

Supplement

Sex-dependent Associations of Childhood Maltreatment with Obesity-related Traits: Results from the German National Cohort (NAKO)

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1. Supplemental Methods

Sample/Sequential Exclusion of Study Participants

For the present analyses, we excluded 32,772 individuals with missing data in the Childhood Trauma Screener (CTS), 6,120 individuals with missing data in the anthropometric markers, and 14,709 individuals with missing data in years of formal education resulting in a study population of 151,143 individuals (74,549 women) aged 19 to 75 years (mean 49.2 years). Data on subcutaneous (SAT) and visceral adipose tissue thickness (VAT) were available in subgroups of 36,111 and 35,719 individuals, respectively. **Figure S1** provides a graphical representation of the sequential exclusion of participants with missing data for study variables.

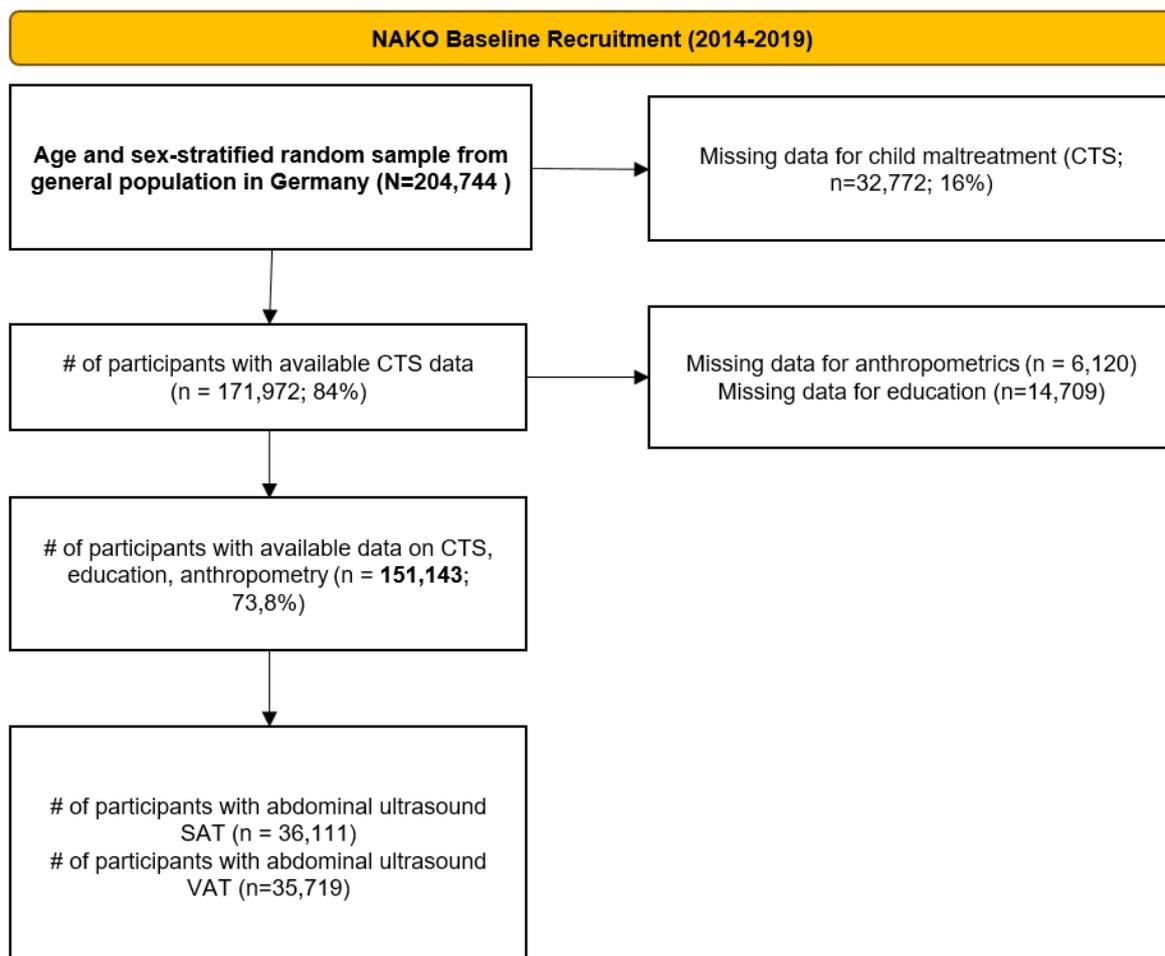


Figure S1: Flow chart of sequential exclusion of subjects with missing data for study variables.

