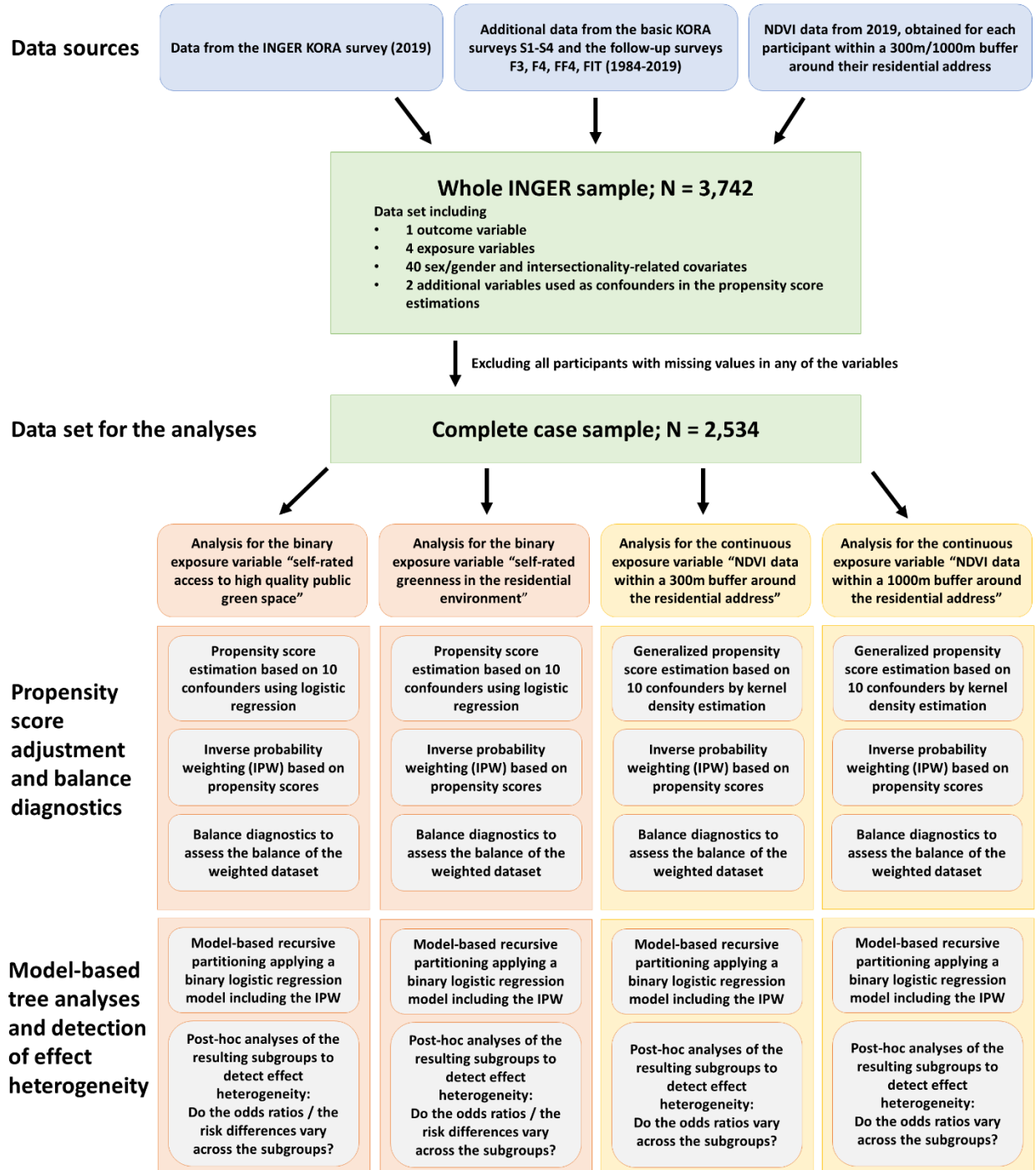


# Supplementary Material S3

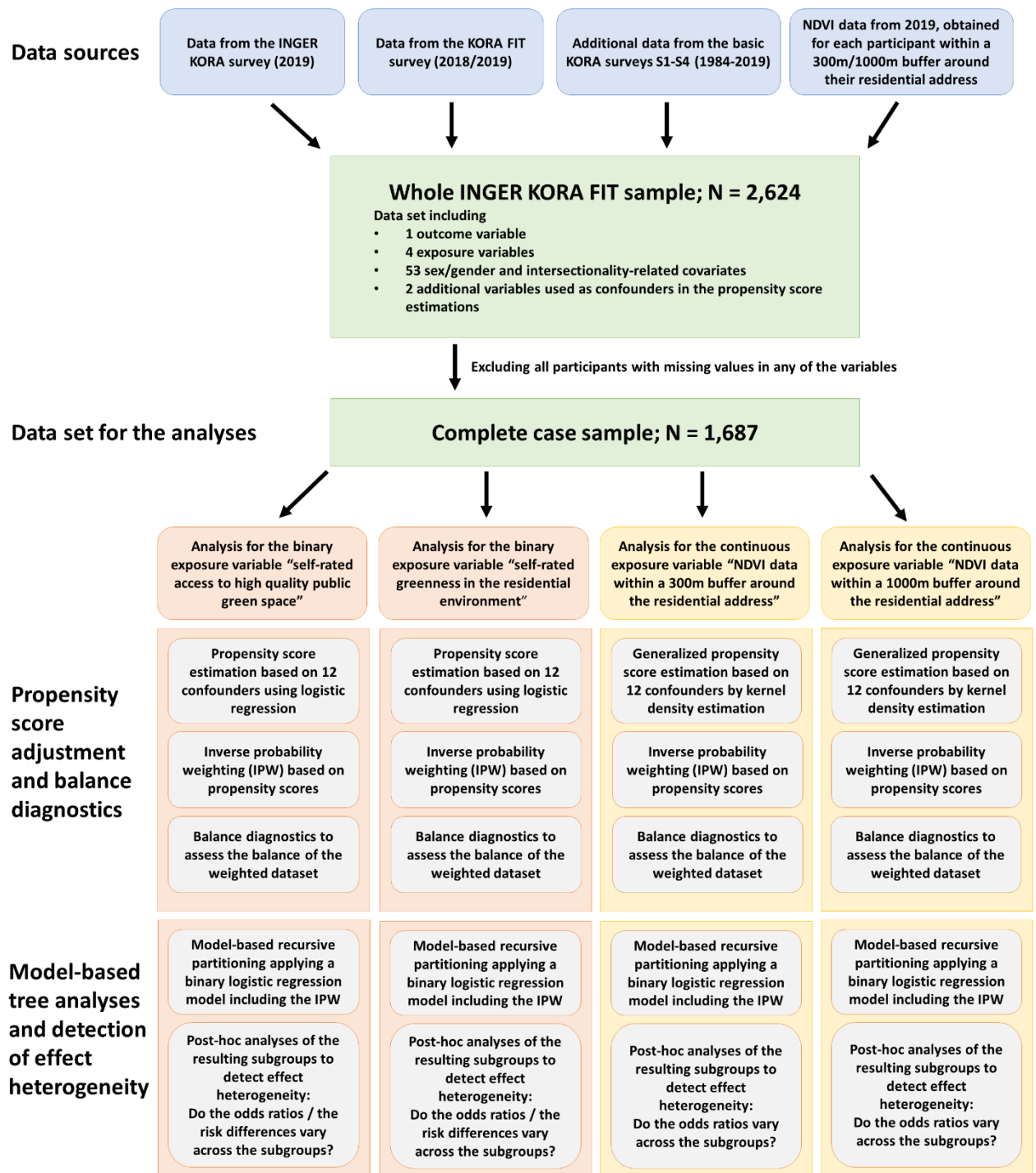
## Containing Supplementary Figures S1-S2 and Supplementary Tables S1-S3

