

**ASSOCIATION BETWEEN PSYCHOSOCIAL FACTORS AND ADVERSE EFFECTS
OF LIGHT-TO-MODERATE AMBIENT HEAT IN PATIENTS WITH CHRONIC DISEASES:
RESULTS OF THE PROSPECTIVE COHORT STUDY CLIMATE-II.**

Additional file 3: Supplementary figures and tables

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Figure S1: Number of participants by number of observations

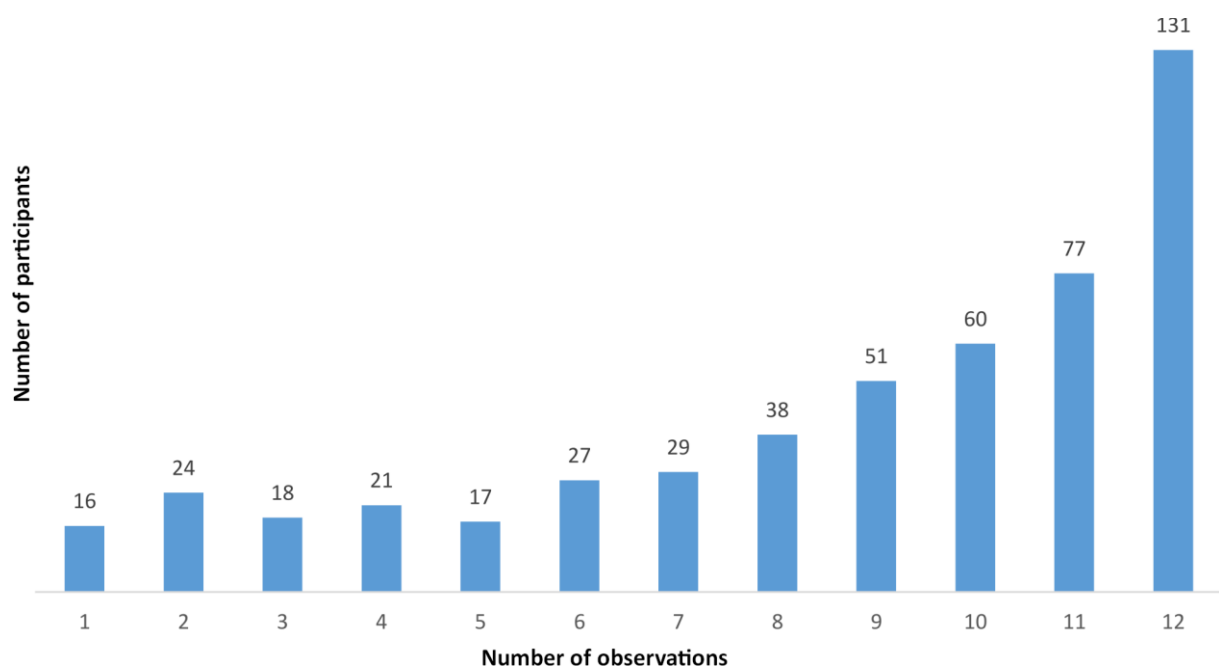


Figure S2: Distribution of dependent variable and continuous independent variables