2. Supplemental Results

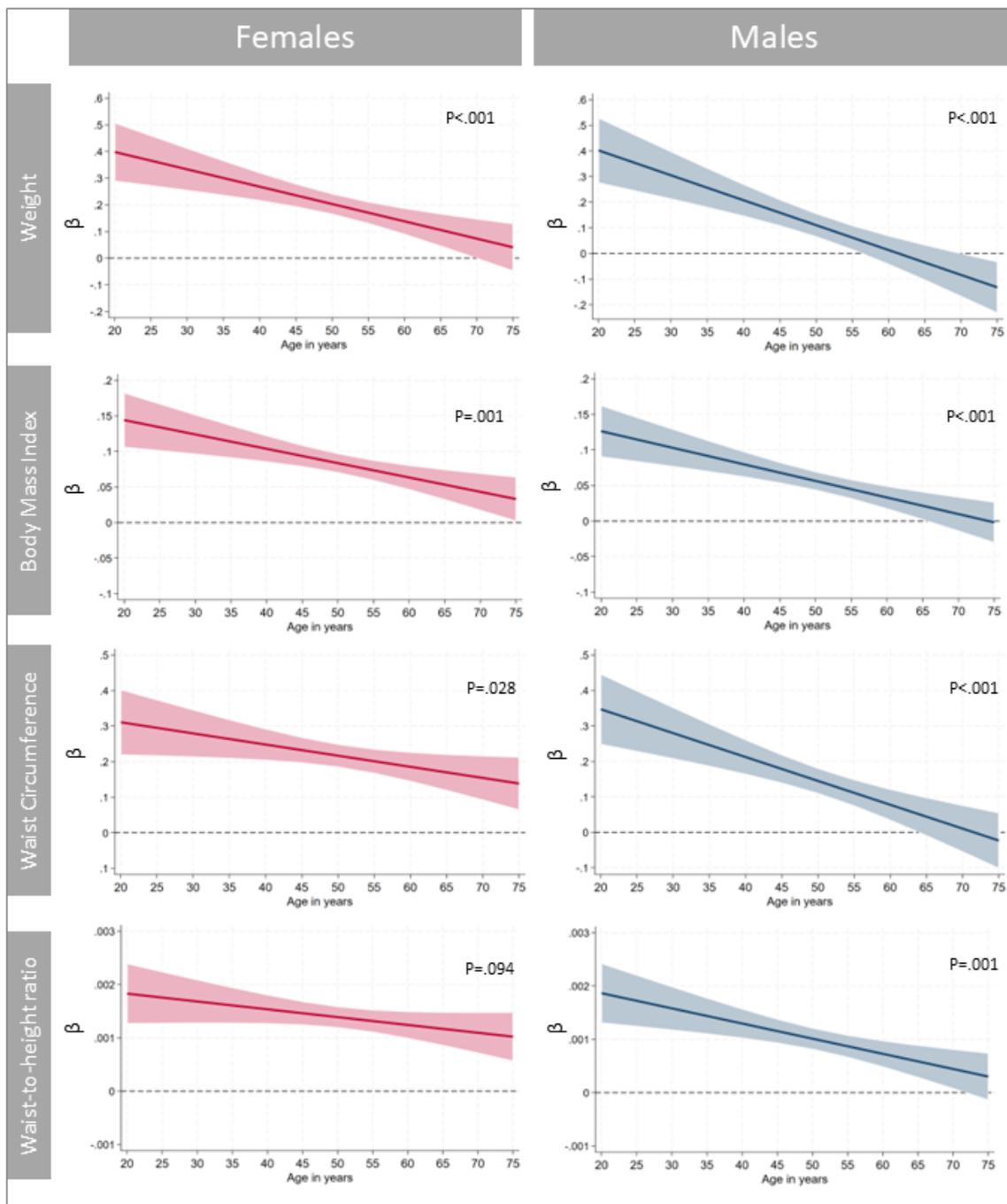


Figure S2: Age-dependent associations between CTS sum score and anthropometric indicators for females (left) and males (right).