Article: " Do multiple sex/gender-dimensions play a role in the association of green space and self-rated health? Model-based recursive partitioning results from the KORA INGER study"

Lisa Dandolo, Klaus Telkmann, Christina Hartig, Sophie Horstmann, Sara Pedron, Lars Schwettmann, Peter Selsam, Alexandra Schneider, Gabriele Bolte on behalf of the INGER Study Group



**Supplementary Figure S1:** A research structure diagram to visually summarise the research process of our main analyses with 40 sex/gender and intersectionality-related covariates



**Supplementary Figure S2:** A research structure diagram to visually summarise the research process of our additional analyses for the INGER KORA FIT subsample with 53 sex/gender and intersectionality-related covariates

**Supplementary Table S1: Distribution of the 40 sex/gender and intersectionality-related covariates in the complete case sample**

Covariate name and question in INGER KORA survey <sup>1</sup>	Response categories and distribution in the complete case sample; N = 2,543 (100 %)
<b>Individual sex/gender self-concept</b>	
<b>Sex assigned at birth</b>	
<b>SexAtBirth</b>	1,339 (52.8) = female
What sex were you assigned at birth?	1,195 (47.2) = male
<b>Current sex/gender identity</b>	
<b>SGIdentity</b>	1,334 (52.6) = female
What is your current sex/gender identity?	1,184 (46.7) = male
(Multiple responses possible)	2 (0.1) = trans, trans man, trans woman
	0 (0.0) = an identity not mentioned here
	8 (0.3) = I do not want to classify as any sex/gender category
	2 (0.1) = female AND I do not want to classify as any sex/gender category
	2 (0.1) = male AND an identity not mentioned here
	2 (0.1) = male AND I do not want to classify as any sex/gender category
<b>Internalized sex/gender roles</b>	
<b>SGRolesFemMasculineFeeling</b>	299 (11.8) = very masculine
I mostly perceive myself as ...	646 (25.5) = mainly masculine
	213 (8.4) = a little masculine
	293 (11.6) = just as feminine as masculine
	118 (4.7) = a little feminine
	664 (26.2) = mainly feminine
	301 (11.9) = very feminine
<b>SGRolesFemMasculineWish</b>	362 (14.3) = very masculine
Ideally, I would like to be ...	636 (25.1) = mainly masculine
	132 (5.2) = a little masculine
	288 (11.4) = just as feminine as masculine
	112 (4.4) = a little feminine
	622 (24.5) = mainly feminine
	382 (15.1) = very feminine
<b>SGRolesFemMasculineChange</b>	264 (10.4) = yes
Has your assessment of what is feminine or masculine changed in recent years?	2,270 (89.6) = no
<b>SGRolesBothIncomeContribute</b>	1,163 (45.9) = strongly agree
Both the men and women should contribute to the household income.	707 (27.9) = rather agree
	575 (22.7) = neither agree nor disagree
	72 (2.8) = rather disagree
	17 (0.7) = strongly disagree
<b>SGRolesMenMoneyWomenHouse</b>	55 (2.2) = strongly agree
	195 (7.7) = rather agree
	585 (23.1) = neither agree nor disagree