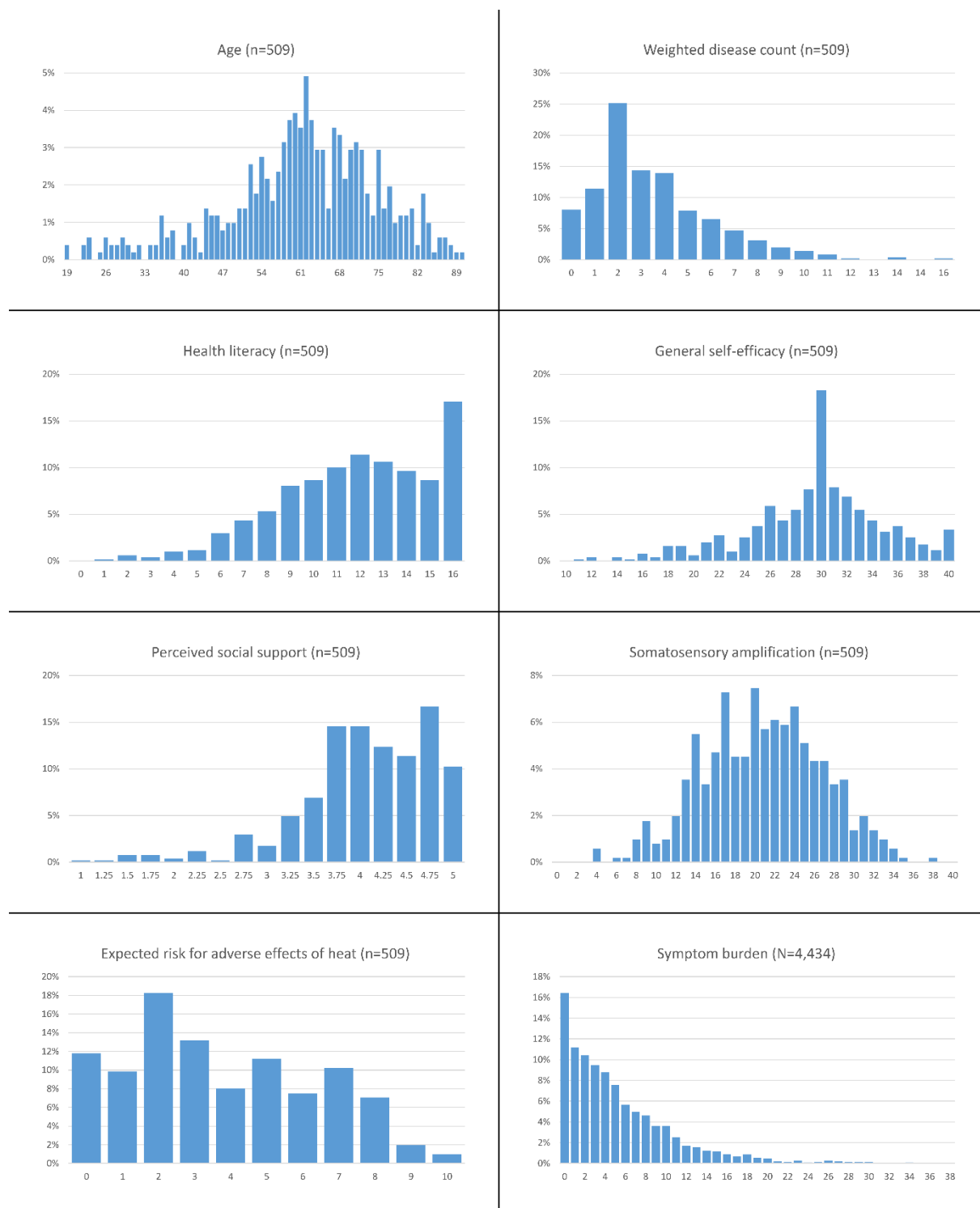


Table S1: Pairwise correlations between independent variables (n=509)