Note: Data are shown as β coefficients and 95% confidence intervals (shaded areas) indicating the age-dependent association between CTS sum scores and different anthropometric markers (i.e., weight, body mass index, waist circumference, and waist-to-height ratio) derived from fully adjusted sex-stratified linear regression models.

p-values denote significance levels for the CTS x age interaction.

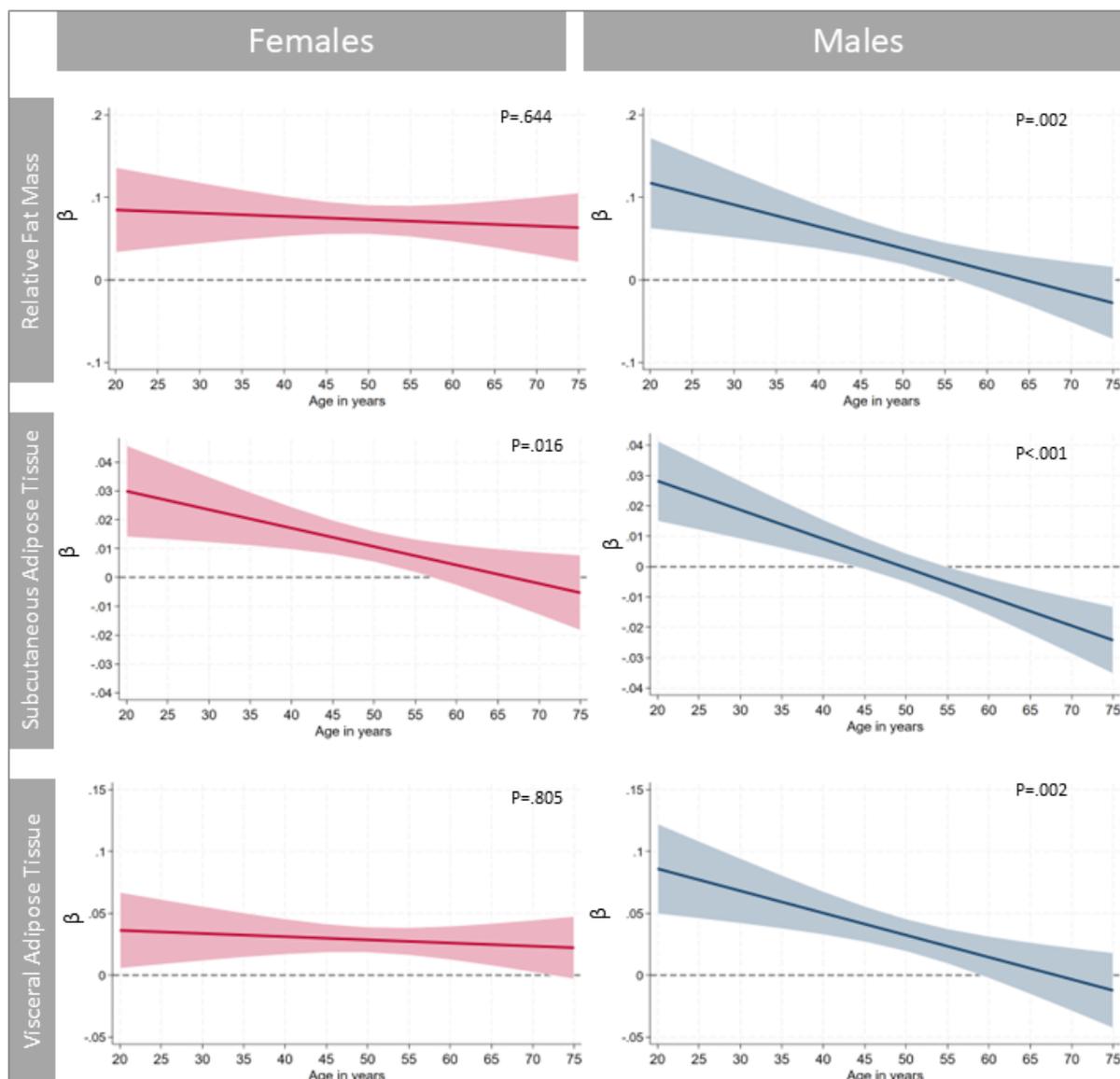


Figure S3: Age-dependent associations between CTS sum score and body fat markers for females (left) and men (right).

