (a learning strategy) supports a comprehensive analysis and evaluation of experiences. • *Psychoeducation* (knowledge transfer, e.g., through short video clips) promotes greater knowledge and expertise.	• "Try to consciously pause in the future to reflect on the experienced situation and the behavior you have shown." • "Research has shown that conscientious employees are more motivated, are more productive, and have lower absenteeism."
Targeting behaviors to be practiced: This action-oriented change factor focuses on learning and reinforcing (new or modified) behaviors and skills, such as compensatory or coping skills, and on behaving in new social roles.	• *Implementation intentions* (a self-regulation strategy) support goal attainment and promote habit formation. • *Behavioral activation* promotes the performance of (new or modified) behaviors and engagement in activities.	• "Do you remember your personal weekly goal ('if-then plan')?" • "Take an unusual route to work and home today. Or order a food for lunch that you would never order otherwise."

Allemand et al., (2022) Personality Change Through Digital-Coaching Interventions

Kas ja kuidas muuta keha?
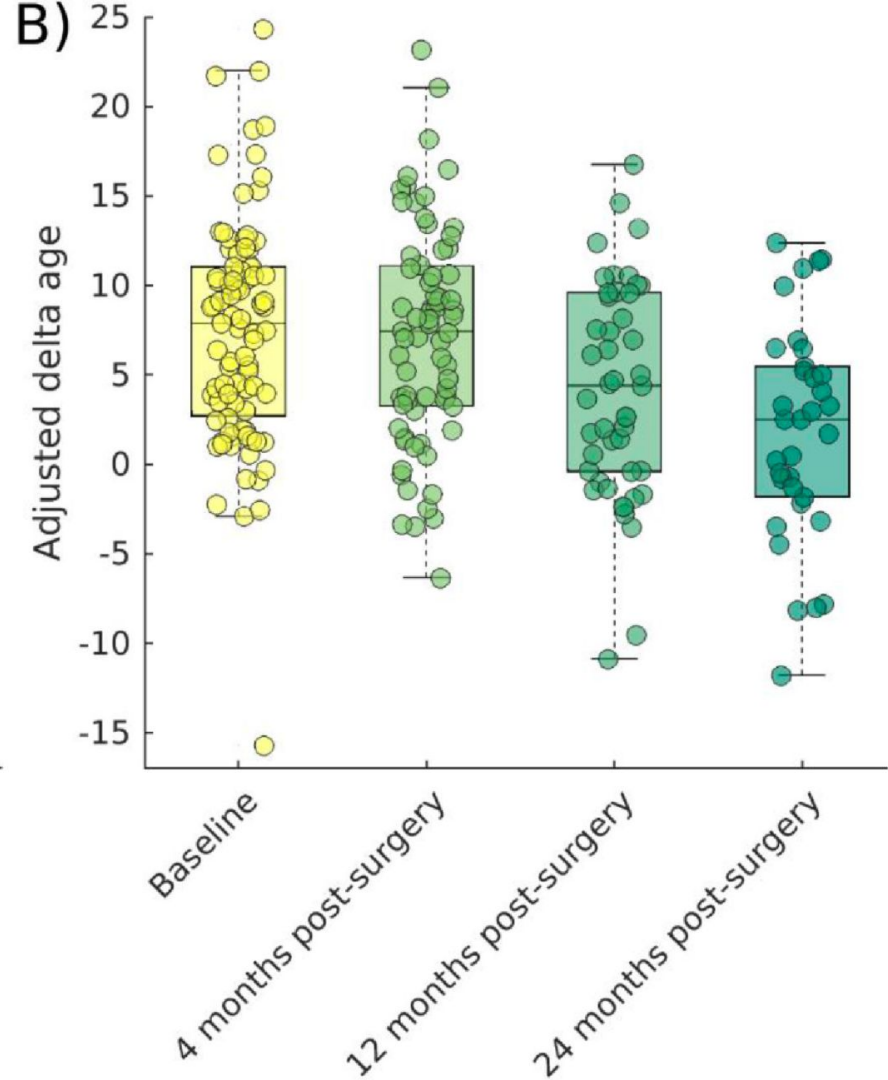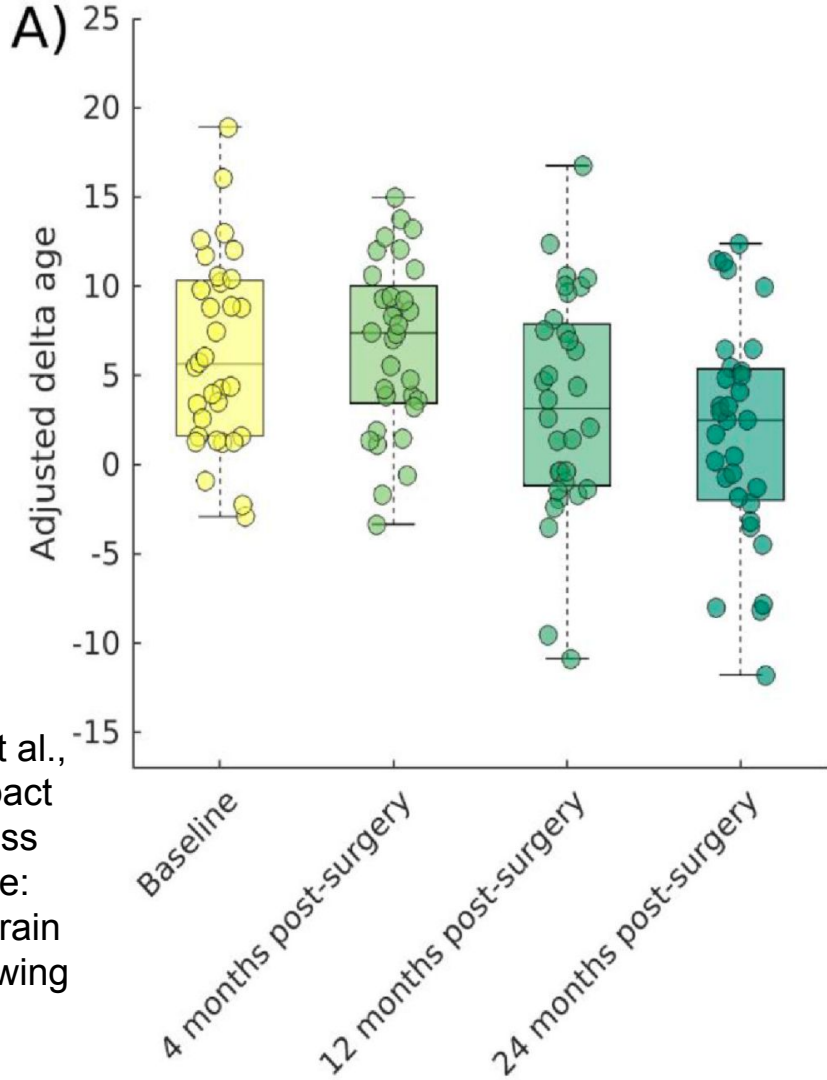
Zeighami et al., (2022). Impact of weight loss on brain age: Improved brain health following bariatric surgery

HDL cholesterol −4.68 [−6.33, −3.01] *
Glucose −2.2 [−5.11, 0.8]
Albumin −1.22 [−3.86, 1.49]
Vitamin D −0.89 [−3.3, 1.58]
Creatinine −0.56 [−2.85, 1.79]
Lipoprotein(a) 0.4 [−0.24, 1.04]
LDL cholesterol 1.79 [−0.85, 4.5]
C−reactive protein 2.67 [0.49, 4.91]
Glycated hemoglobin 2.69 [0.75, 4.66]
Cystatin C 2.79 [0.98, 4.63] *
Triglycerides 4.34 [2.37, 6.34] *
Alanine aminotransferase 4.69 [1.51, 7.95]
Systolic blood pressure 13.08 [8.84, 17.48] * #
Body mass index 13.64 [10.26, 17.12] * #
Waist circumference 22.78 [18.75, 26.95] * #