	Age	Sex: women	Living arrangement: living alone	Education: secondary	Education: primary or below	Participant born in Germany, at least one parent abroad	Participant born abroad	Weighted disease count	Health literacy	General self-efficacy	Perceived social support	Somatosensory amplification	Expected risk for adverse effects of heat
Age	1.00												
Sex: women	-0.16 P<0.001	1.00											
Living arrangement: living alone	0.04 P=0.044	0.11 P<0.001	1.00										
Education: secondary	-0.22 P<0.001	0.14 P<0.001	0.10 P<0.001	1.00									
Education: primary or below	0.12 P<0.001	-0.14 P<0.001	0.00 P=0.803	-0.69 P<0.001	1.00								
Participant born in Germany, at least one parent abroad	-0.05 P=0.004	-0.01 P=0.519	-0.02 P=0.280	0.09 P<0.001	-0.08 P<0.001	1.00							
Participant born abroad	-0.01 P=0.437	-0.06 P=0.001	-0.06 P=0.002	-0.06 P=0.001	0.05 P=0.004	-0.04 P=0.014	1.00						
Weighted disease count	0.16 P<0.001	-0.12 P<0.001	0.16 P<0.001	0.01 P=0.533	-0.08 P<0.001	0.02 P=0.229	0.04 P=0.031	1.00					
Health literacy	0.07 P<0.001	-0.05 P=0.007	-0.01 P=0.746	-0.01 P=0.430	0.14 P<0.001	0.04 P=0.034	0.08 P<0.001	-0.15 P<0.001	1.00				
General self-efficacy	0.23 P<0.001	-0.15 P<0.001	-0.13 P<0.001	-0.07 P<0.001	0.03 P=0.125	0.00 P=0.817	0.06 P=0.001	-0.13 P<0.001	0.40 P<0.001	1.00			
Perceived social support	0.01 P=0.665	0.06 P=0.002	-0.31 P<0.001	-0.05 P=0.004	0.02 P=0.286	0.04 P=0.026	0.05 P=0.005	-0.16 P<0.001	0.36 P<0.001	0.37 P<0.001	1.00		
Somatosensory amplification	0.00 P=0.806	0.30 P<0.001	-0.01 P=0.668	0.03 P=0.159	-0.08 P<0.001	-0.03 P=0.163	0.05 P=0.012	0.17 P<0.001	-0.19 P<0.001	-0.24 P<0.001	-0.10 P<0.001	1.00	
Expected risk for adverse effects of heat	-0.09 P<0.001	0.11 P<0.001	0.00 P=0.797	0.05 P=0.008	-0.09 P<0.001	0.03 P=0.114	0.06 P=0.002	0.26 P<0.001	-0.15 P<0.001	-0.18 P<0.001	-0.11 P<0.001	0.38 P<0.001	1.00

Figure S3: Mean maximum daily heat exposure in °C between 1 July and 19 September 2024 by meteorological station

