**Supplemental Digital Content for Stephan et al.
Personality and Headaches: Findings from Six Prospective Studies**

**Attrition analysis**

In the MIDUS, attrition analysis revealed that participants with headaches data at follow-up were more educated, *t*(6021)= 12.88, *p* < .001, more likely to be white *χ*²(1, 6023)= 69.82, *p* < .001, more likely to be women *χ*²(1, 6023)= 9.38, *p* < .01, and presented lower neuroticism, *t*(6021)= 2.35, *p* < .05, and higher conscientiousness *t*(6021)= 7.16, *p* < .001. No differences were found for age *t*(6021)= 1.42, *p* =.16, extraversion *t*(6021)= 0.06, *p* =.95, openness, *t*(6021)= 0.81, *p* =.42, agreeableness, *t*(6021)= 1.83, *p* =.07, and baseline headaches, *χ*²(1, 6023)= 1.47, *p* = .22.

In the MIDJA, participants with complete data at follow-up were more likely to be women, *χ*²(1, 1004)= 4.44, p<.05, and were more conscientious, *t*(1002)= 2.58, *p* < .01, and agreeable, *t*(1002)= 2.29, *p* <.05 than those without headaches data at follow-up. No differences were found for age, *t*(1002)= 1.70, *p* =.09, education, *t*(1002)= 0.89, *p* =.06, neuroticism, *t*(1002)= 1.53, *p* =.13, extraversion, *t*(1002)= 0.21, *p* =.84, openness, *t*(1002)= 0.60, *p* =.55, *p* =.44, and baseline headaches *χ*²(1, 1004)= 1.94, *p*= .16.

In the HRS, analysis revealed that participants with headaches data at follow-up were younger, *t*(12104)= 41.06, *p* < .001, more educated, *t*(12104)= 12.39, *p* < .001, more likely to be women *χ*²(1, 12106)= 42.96, *p* < .001, less likely to be white *χ*²(1, 12106)= 4.46, *p* < .05 than those without data on headaches at follow-up. In addition, they presented higher extraversion, *t*(12104)= 8.76, *p* < .001, higher conscientiousness, *t*(12104)= 12.84, *p* < .001, higher openness, *t*(12104)= 11.16, *p* < .001, and higher agreeableness, *t*(12104)= 5.46, *p* < .001. No differences were found for neuroticism, *t*(3340)= 1.78, *p* =.07, agreeableness, *t*(3340)= 0.77, *p* =.44, and baseline headaches *χ*²(1, 12106)= 0.27, *p*= .60.

In the WLSG, attrition analysis revealed that participants with headaches data at follow-up were younger, *t*(6671)= 5.36, *p* < .001, more educated, *t*(6671)= 6.53, *p* < .001, were more likely to be women *χ*²(1, 6673)= 9.23, *p* < .01, and to suffer from headaches at baseline, *χ*²(1, 6673)= 7.63, *p* < .01 than those without such data at follow-up. In addition, they presented lower neuroticism, *t*(6671)= 4.57, *p* < .001, higher extraversion, *t*(6671)= 2.03, *p* < .05, openness, *t*(6671)= 2.43, *p* < .05, agreeableness *t*(6671)= 2.66, *p* < .01, and conscientiousness, *t*(6671)= 3.01, *p* < .01.

In the WLSS, participants with headaches data at follow-up were younger, *t*(3385)= 7.45, *p* < .001, more educated, *t*(3385)= 6.45, *p* < .001, were more likely to suffer from headaches at baseline, *χ*²(1, 3387)= 5.08, *p* < .05 than those without complete data. In addition, they presented higher openness, *t*(3385)= 2.02, *p* < .05, and agreeableness *t*(3385)= 2.91, *p* < .01. No differences were found for sex, *χ*²(1, 3387)= 2.56, *p* =.11, neuroticism t(3385)= -1.92, *p* =.06, extraversion t(3385)= 0.53, *p* =.60, and conscientiousness, *t*(3385)= -.02, *p* =.98.

In the LISS, analysis revealed that participants with headaches data at follow-up were older, *t*(5794)= 7.89*, p* < .001, more likely to be men, *χ*²(1, 5796)= 11.53, *p*<.01, less neurotic, *t*(5794)= 2.25*, p* < .05, less extraverted *t*(5794)= 2.66*, p* < .01, more conscientious, *t*(5794)= 5.77*, p* < .001, than those without data at follow-up. No differences were found for agreeableness, *t*(5794)= 1.64*, p* =.10, openness, *t*(5794)= 0.34, p=.73, education, *t*(5794)= 1.27*, p* =.20 and baseline headaches *χ*²(1, 5796)= 0.30, *p*= .58.