Percent Change in Healthcare Cost per
1 SD Increase in Risk Factor

Lee et al., (2023) Quantifying the causal impact
of biological risk factors on healthcare costs

Franz et al., 2007 Weight-loss outcomes: a systematic review and meta-analysis of weight-loss clinical trials with a minimum 1-year follow-up. N=26455, 18,199 at 1 years, 69%
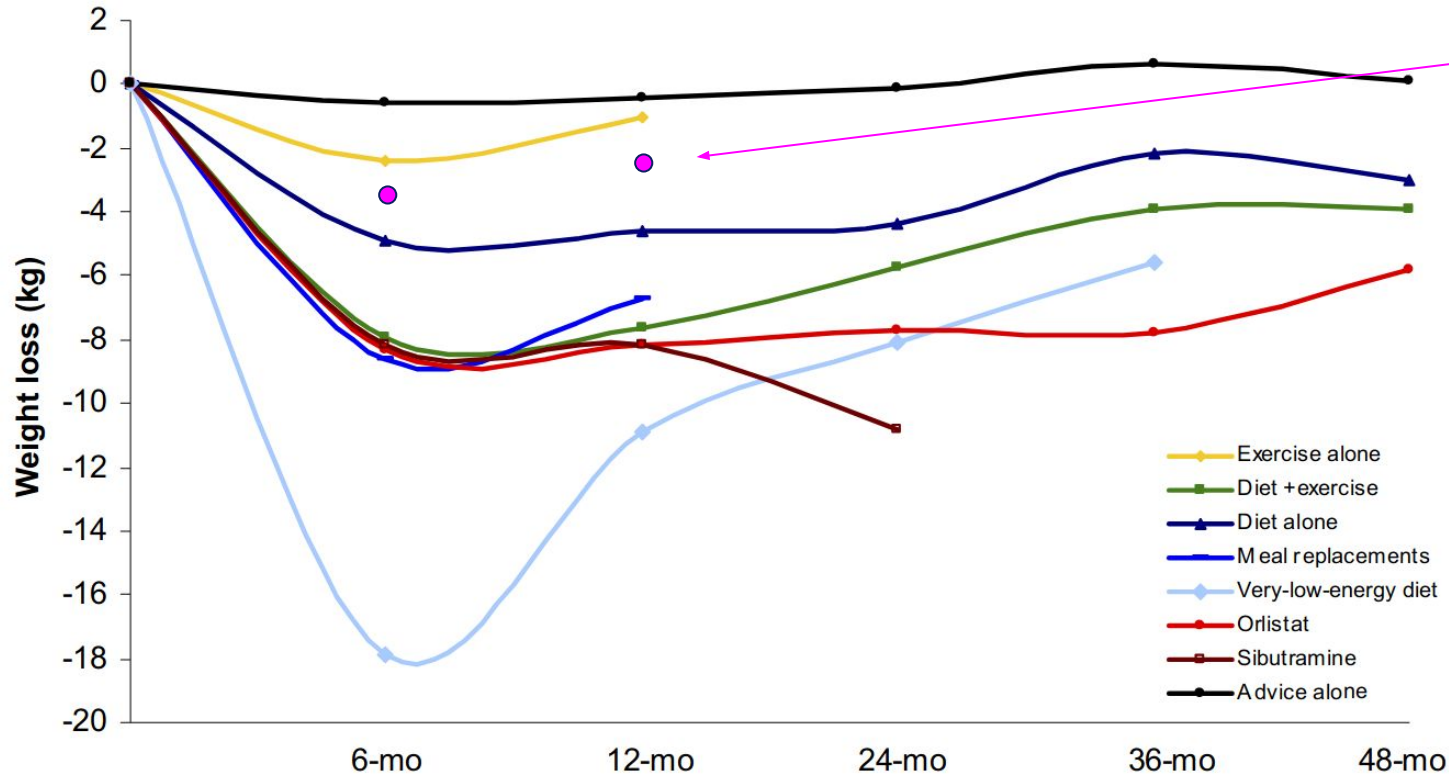
Kaalulangetuse äpid

Kadri Arumäe

Arumäe et al., (Under re-review) Weight loss in smartphone apps at six months and longer: A meta-analysis and bias check.