The man's job is to earn money; a woman's job is to look after the home and family.	735 (29.0) = rather disagree 964 (38.0) = strongly disagree
<b>SGRolesGoodRelationshipWorkingMom</b> A working mother can establish just as warm and secure a relationship with her children as a mother who does not work.	1,251 (49.4) = strongly agree 690 (27.2) = rather agree 409 (16.1) = neither agree nor disagree 157 (6.2) = rather disagree 27(1.1) = strongly disagree
<b>SGRolesWomenWorkChildSuffer</b> A pre-school child is likely to suffer if his or her mother works.	272 (10.7) = strongly agree 691 (27.3) = rather agree 770 (30.4) = neither agree nor disagree 506 (20.0) = rather disagree 295 (11.6) = strongly disagree
<b>SGRolesWomenWorkFamilySuffer</b> All in all, family life suffers when the woman is working.	88 (3.5) = strongly agree 389 (15.4) = rather agree 939 (37.1) = neither agree nor disagree 699 (27.6) = rather disagree 419 (16.5) = strongly disagree
<b>SGRolesHousewifeFulfilling</b> Being a housewife is just as fulfilling as working for pay.	327 (12.9) = strongly agree 440 (17.4) = rather agree 743 (29.3) = neither agree nor disagree 728 (28.7) = rather disagree 296 (11.7) = strongly disagree
<b>SGRolesHousehusbandFulfilling</b> Being a househusband is just as fulfilling as working for pay.	187 (7.4) = strongly agree 332 (13.1) = rather agree 733 (28.9) = neither agree nor disagree 884 (34.9) = rather disagree 398 (15.7) = strongly disagree
<b>SGRolesSingleParentEqual</b> One parent can raise a child as well as two parents together.	232 (9.2) = strongly agree 423 (16.7) = rather agree 802 (31.6) = neither agree nor disagree 818 (32.3) = rather disagree 259 (10.2) = strongly disagree
<b>SGRolesSameSexEqual</b> A same-sex couple can raise a child as well as a male-female couple.	444 (17.5) = strongly agree 591 (23.3) = rather agree 618 (24.4) = neither agree nor disagree 486 (19.2) = rather disagree 395 (15.6) = strongly disagree
<b>Externalized sex/gender expressions</b>	
<b>SGExpressionLooks</b> How would other people generally describe you based on your appearance, clothing style and other visual characteristics?	308 (12.2) = very masculine 670 (26.4) = mainly masculine 179 (7.1) = a little masculine 227 (9.0) = just as feminine as masculine 186 (7.3) = a little feminine 690 (27.2) = mainly feminine 274 (10.8) = very feminine
<b>SGExpressionBehavior</b> How would other people generally describe you based on your behaviors?	289 (11.4) = very masculine 662 (26.1) = mainly masculine 218 (8.6) = a little masculine 301 (11.9) = just as feminine as masculine 171 (6.7) = a little feminine 656 (25.9) = mainly feminine 237 (9.4) = very feminine

<b>SGExpressionSAGE</b>	642 (25.3) = 1,0 – 1,5 ( <i>high socially assigned gender conformity</i> )
SGExpressionLooks +	1,292 (51.0) = 2,0 – 2,5
SGExpressionBehavior	358 (14.1) = 3,0 – 3,5
(seven-point scales ranging from “very feminine” to “very masculine”)	210 (8.3) = 4,0 – 4,5
	30 (1.2) = 5,0 – 5,5
	1 (0.0) = 6,0 – 6,5
SAGE-Score values: 1,0 – 7,0	1 (0.0) = 7,0 ( <i>low socially assigned gender conformity</i> )
low values = high socially assigned gender conformity	
	2.19 = mean
	0.92 = SD
	1.00 = min
	7.00 = max