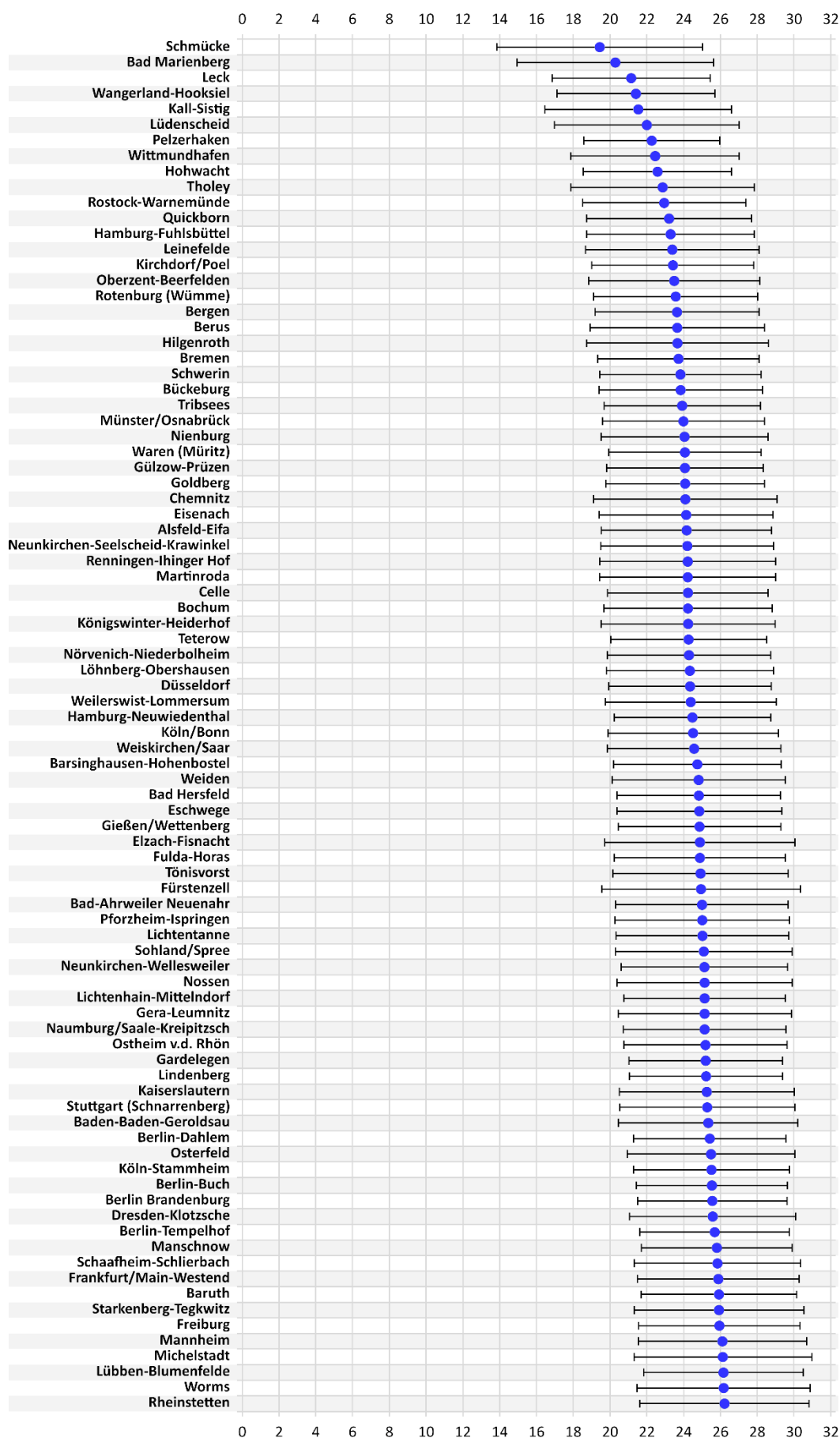


Figure S4: Number of observations by heat exposure

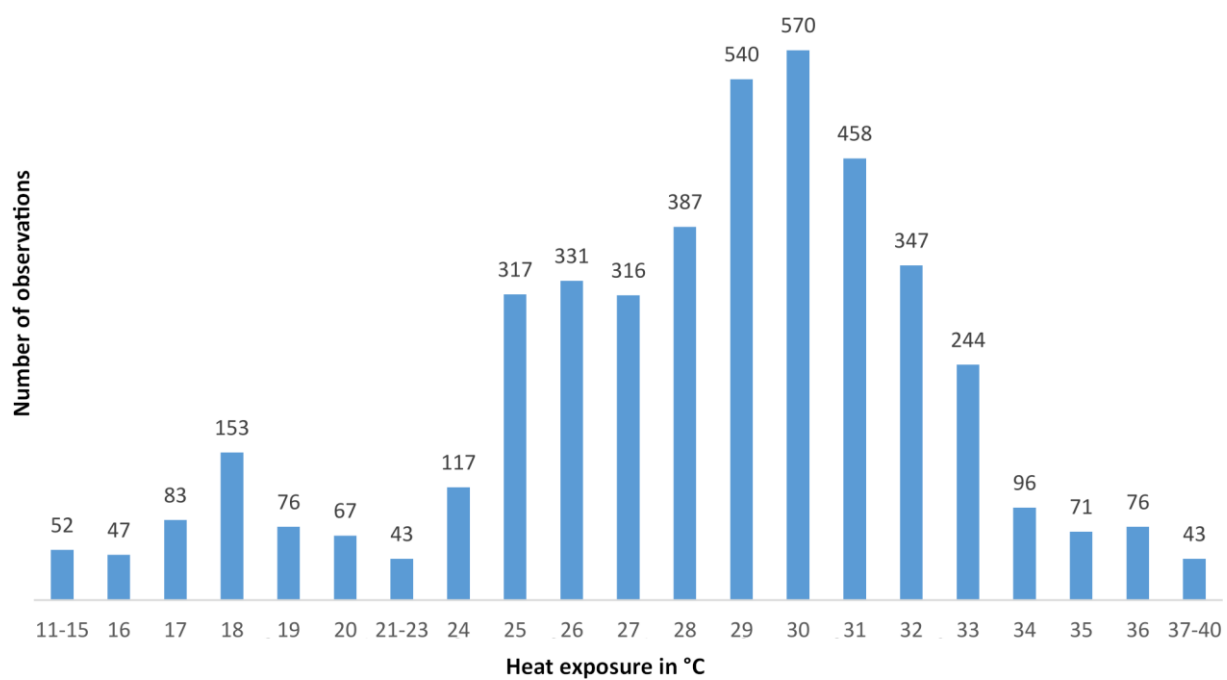


Table S2: Unadjusted association of symptom burden with heat and participant characteristics by distance between meteorological station and study participants' homes: results of linear regression analyses controlled for observation numbers and heat exposure and adjusted for random effects on the levels of meteorological stations and participants.

Characteristic	Distance ≤ 11 km between station and participant (n=271; N=2,310)		Distance > 11 km between station and participant (n=257; N=2,124)	
	Coefficient (95% CI)	P	Coefficient (95% CI)	P
Heat exposure				
- 27°C or less	reference		reference	
- more than 27°C through 32°C	0.95 (0.68/1.21)	<0.001	1.13 (0.83/1.43)	<0.001
- more than 32°C through 40°C	1.28 (0.93/1.63)	<0.001	1.73 (1.25/2.21)	<0.001
Age	-0.02 (-0.06/0.02)	0.267	-0.04 (-0.09/0.006)	0.091
Sex				
- men	reference		reference	
- women	1.22 (0.25/2.20)	0.014	1.57 (0.33/2.80)	0.013
Living arrangement				
- living together with others	reference		reference	
- living alone	1.41 (0.32/2.49)	0.011	0.27 (-1.38/1.91)	0.751
Educational level				
- tertiary	reference		reference	