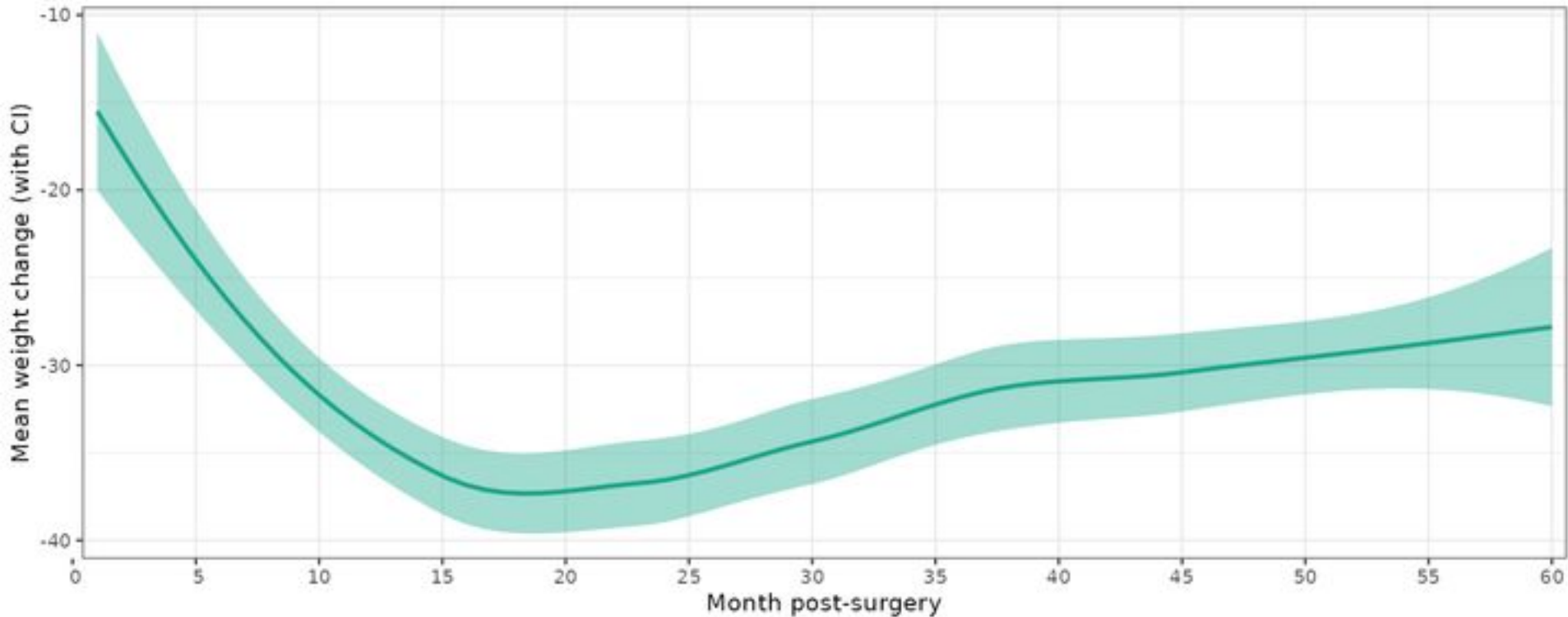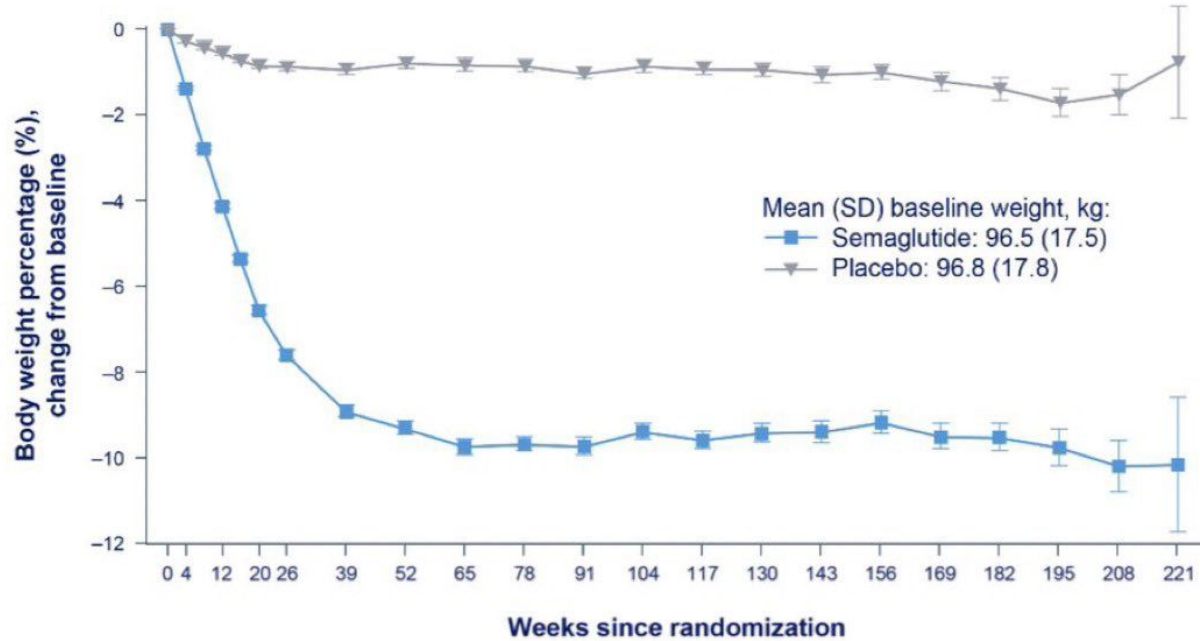# Bariaatriline kirurgia geenivaramus