**Relationship between personality and headaches, controlling for physical inactivity, smoking , alcohol consumption, and BMI**

### In the MIDUS, physical inactivity was assessed by asking participants to indicate the frequency of their vigorous and moderate leisure physical activity during both the summer months and the winter months on a scale from 1 (never) to 6 (several times a week or more). The mean of the two items wa computed. In the MIDJA, participants reported how frequently they followed exercise therapies such as yoga or thaï chi in the past 12 months on a scale from 1 (*never*) to 5 (*a lot*). In the HRS, the mean of two items asking how often individuals participated in vigorous and moderate physical activity on a scale from 1 (more than once a week) to 4 (hardly ever or never) was computed. In the WLSG and WLSS, participants were asked to indicate how often they participate in light and vigorous physical activity using two items on a scale from 1(three or more times per week) to 4 (less than once per month). The two items were averaged. In the LISS, participants indicated on how many days in the last 7 days they performed strenuous physical activity, and on how many days in the last 7 days they performed perform moderately intensive physical activity. The two items were averaged. In the MIDUS, MIDJA, WLSG, WLSS, and LISS, smoking was coded as 1 (current smoker) and 0 (never/former smoker), whereas it was coded as 1 (current/former smoker) and 0 (never smoker) in the HRS. In the MIDUS and MIDJA, alcohol consumption was assessed using a single item asking participants to indicate how many times in the past 12 months they used larger amount of alcohol than they intended to when they begin or used them for longer period of time than they intended to , on a scale from 1 (never) to 6 (more than 20 times). In the HRS, a single item asked participants to indicate In the last three months, on average, how many days per week they ahd any alcohol to drink? (For example, beer, wine, or any drink containing liquor.) from 0 to 7. In the WLSG and WLSS, participants reported the number of alcoholic drinks they had in the last month. In the LISS, they indicated how often they had a drink containing alcohol over the last 12 months, from 1 (almost everyday) to 12 (not at all over the last 12 months). Finally, self-reported height and weight were used to compute BMI as kg/m2, in the MIDUS, HRS, WLSG and the WLSS. BMI was not available in the MIDJA and the LISS.

Table S1

*Summary of Logistic Regression Analysis Predicting Baseline Headaches from Baseline Personality Traits, Controlling for Smoking, Physical*

*Inactivity, Alcohol Consumption, and BMI*

 MIDUS a MIDJA c HRSa WLSG b WLSS b LISS c

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Neuroticism | 1.37\*\*\*(1.27-1.48) | 1.42\*\*(1.14-1.77) | 1.51\*\*\*(1.40-1.63) | 1.21\*\*\*(1.12-1.30) | 1.28\*\*\*(1.15-1.43) | 1.55\*\*\*(1.45-1.65) |
| Extraversion | 0.83\*\*\*(0.77-0.89) | 1.00(0.75-1.33) | 0.85\*\*\*(0.79-0.92) | 0.94(0.88-1.01) | 0.87\*(0.77-0.97) | 0.88\*\*\*(0.83-0.94) |
| Openness | 0.86\*\*\*(0.80-0.93) | 1.16(0.92-1.47) | 0.94(0.87-1.02) | 0.97(0.90-1.04) | 1.02(0.88-1.17) | 0.97(0.91-1.04) |
| Agreeableness | 0.94(0.87-1.01) | 0.99(0.78-1.24) | 0.95(0.88-1.04) | 0.93(0.87-1.00) | 0.98(0.85-1.12) | 0.99(0.92-1.07) |
| Conscientiousness | 0.88\*\*\*(0.81-0.94) | 0.96(0.76-1.21) | 0.85\*\*\*(0.78-0.92) | 0.93(0.87-1.00) | 0.84\*(0.73-0.97) | 0.94(0.88-1.01) |

Note. MIDUS: N= 4344; MIDJA: N= 398; HRS: N= 10,012; WLSG: N= 3,531; WLSS: N= 1,844; LISS: N= 5,790;

a Adjusted for age, sex, education, race, physical inactivity, smoking, alcohol, and BMI

b Adjusted for age, sex, education, physical inactivity, smoking, alcohol, and BMI

c Adjusted for age, sex, education, physical inactivity, smoking, and alcohol

\* *p* < .05, \*\* *p* < .01, \*\*\* *p* <.001

Table S2

*Summary of Logistic Regression Analysis Predicting Incident Headaches from Baseline Personality Traits, Controlling for Smoking, Physical*