Note: Data are shown as β coefficients and 95% confidence intervals (shaded areas) indicating the age-dependent association between CTS sum scores and different body fat markers (i.e., relative fat mass, subcutaneous adipose tissue, and visceral adipose tissue) derived from fully adjusted sex-stratified linear regression models.

p-values denote significance levels for the CTS x age interaction.

Table S1. Sex-stratified associations of total and cumulative childhood maltreatment exposure with anthropometric and body fat markers (additionally adjusted for migration background)

Outcome	CTS sum score	1 vs. no CM	2 vs. no CM	3+ vs. no CM
Body height in cm				
Males	-0.06 (-0.08; -0.04)*	-0.29 (-0.43; -0.17)*	-0.15 (-0.39; 0.08)	-0.53 (-0.85; -0.22)*
Females	-0.02 (-0.03; 0.00)	0.02 (-0.10; 0.14)	-0.28 (-0.48; -0.09)	-0.04 (-0.27; 0.18)
Body weight in kg				
Males	0.11 (0.06; 0.15)*	0.31 (0.02; 0.60)	1.06 (0.55; 1.57)*	1.52 (0.83; 2.23)*
Females	0.21 (0.17; 0.24)*	0.57 (0.28; 0.85)*	1.49 (1.03; 1.95)*	2.98 (2.44; 3.50)*
Body mass index in kg/m²				
Males	0.05 (0.04; 0.06)*	0.18 (0.10; 0.27)*	0.36 (0.21; 0.50)*	0.64 (0.44; 0.84)*
Females	0.08 (0.07; 0.09)*	0.19 (0.09; 0.29)*	0.63 (0.46; 0.79)*	1.11 (0.93; 1.30)*
Waist circumference in cm				
Males	0.14 (0.10; 0.17)*	0.39 (0.16; 0.62)*	1.12 (0.71; 1.52)*	1.62 (1.07; 2.17)*
Females	0.22 (0.18; 0.25)*	0.54 (0.31; 0.78)*	1.67 (1.28; 2.06)*	2.75 (2.30; 3.19)*
Waist to height ratio in %				
Males	0.09 (0.07; 0.11)*	0.29 (0.16; 0.42)*	0.66 (0.43; 0.89)*	1.06 (0.75; 1.37)*
Females	0.13 (0.12; 0.15)*	0.31 (0.17; 0.46)*	1.09 (0.85; 1.33)*	1.66 (1.39; 1.93)*
Relative fat mass in %				
Males	0.03 (0.01; 0.05)*	0.13 (0.00; 0.26)	0.27 (0.04; 0.50)	0.62 (0.31; 0.93)*
Females	0.07 (0.05; 0.09)*	0.11 (-0.02; 0.24)	0.56 (0.34; 0.78)*	1.14 (0.89; 1.39)*
Subcutaneous adipose tissue in mm				
Males	-0.02 (-0.06; 0.03)	0.07 (-0.24; 0.38)	-0.38 (-0.95; 0.18)	0.11 (-0.70; 0.91)
Females	0.10 (0.04; 0.15)*	0.31 (-0.09; 0.70)	0.79 (0.12; 1.46)	1.29 (0.52; 2.07)*
Visceral adipose tissue in mm				
Males	0.31 (0.17; 0.44)*	1.26 (0.40; 2.11)	1.27 (-0.29; 2.83)	3.12 (0.92; 5.31)
Females	0.27 (0.16; 0.38)*	0.89 (0.12; 1.66)	2.61 (1.30; 3.91)*	2.54 (1.03; 4.05)*

Note: Data are reported as β coefficients and 95% confidence intervals derived from sex-stratified linear regression models adjusted for age, years of formal education, migration background, and examination center. **Abbreviations:** CM = Childhood Maltreatment; CTS = Childhood Trauma Screener.