Figure S6. Effect of Semaglutide as Compared with Placebo on Body Weight and Waist Circumference.
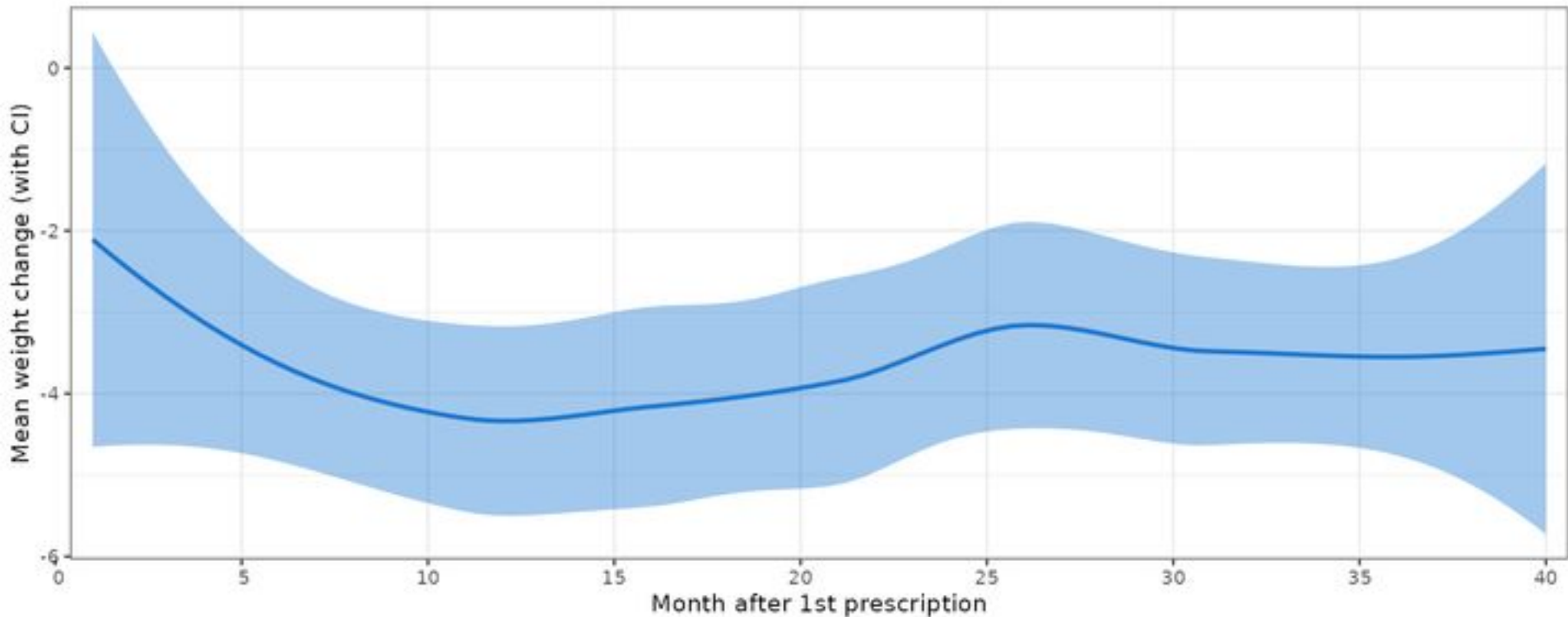
A)