### Items contributing to explain structural sex/gender relations

<b>Experience of discrimination</b>	
<b>DiscriminationSocialPosition</b>	24 (0.9) = strongly agree
I have the feeling to be disadvantaged because of my position in society.	125 (4.9) = rather agree
	229 (9.0) = neither agree nor disagree
	971 (38.3) = rather disagree
	1,185 (46.8) = strongly disagree
<b>DiscriminationAge</b>	26 (1.0) = strongly agree
I have the feeling to be disadvantaged because of my age.	165 (6.5) = rather agree
	275 (10.9) = neither agree nor disagree
	936 (36.9) = rather disagree
	1,132 (44.7) = strongly disagree
<b>DiscriminationHeight</b>	11 (0.4) = strongly agree
I have the feeling to be disadvantaged because of my height.	41 (1.6) = rather agree
	92 (3.6) = neither agree nor disagree
	627 (24.7) = rather disagree
	1,763 (69.6) = strongly disagree
<b>DiscriminationWeight</b>	15 (0.6) = strongly agree
I have the feeling to be disadvantaged because of my weight.	46 (1.8) = rather agree
	125 (4.9) = neither agree nor disagree
	614 (24.2) = rather disagree
	1,734 (68.4) = strongly disagree
<b>DiscriminationDisability</b>	24 (0.9) = strongly agree
I have the feeling to be disadvantaged because of my physical impairment.	58 (2.3) = rather agree
	145 (5.7) = neither agree nor disagree
	428 (16.9) = rather disagree
	1,879 (74.2) = strongly disagree
<b>DiscriminationEthnicity</b>	8 (0.3) = strongly agree
I have the feeling to be disadvantaged because of my ethnic/cultural affiliation.	10 (0.4) = rather agree
	34 (1.3) = neither agree nor disagree
	269 (10.6) = rather disagree
	2,213 (87.3) = strongly disagree
<b>DiscriminationSG</b>	9 (0.4) = strongly agree
I have the feeling to be disadvantaged because of my sex/gender.	28 (1.1) = rather agree
	88 (3.5) = neither agree nor disagree
	331 (13.1) = rather disagree
	2,078 (82.0) = strongly disagree
	8 (0.3) = strongly agree

<b>DiscriminationSexualOrientation</b>	2 (0.1) = rather agree
I have the feeling to be disadvantaged because of my sexual orientation.	18 (0.7) = neither agree nor disagree
	153 (6.0) = rather disagree
	2,353 (92.9) = strongly disagree
<b>DiscriminationAskedifParentsBornAbroad</b>	289 (11.4) = yes
Have you ever been asked in Germany whether you or your parents were born abroad?	2,245 (88.6) = no
<b>Care and household activities</b>	
<b>CareActivitiesChildren</b>	90 (3.6) = only me
Who is currently taking primary responsibility for the following tasks? ("Other people" also includes your partner)	225 (8.9) = mainly me
	829 (32.7) = me and other people
	274 (10.8) = mainly other people
	45 (1.8) = only other people
	1,071 (42.3) = not applicable
Care and/or upbringing of your children/grandchildren, driving services for your children/grandchildren	
<b>CareActivitiesSick</b>	116 (4.6) = only me
Who is currently taking primary responsibility for the following tasks? ("Other people" also includes your partner)	199 (7.9) = mainly me
	419 (16.5) = me and other people
	184 (7.3) = mainly other people
	50 (2.0) = only other people
	1,566 (61.8) = not applicable
Care for disabled, chronically ill or in need of care family members, neighbours or friends	
<b>CareActivitiesCooking</b>	673 (26.6) = only me
Who is currently taking primary responsibility for the following tasks? ("Other people" also includes your partner)	522 (20.6) = mainly me
	626 (24.7) = me and other people
	483 (19.1) = mainly other people
	230 (9.1) = only other people
Cooking	
<b>CareActivitiesHousework</b>	558 (22.0) = only me
Who is currently taking primary responsibility for the following tasks? ("Other people" also includes your partner)	608 (24.0) = mainly me
	833 (32.9) = me and other people
	478 (18.9) = mainly other people
	57 (2.2) = only other people
Housework	
<b>CareActivitiesGardening</b>	337 (13.3) = only me
	490 (19.3) = mainly me