*significant after Bonferroni correction ($p < 0.003$).

Table S2. Sex-stratified associations of subtype-specific childhood maltreatment with anthropometric and body fat markers

Outcome	Emotional neglect	Physical neglect	Emotional abuse	Physical abuse	Sexual abuse
Body height in cm					
Males	-0.50 (-0.70; -0.31)*	-0.65 (-0.82; -0.49)*	-0.23 (-0.43; -0.03)	-0.12 (-0.30; 0.05)	-0.31 (-0.62; -0.01)
Females	-0.12 (-0.28; 0.05)	-0.52 (-0.68; -0.37)*	0.01 (-0.14; 0.16)	-0.09 (-0.26; 0.08)	0.04 (-0.11; 0.20)
Body weight in kg					
Males	-0.16 (-0.60; 0.27)	-0.28 (-0.64; 0.08)	1.53 (1.09; 1.97)*	1.77 (1.38; 2.15)*	0.36 (-0.32; 1.03)
Females	1.18 (0.79; 1.57)*	-0.33 (-0.69; 0.03)	2.06 (1.70; 2.42)*	2.53 (2.13; 2.93)*	1.73 (1.36; 2.09)*
Body mass index in kg/m²					
Males	0.09 (-0.03; 0.22)	0.11 (0.01; 0.21)	0.54 (0.41; 0.67)*	0.58 (0.47; 0.69)*	0.21 (0.02; 0.40)
Females	0.48 (0.34; 0.61)*	0.05 (-0.08; 0.18)	0.74 (0.62; 0.87)*	0.94 (0.80; 1.08)*	0.61 (0.48; 0.74)*
Waist circumference in cm					
Males	0.27 (-0.06; 0.61)	0.04 (-0.24; 0.33)	1.53 (1.18; 1.87)*	1.46 (1.16; 1.76)*	0.48 (-0.05; 1.01)
Females	1.30 (0.97; 1.62)*	0.14 (-0.16; 0.45)	1.96 (1.66; 2.26)*	2.28 (1.94; 2.62)*	1.51 (1.20; 1.81)*
Waist to height ratio in %					
Males	0.29 (0.10; 0.48)	0.22 (0.06; 0.38)	0.91 (0.72; 1.10)*	0.84 (0.67; 1.01)*	0.35 (0.05; 0.65)
Females	0.81 (0.61; 1.01)*	0.25 (0.07; 0.44)	1.17 (0.99; 1.36)*	1.39 (1.18; 1.60)*	0.89 (0.70; 1.08)*
Relative fat mass in %					
Males	0.03 (-0.16; 0.22)	0.08 (-0.07; 0.24)	0.56 (0.37; 0.75)*	0.49 (0.32; 0.66)*	0.21 (-0.08; 0.51)
Females	0.43 (0.25; 0.62)*	-0.02 (-0.20; 0.15)	0.79 (0.61; 0.96)*	1.00 (0.81; 1.19)*	0.58 (0.41; 0.75)*
Subcutaneous adipose tissue in mm					
Males	-0.11 (-0.59; 0.37)	-0.13 (-0.52; 0.26)	0.11 (-0.38; 0.59)	-0.03 (0.45; 0.40)	0.16 (-0.59; 0.91)
Females	0.52 (-0.04; 1.09)	-0.19 (-0.71; 0.33)	1.00 (0.48; 1.52)*	1.28 (0.70; 1.86)*	0.62 (0.10; 1.15)
Visceral adipose tissue in mm					
Males	0.91 (-0.41; 2.23)	0.92 (-0.17; 2.00)	2.35 (1.03; 3.66)*	2.37 (1.20; 3.53)*	0.25 (-1.81; 2.31)
Females	1.99 (0.88; 3.09)*	0.41 (-0.60; 1.42)	1.98 (0.97; 2.99)*	2.10 (0.97; 3.23)*	1.96 (0.95; 2.97)*

Note: Data are reported as β coefficients and 95% confidence intervals derived from sex-stratified linear regression models adjusted for age, years of formal education, and examination center.