Semaglutide, N	8,803	7,647	7,493	6,690	7,290	6,447	7,282	6,460	7,474	5,991	5,898	4,686	5,085	3,650	2,954	1,737	921	157		
Placebo, N	8,801	7,715	7,516	6,704	7,269	6,340	7,272	6,392	7,378	5,871	5,879	4,583	5,014	3,560	2,890	1,698	898	152		

Kadri Arumäe

GLP-1 geenivaramu andmed

Ehk tasub muuta tervet keskkonda?

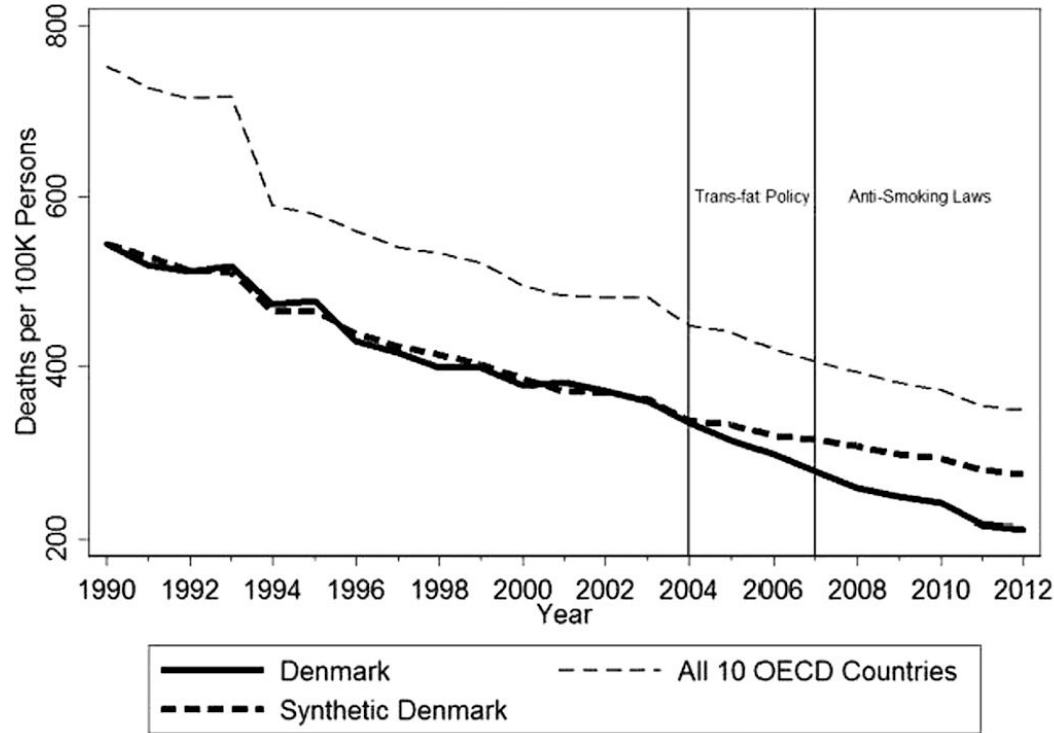Rose 1985 / 2001 Int J Epi
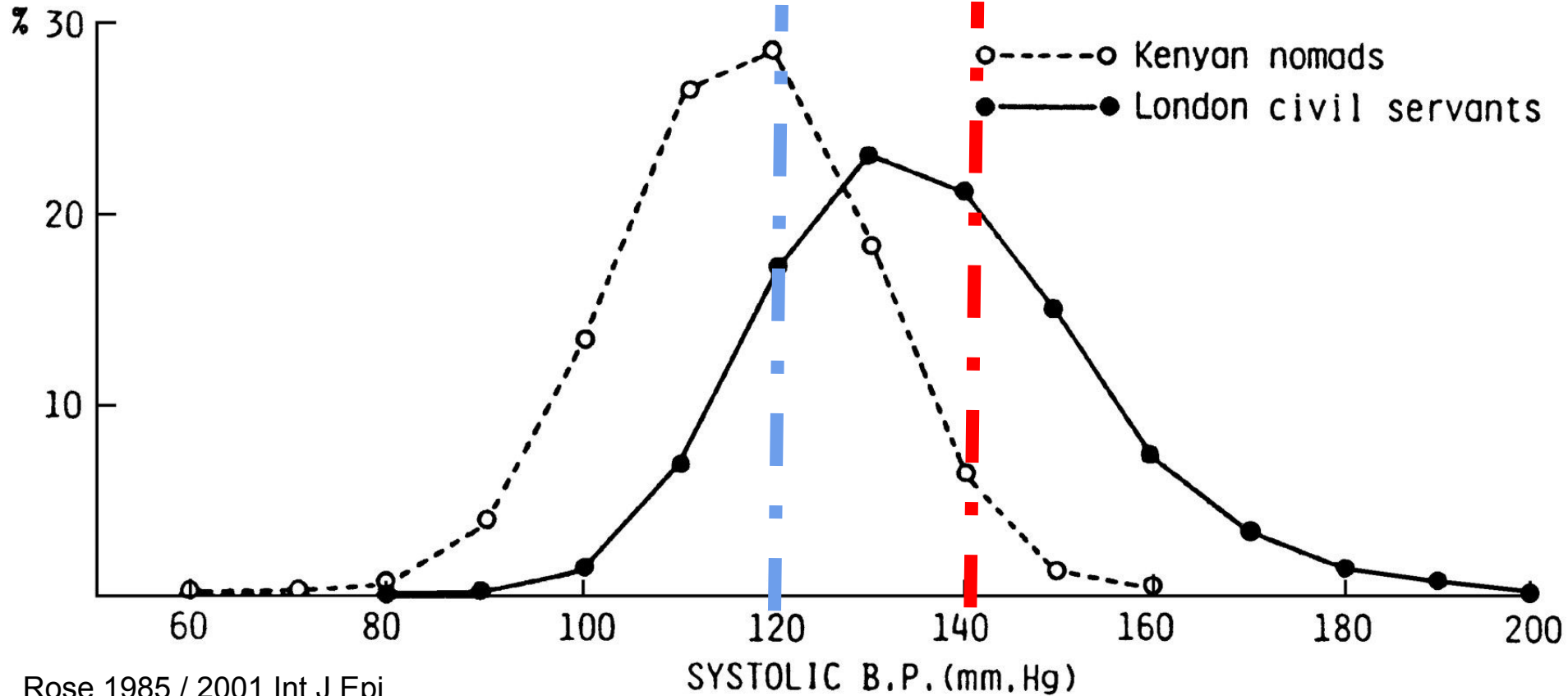
UK soola vähendamine