Who is currently taking primary responsibility for the following tasks? ("Other people" also includes your partner)	1,031 (40.7) = me and other people 301 (11.9) = mainly other people 68 (2.7) = only other people 307 (12.1) = not applicable
Gardening (during the gardening season)	
<b>CareActivitiesErrands</b>	501 (19.8) = only me
Who is currently taking primary responsibility for the following tasks? ("Other people" also includes your partner)	557 (22.0) = mainly me 1,100 (43.4) = me and other people 328 (12.9) = mainly other people 48 (1.9) = only other people
Errands (shopping, procurement)	
<b>CareActivitiesHandicraft</b>	478 (18.9) = only me
Who is currently taking primary responsibility for the following tasks? ("Other people" also includes your partner)	666 (26.3) = mainly me 613 (24.2) = me and other people 594 (23.4) = mainly other people 183 (7.2) = only other people
Handicraft tasks in the household	
<b>Intersectionality-related social categories</b>	
<b>SGRelationsSchoolEducation</b>	1,062 (41.9) = Degree after German basic secondary school ( <i>Hauptschulabschluss</i> )
School education (Variable from basic KORA studies S1-S4)	793 (31.3) = German O-levels ( <i>Mittlere Reife</i> ) 679 (26.8) = German A-Levels ( <i>Abitur</i> )
<b>SGRelationsVocationalEducation</b>	157 (6.2) = no vocational qualification
Highest vocational qualification (Variable from basic KORA studies S1-S4)	1,358 (53.6) = vocational school / apprenticeship 504 (19.9) = technical school / master school 22 (0.9) = engineering school / polytechnical school 493 (19.5) = university of applied sciences / university
<b>SGRelationsEmployment</b>	1,328 (52.4) = no
Are you employed?	13 (0.5) = 1-5 h/week 97 (3.8) = 6-10 h/week 168 (6.6) = 11-20 h/week
If so: How many hours do you work on average per week (actual working hours)?	176 (6.9) = 21-30 h/week 454 (17.9) = 31-40 h/week 228 (9.0) = 41-50 h/week 70 (2.8) = > 50 h/week
<b>SGRelationsIncome</b>	295 (11.6) = very good
How do you assess your financial situation?	1,645 (64.9) = good 559 (22.1) = moderate 35 (1.4) = bad
<b>SGRelationsFamilySituation</b>	
Do you live with a spouse or partner in a shared household? (Variable from KORA surveys F3, F4, FF4, FIT; the latest available information from each participant was used)	2,045 (80.7) = yes 489 (19.3) = no

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**SGRelationsUrbanisation**

Distribution of participants by degree of  
urbanisation.

902 (35.6) = city

1,091 (43.1) = suburb

541 (21.3) = rural

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<sup>1</sup>*Original questions were asked in German*



**Supplementary Table S2: Additional 13 sex/gender and intersectionality-related covariates within the INGER KORA FIT sample**

Covariate Name and question in INGER KORA FIT survey <sup>1</sup>	Response categories and distribution in the INGER KORA FIT complete case sample; N = 1,687 (100 %)	
Items contributing to explain structural sex/gender relations		
Intersectionality-related social categories		
<b>SGRelationsEmploymentCategories</b>	755 (44.8)	= a pensioner
Which of the following statements applies to you?	73 (4.3)	= in partial retirement
Are you currently ...	707 (41.9)	= working
	34 (2.0)	= unemployed
	118 (7.0)	= other status (e.g. housewife/ househusband, in training, other leave of absence)
<b>SGRelationsOccupation</b>	22 (1.3)	= unskilled worker
What position do you have, or did you have in your job?	66 (3.9)	= Civil servant simple activity / semi-skilled worker
+ one of four more detailed follow-up questions depending on the initial response (worker, employee, civil-servant or self-employed)	234 (13.9)	= Civil servant simple service / skilled worker
	98 (5.8)	= Civil servant middle service / skilled worker or foreman
	31 (1.8)	= Master craftsman / foreman
	698 (41.4)	= Civil servants higher service / employee with qualified activity
	100 (5.9)	= Self-employed, max. 1 employee
	386 (22.9)	= Civil servant higher service / employee with highly qualified activity / self-employed academic / self-employed with max. 9 employees
	52 (3.1)	= Employees with extensive managerial responsibilities / self-employed with at least 10 employees
<b>SGRelationsIncomeEuro</b>	Continuous	variable (€)
Equivalent income = the household's income divided by the number of consumption units in the household.	1937.00	= mean
	920.34	= SD
	185.00	= min
	8000.00	= max
(To calculate this, participants were asked about their household income and number of households' members and the age of the members)		
<b>SGRelationsHouseholdMembers</b>	314 (18.6)	= 1
How many people live in your household at all times, including yourself?	1,061 (62.9)	= 2
	204 (12.1)	= 3
	78 (4.6)	= 4
	25 (1.5)	= 5
	3 (0.2)	= 6