*significant after Bonferroni correction ($p < 0.003$)

Table S3. Sex-stratified associations of subtype-specific childhood maltreatment with anthropometric and body fat markers (additionally adjusted for migration background)

Outcome	Emotional neglect	Physical neglect	Emotional abuse	Physical abuse	Sexual abuse
Body height in cm					
Males	-0.34 (-0.54; -0.15)*	-0.52 (-0.69; -0.36)*	-0.14 (-0.33; 0.06)	-0.01 (-0.19; 0.16)	-0.21 (-0.51; 0.10)
Females	-0.03 (-0.19; 0.13)	-0.45 (-0.61; -0.30)*	0.08 (-0.07; 0.23)	0.02 (-0.15; 0.19)	0.06 (-0.09; 0.21)
Body weight in kg					
Males	-0.09 (-0.52; 0.35)	-0.21 (-0.57; 0.15)	1.58 (1.13; 2.02)*	1.82 (1.43; 2.21)*	0.39 (-0.29; 1.07)
Females	1.23 (0.84; 1.62)*	-0.28 (-0.65; 0.08)	2.11 (1.75; 2.47)*	2.61 (2.21; 3.01)*	1.74 (1.37; 2.10)*
Body mass index in kg/m²					
Males	0.07 (-0.05; 0.19)	0.09 (-0.01; 0.20)	0.53 (0.40; 0.65)*	0.56 (0.45; 0.67)*	0.18 (-0.01; 0.38)
Females	0.47 (0.33; 0.61)*	0.05 (-0.08; 0.17)	0.74 (0.61; 0.87)*	0.94 (0.80; 1.08)*	0.61 (0.48; 0.74)*
Waist circumference in cm					
Males	0.28 (-0.06; 0.62)	0.05 (-0.22; 0.34)	1.53 (1.18; 1.88)*	1.47 (1.16; 1.77)*	0.48 (-0.06; 1.00)
Females	1.31 (0.98; 1.63)*	0.15 (-0.15; 0.46)	1.97 (1.67; 2.28)*	2.30 (1.96; 2.64)*	1.51 (1.20; 1.82)*
Waist to height ratio in %					
Males	0.25 (0.06; 0.44)	0.18 (0.03; 0.34)	0.88 (0.69; 1.08)*	0.81 (0.64; 0.98)*	0.31 (0.02; 0.61)
Females	0.79 (0.59; 0.99)*	0.24 (0.05; 0.44)	1.16 (0.97; 1.34)*	1.37 (1.16; 1.58)*	0.89 (0.70; 1.07)*
Relative fat mass in %					
Males	0.00 (-0.19; 0.19)	0.06 (-0.10; 0.22)	0.54 (0.35; 0.74)*	0.46 (0.29; 0.63)*	0.19 (-0.11; 0.48)
Females	0.41 (0.23; 0.60)*	-0.03 (-0.21; 0.14)	0.77 (0.60; 0.94)*	0.98 (0.79; 1.17)*	0.58 (0.41; 0.75)*
Subcutaneous adipose tissue in mm					
Males	-0.13 (-0.61; 0.35)	-0.15 (-0.54; 0.25)	0.09 (-0.39; 0.57)	-0.04 (0.47; 0.38)	0.14 (-0.61; 0.89)
Females	0.50 (-0.06; 1.07)	-0.20 (-0.72; 0.32)	0.98 (0.47; 1.51)*	1.26 (0.68; 1.84)*	0.62 (0.10; 1.14)
Visceral adipose tissue in mm					
Males	0.87 (-0.45; 2.19)	0.87 (-0.21; 1.96)	2.31 (1.00; 3.63)*	2.33 (1.17; 3.50)*	0.22 (-1.84; 2.27)
Females	1.92 (0.82; 3.03)*	0.38 (-0.63; 1.39)	1.95 (0.94; 2.96)*	2.05 (0.92; 3.18)*	1.94 (0.93; 2.96)*

Note: Data are reported as β coefficients and 95% confidence intervals derived from sex-stratified linear regression models adjusted for age, years of formal education, migration background, and examination center.

*significant after Bonferroni correction ($p < 0.003$)