He et al., 2013 BMJ Open
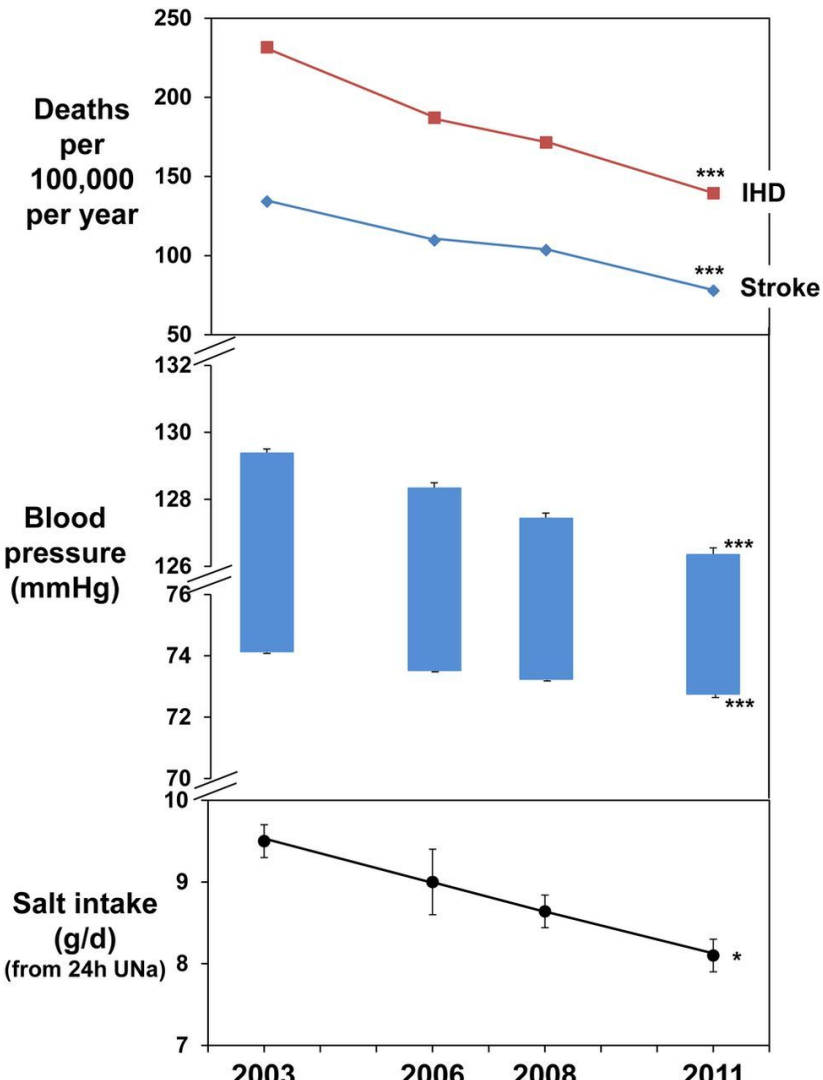
Taani transrasva vähendamine

Panel A: CVD

Kokkuvõte

- Isiksus seostub väga selgelt tervisekäitumisega
- Isiksuse muutusega muutuvad üldine tervis, vaimne tervis ja tervisemured.
- Kuid kehakaal, sportimine ja füüsilised probleemid jäävad puutumata.
- Isiksust saab muuta, nii äpi kui ülekaalu muutuse kaudu.
- Soovitan tervist toetavat keskkonda!

TARTU ÜLIKOOL

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