- secondary	1.38 (0.26/2.51)	0.016	1.71 (0.29/3.12)	0.018
- primary or below	1.48 (0.04/2.92)	0.044	2.26 (0.38/4.13)	0.018
Country of birth				
- participant and parents born in Germany	reference		reference	
- participant born in Germany, at least one parent abroad	-0.09 (-2.12/1.94)	0.932	-1.45 (-4.53/1.63)	0.357
- participant born abroad	-1.42 (-3.51/0.68)	0.185	-1.28 (-5.75/3.19)	0.357
Weighted disease count	0.60 (0.41/0.79)	<0.001	0.56 (0.34/0.78)	<0.001
Health literacy	-0.39 (-0.54/-0.24)	<0.001	-0.59 (-0.77/-0.42)	<0.001
General self-efficacy	-0.38 (-0.46/-0.29)	<0.001	-0.39 (-0.50/-0.29)	<0.001
Perceived social support	-1.89 (-2.56/-1.22)	<0.001	-2.02 (-2.80/-1.24)	<0.001
Somatosensory amplification	0.29 (0.21/0.37)	<0.001	0.41 (0.32/0.50)	<0.001
Expected risk for adverse effects of heat	0.65 (0.47/0.82)	<0.001	0.96 (0.76/1.16)	<0.001

CI: confidence interval; n: number of participants; N: number of observations.

Table S3: Multivariable association of symptom burden with heat and participant characteristics by distance between meteorological station and study participants' homes: results of linear regression analyses controlled for observation numbers and adjusted for random effects on the levels of meteorological stations and participants.