0 (0.0) = 7

1 (0.1) = 8

1 (0.1) = 9

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**SGRelationsDisability**

Do you have a recognized disability?

If yes, what degree of disability do you have?

1,367 (81.0) = no disability

104 (6.2) = disability 10 - 30%

165 (9.8) = disability 40 - 60%

51 (3.0) = disability 70-100%

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**SGRelationsMobility**

Please indicate which of the following statements best describes your current state of health regarding mobility.

1,239 (73.4) = I have no problems moving around

272 (16.1) = I have little problems moving around

137 (8.1) = I have moderate problems moving around

39 (2.3) = I have big problems moving around / I am unable to move

---

**Life-style and psychological factors****Health Behaviors****HealthBehaviorAlcohol**

Alcohol consumption (g /day)

Continuous variable

15.12 = mean

19.30 = SD

(To calculate this, participants were asked about their consumption of different kind of alcoholic drinks on weekends or working days)

0.00 = min

160.00 = max

---

**HealthBehaviorSmoking**

Smoking behavior based on three interview questions

191 (11.3) = regular smoker

35 (2.1) = irregular smoker

710 (42.1) = ex-smoker

751 (44.5) = never-smoker

a) Do you currently smoke cigarettes?

b) Do you smoke regularly or irregularly (i.e. usually less than one cigarette a day)?

c) Have you ever smoked cigarettes?

---

**HealthBehaviorPhysicalActivity**

How often do you do sports in winter/summer?

655 (38.8) = regularly > 2h a week

586 (34.7) = regularly ~ 1h a week

215 (12.7) = irregularly ~ 1h a week

231 (13.7) = almost no or no physical activity

---

**Psychosocial Factors****LifeSatisfaction**

Overall, how satisfied are you with your life right now?

Continuous variable

7.46 = mean

2.18 = SD

0.00 = min

on a scale from 0 (totally dissatisfied) – 10 (completely satisfied)

10.00 = max

---

**PerceivedStress**

Based on 10 questions of the German version of the Perceived Stress Scale (see Klein [62]) for exact formulation of questions)

Continuous	variable
14.31	= mean
5.57	= SD
0.00	= min
34.00	= max

Scores are obtained by reversing responses to four positively stated items and then summing across all scale items. Higher scores indicated a higher level of perceived stress.

### SelfEfficacy

Self-efficacy scale (ASKU, see Beierlein [63])

Continuous	variable
4.04	= mean
0.57	= SD
1.00	= min
5.00	= max

Score is based on three statements on a scale from 1 (strongly disagree) – 5 (strongly agree):

- a) I can rely on my own abilities in difficult situations.
- b) I am able to solve most problems on my own.
- c) I can usually solve even challenging and complex tasks well.

Score is the average response to these three statements.

### OptimismPessimism

Based on questions of the German version of the Life-Orientation-Test (LOT-R) for dispositional optimism and pessimism [64]

Continuous	variable
7.49	= mean
3.60	= SD
0.00	= min
20.00	= max

Scores are obtained by reversing responses to positively stated items and then summing across all scale items. Higher scores indicated a higher level of pessimism.