*Inactivity, Alcohol Consumption, and BMI*

 MIDUS a MIDJA c HRSa WLSG b WLSS b LISS c

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Neuroticism | 1.21(0.98-1.50) | 1.04(0.73-1.49) | 1.42\*\*\*(1.26-1.61) | 1.13(0.97-1.32) | 1.08(0.75-1.56) | 1.66\*\*\*(1.37-2.01) |
| Extraversion | 0.86(0.69-1.07) | 0.92(0.63-1.34) | 0.91(0.80-1.03) | 0.87(0.74-1.01) | 1.04(0.73-1.47) | 0.94(0.76-1.15) |  |
| Openness | 0.94(0.76-1.18) | 1.16(0.80-1.69) | 0.93(0.82-1.06) | 1.15(0.97-1.36) | 1.01(0.69-1.47) | 1.18(0.95-1.46) |  |
| Agreeableness | 1.11(0.88-1.40) | 1.03(0.70-1.51) | 1.00(0.93-1.07) | 0.91(0.78-1.07) | 0.91(0.63-1.32) | 1.09(0.87-1.37) |  |
| Conscientiousness | 0.99(0.80-1.23) | 1.35(0.92-2.00) | 0.85\*\*(0.75-0.96) | 0.95(0.81-1.10) | 0.88(0.61-1.25) | 0.97(0.79-1.19) |  |

Note. MIDUS: N= 531; MIDJA: N= 213; HRS: N= 6,165; WLSG: N=1226; WLSS: N= 375; LISS: N= 1694;

a Adjusted for age, sex, education, race, physical inactivity, smoking, alcohol, and BMI

b Adjusted for age, sex, education, physical inactivity, smoking, alcohol, and BMI

c Adjusted for age, sex, education, physical inactivity, smoking, and alcohol

\* *p* < .05, \*\* *p* < .01, \*\*\* *p* <.001

Table S3

*Summary of Logistic Regression Analysis Predicting Baseline Headaches from the Five Personality Traits*

 MIDUS a MIDJA b HRSa WLSG b WLSS b LISS b

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Neuroticism | 1.35\*\*\*(1.26-1.47) | 1.44\*\*\*(1.24-1.67) | 1.51\*\*\*(1.40-1.62) | 1.20\*\*\*(1.13-1.26) | 1.38\*\*\*(1.27-1.49) | 1.57\*\*\*(1.46-1.68) |
| Extraversion | 0.85\*\*\*(0.81-0.94) | 0.87(0.71-1.07) | 0.85\*\*\*(0.78-0.94) | 0.93\*\*(0.88-0.98) | 0.87\*\*\*(0.80-0.94) | 0.97(0.90-1.04) |
| Openness | 0.94(0.88-1.02) | 1.12(0.92-1.37) | 1.12\*(1.02-1.23) | 1.08\*(1.02-1.14) | 1.10\*(1.01-1.20) | 1.02(0.95-1.10) |
| Agreeableness | 1.10\*(1.02-1.18) | 1.06(0.85-1.31) | 1.12\*(1.02-1.23) | 0.97(0.91-1.02) | 1.25\*\*\*(1.15-1.35) | 1.03(0.95-1.11) |
| Conscientiousness | 0.97(0.91-1.04) | 0.92(0.78-1.09) | 0.88\*\*(0.81-0.96) | 0.98(0.93-1.03) | 0.93(0.86-1.00) | 1.03(0.96-1.10) |

Note. MIDUS: N= 6023; MIDJA: N= 1004; HRS: N= 12,106; WLSG: N= 6,673; WLSS: N= 3,387; LISS: N= 5,796;

a Adjusted for age, sex, education, and race

b Adjusted for age, sex, and education

\* *p* < .05, \*\* *p* < .01, \*\*\* *p* <.001

Table S4

*Summary of Logistic Regression Analysis Predicting Incident Headaches from the Five Personality Traits*

 MIDUS a MIDJA b HRSa WLSG b WLSS b LISS b

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Neuroticism | 1.24\*(1.03-1.49) | 1.04(0.78-1.39) | 1.41\*\*\*(1.26-1.58) | 1.17\*\*(1.04-1.32) | 1.16(0.88-1.52) | 1.65\*\*\*(1.37-1.98) |
| Extraversion | 0.87(0.70-1.09) | 0.79(0.52-1.19) | 0.95(0.82-1.09) | 0.91(0.81-1.02) | 0.96(0.74-1.24) | 0.88(0.73-1.06) |  |
| Openness | 0.98(0.79-1.22) | 1.07(0.70-1.35) | 0.99(0.86-1.13) | 1.19\*\*(1.05-1.35) | 1.09(0.83-1.43) | 1.11(0.90-1.36) |  |
| Agreeableness | 1.10(0.88-1.36) | 0.84(0.54-1.31) | 1.14(0.98-1.33) | 0.96(0.86-1.09) | 1.11(0.84-1.47) | 1.07(0.87-1.30) |  |
| Conscientiousness | 1.10(0.91-1.34) | 1.57\*(1.10-2.25) | 0.90(0.79-1.03) | 0.99(0.88-1.11) | 0.89(0.67-1.16) | 0.93(0.77-1.12) |  |

Note. MIDUS: N= 735; MIDJA: N= 337; HRS: N= 7,195; WLSG: N= 2241; WLSS: N= 685; LISS: N= 1693;

a Adjusted for age, sex, education, and race

b Adjusted for age, sex, and education

\* *p* < .05, \*\* *p* < .01, \*\*\* *p* <.001