Characteristic	Distance $\leq$ 11 km between station and participant (n=271; N=2,310)		Distance > 11 km between station and participant (n=257; N=2,124)	
	Coefficient (95% CI)	P	Coefficient (95% CI)	P
Heat exposure				
- 27°C or less	reference		reference	
- more than 27°C through 32°C	0.96 (0.70/1.23)	<0.001	1.12 (0.82/1.41)	<0.001
- more than 32°C through 40°C	1.31 (0.96/1.65)	<0.001	1.72 (1.25/2.20)	<0.001
Age	-0.002 (-0.03/0.03)	0.901	-0.01 (-0.05/0.03)	0.535
Sex				
- men	reference		reference	
- women	0.23 (-0.62/1.08)	0.598	0.27 (-0.72/1.25)	0.598
Living arrangement				
- living together with others	reference		reference	
- living alone	0.14 (-0.81/1.08)	0.773	-0.47 (-1.75/0.81)	0.470
Educational level				
- tertiary	reference		reference	
- secondary	0.31 (-0.61/1.23)	0.510	1.12 (0.05/2.19)	0.040
- primary or below	0.63 (-0.57/1.83)	0.302	0.60 (-0.81/2.00)	0.408
Country of birth				
- participant and parents born in Germany	reference		reference	
- participant born in Germany, at least one parent abroad	-0.44 (-2.00/1.13)	0.583	-0.41 (-2.69/1.88)	0.726
- participant born abroad	-1.71 (-3.35/-0.06)	0.042	-2.53 (-5.79/0.72)	0.127
Weighted disease count	0.33 (0.16/0.51)	<0.001	0.30 (0.12/0.48)	0.001
Health literacy	-0.09 (-0.22/0.05)	0.215	-0.21 (-0.37/-0.05)	0.012
General self-efficacy	-0.22 (-0.31/-0.12)	<0.001	-0.19 (-0.29/-0.09)	<0.001
Perceived social support	-0.41 (-1.07/0.25)	0.224	-0.75 (-1.43/-0.07)	0.031
Somatosensory amplification	0.16 (0.09/0.23)	<0.001	0.20 (0.11/0.28)	<0.001
Expected risk for adverse effects of heat	0.30 (0.13/0.46)	<0.001	0.56 (0.37/0.75)	<0.001

CI: confidence interval; n: number of participants; N: number of observations.

Table S4: Association of log-transformed symptom burden with heat and participant characteristics: results of linear regression analyses controlled for observation numbers and adjusted for random effects on the levels of meteorological stations and participants (n=509, N=4,434).

Characteristic	Unadjusted models*		Multivariable model	
	Coefficient (95% CI)	P	Coefficient (95% CI)	P
Heat exposure				
- 27°C or less	reference		reference	
- more than 27°C through 32°C	0.19 (0.15/0.23)	<0.001	0.19 (0.15/0.23)	<0.001
- more than 32°C through 40°C	0.26 (0.21/0.32)	<0.001	0.27 (0.21/0.32)	<0.001
Age	-0.006 (-0.01/-0.0007)	0.026	-0.001 (-0.005/0.003)	0.587
Sex				
- men	reference		reference	
- women	0.26 (0.13/0.40)	<0.001	0.10 (-0.01/0.21)	0.081
Living arrangement				
- living together with others	reference		reference	
- living alone	0.16 (-0.002/0.316)	0.053	-0.01 (-0.14/0.12)	0.879
Educational level				
- tertiary	reference		reference	
- secondary	0.26 (0.11/0.41)	0.001	0.08 (-0.04/0.20)	0.169
- primary or below	0.26 (0.06/0.46)	0.011	0.06 (-0.10/0.21)	0.460
Country of birth				
- participant and parents born in Germany	reference		reference	
- participant born in Germany, at least one parent abroad	-0.12 (-0.42/0.18)	0.432	-0.07 (-0.30/0.15)	0.507
- participant born abroad	-0.24 (-0.59/0.10)	0.165	-0.30 (-0.56/-0.04)	0.023
Weighted disease count	0.09 (0.06/0.11)	<0.001	0.04 (0.02/0.06)	<0.001
Health literacy	-0.08 (-0.10/-0.06)	<0.001	-0.03 (-0.04/-0.008)	0.004
General self-efficacy	-0.06 (-0.07/-0.05)	<0.001	-0.02 (-0.04/-0.01)	<0.001
Perceived social support	-0.32 (-0.41/-0.23)	<0.001	-0.12 (-0.20/-0.04)	0.004
Somatosensory amplification	0.06 (0.05/0.07)	<0.001	0.04 (0.03/0.04)	<0.001
Expected risk for adverse effects of heat	0.14 (0.12/0.16)	<0.001	0.08 (0.06/0.10)	<0.001

* controlled for heat exposure;

CI: confidence interval; n: number of participants; N: number of observations.