<sup>1</sup>Original questions were asked in German

- 62. Klein E.M.; Brahler E.; Dreier M.; Reinecke L.; Muller K.W.; Schmutzer G.; Wolfling K.; Beutel M.E. The German version of the Perceived Stress Scale - psychometric characteristics in a representative German community sample. *BMC Psychiatry* **2016**, *16*, 159. doi:10.1186/s12888-016-0875-9
- 63. Beierlein C.; Kovaleva A.; Kemper C.J.; Rammstedt B. *ASKU - Allgemeine Selbstwirksamkeit Kurzskala [Fragebogen]*. Elektronisches Testarchiv (PSYNDEX Tests-Nr. 9006490). Trier: ZPID.: Leibniz-Zentrum für Psychologische Information und Dokumentation (ZPID); 2012.
- 64. Scheier M.F.; Carver C.S.; Bridges M.W. Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): a reevaluation of the Life Orientation Test. *J Pers Soc Psychol* **1994**, *67*(6), 1063-78. doi:10.1037//0022-3514.67.6.1063

**Supplementary Table S3: Comparison of the whole INGER sample with the complete case sample**

Variable	Response categories	Distribution in the whole INGER sample; N = 3,742 (100 %)	Distribution in the complete case sample; N = 2,534 (100 %)
Age in years	mean = SD = min = max =	63.41 9.42 43 92	62.69 8.87 43 90
Sex/gender identity	I don't want to classify= female = female and I don't want to classify = male = male and I don't want to classify= male and other identity = other identity = transsexual = 60 missings	14 (0.4) 1,998 (54.3) 3 (0.1) 1,650 (44.8) 7 (0.2) 4 (0.1) 4 (0.1) 2 (0.1) 60 missings	8 (0.3) 1,334 (52.6) 2 (0.1) 1,184 (46.7) 2 (0.1) 2 (0.1) 0 (0.0) 2 (0.1) 2 (0.1)
Sex assigned at birth	female = male = divers / intersexual = 44 missings	2,014 (54.5) 1,684 (45.5) 0 (0.0) 44 missings	1,339 (52.8) 1,195 (47.2) 0 (0.0) 0 (0.0)
School education	basic secondary school degree = German O-Levels = German A-Levels = 1 missing	1,736 (46.4) 1,085 (29.0) 920 (24.6) 1 missing	1,062 (41.9) 793 (31.3) 679 (26.8) 1 missing
Employment	Yes = No = 91 missings	1,681 (46.0) 1,970 (54.0) 91 missings	1,206 (47.6) 1,328 (52.4) 1,328 (52.4)
Self-rated financial situation	very good = good = moderate = bad = 42 missings	394 (10.6) 2,303 (62.2) 937 (25.3) 66 (1.8) 42 missings	295 (11.6) 1,645 (64.9) 559 (22.1) 35 (1.4) 35 (1.4)
Degree of urbanisation.	city = suburb = rural = 460 missings	1,139 (34.7) 1,392 (42.4) 751 (22.9) 460 missings	902 (35.6) 1,091 (43.1) 541 (21.3) 541 (21.3)
Self-rated health	good = bad = 39 missings	2,728 (73.7) 975 (26.3) 39 missings	1,926 (76.0) 608 (24.0) 608 (24.0)
Access to high quality public green spaces	high quality green spaces = lower quality and no green spaces = 163 missings	1,066 (29.8) 2,513 (70.2) 163 missings	774 (30.5) 1,760 (69.5) 1,760 (69.5)
Greenness in the residential environment	very green = less green = 22 missings	2,911 (78.3) 809 (21.7) 22 missings	2,008 (79.2) 526 (20.8) 526 (20.8)
Greenness within a 300 m buffer (NDVI)	mean = SD = min = max =	0.47 0.09 0.16 0.73	0.47 0.09 0.16 0.73

<b>Greenness within a 1000 m buffer (NDVI)</b>	mean =	0.50	0.50
	SD =	0.09	0.09
	min =	0.27	0.27
	max =	0.71	0.71