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## **Predicting Physical Activity by the Personality Styles of the Five-Factor Model**

Alexander Weiss<sup>1\*</sup>, Paul T. Costa, Jr.<sup>2\*</sup>, Katherine A. Collins<sup>3</sup>, Leanna M. Ross<sup>3</sup>, Kim M. Huffman<sup>3</sup>, Ruth Q. Wolever<sup>4</sup>, Patrick J. Smith<sup>5</sup>, Elizabeth R. Hauser<sup>3</sup>, Rong Jiang<sup>5</sup>, John M. Jakicic<sup>6</sup>, William E. Kraus<sup>3</sup>, Ilene C. Siegler<sup>5</sup>

<sup>1</sup> Department of Psychology; School of Philosophy, Psychology and Language Sciences; The University of Edinburgh

<sup>2</sup> Department of Medicine; Division of Geriatrics; Duke University School of Medicine

<sup>3</sup> Duke University Medical Center; Duke Molecular Physiology Institute

<sup>4</sup> Department of Physical Medicine and Rehabilitation; Vanderbilt University Medical Center

<sup>5</sup> Department of Psychiatry and Behavioral Sciences; Duke University School of Medicine

<sup>6</sup> Department of Internal Medicine, Division of Physical Activity and Weight Management, University of Kansas Medical Center

\* Joint first authors

### **Author Note**

Alexander Weiss is now at the Lester E. Fisher Center for the Study and Conservation of Apes, Lincoln Park Zoo, Chicago, IL.

Paul T. Costa, Jr. earns royalties for the Revised NEO Personality Inventory. Ruth Q. Wolever, PhD consults for eMindful, a Wondr Health company, and for Fullfill, Inc. John M. Jakicic served on the Scientific Advisory Board for Wondr Health, Inc.

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Correspondence concerning this article should be addressed to Paul T. Costa, Jr., Division of Geriatrics, Duke University School of Medicine, Durham, North Carolina 27710, United States. Email: [paul.costa@duke.edu](mailto:paul.costa@duke.edu).

### Abstract

**Objective:** Low Neuroticism, high Extraversion, and high Conscientiousness are related to physical activity (PA). We tested whether the small size and heterogeneity of these relationships result because personality traits influence one another as well as because narrow facets rather than broad domains contain more specific variance relevant to PA.

**Methods:** Participants were men and women enrolled in the University of North Carolina Alumni Heart Study who completed the Revised NEO Personality Inventory (NEO-PI-R) and reported their past month's average activity on an 8-point scale. In Study 1 we examined prospective correlations between the five NEO-PI-R domains and PA. In Study 2 and Study 3 we used multinomial logistic regression to examine associations between PA and trait pair combinations (personality styles) controlling for age, sex, educational achievement, relationship status, and depression.

**Results:** Study 1 revealed that lower Neuroticism (N) and Agreeableness (A) and higher Conscientiousness (C) predicted more PA. Study 2 and Study 3 found that the combination of high Extraversion (E) and high Openness (O) was related to higher PA, that combinations of low E and either high A or low C were related to lower PA and that the activity facet (E4) of E was largely responsible for the E - PA associations.

**Conclusions:** Personality traits do not operate in isolation. They may influence how other traits are expressed and such nonadditive effects can impact PA. Assessment of personality styles could help to identify individuals at risk for physical activity avoidance and may be useful for developing personalized interventions.

**Keywords:** Five-Factor Model of Personality Traits, Higher-Order Domains, Lower-Order Facets, Personality Styles, Physical Activity

**Public Significance Statement**

Pair combinations of personality traits are related to adults' general (or typical) activity levels. Participants high in Extraversion and in Openness to Experience were more physically active. Participants low in Extraversion and high in Agreeableness were less physically active as were those low in Extraversion and in Conscientiousness. These findings suggest that knowing which combinations of personality traits are related to physical activity can be useful when devising public health or clinical approaches to increase physical activity or reduce sedentariness.

### **Predicting Physical Activity by the Personality Styles of the Five-Factor Model**

1           Physical activity (PA)—movement produced by skeletal muscles, which requires the  
2 expenditure of energy—and exercise—planned, structured, repetitive, and intentional movement  
3 intended to improve or maintain physical functioning—like personality are multifaceted, and  
4 produce health benefits, including reducing the risk of most common, chronic health conditions  
5 (U.S. Department of Health and Human Services, 2018; World Health Organization, 2020).  
6 Public health messages convey the importance of regular moderate to vigorous PA. However,  
7 most adults in the United States (U.S. Department of Health and Human Services, 2018) and  
8 elsewhere (e.g., World Health Organization. Regional Office for Europe, 2018) do not achieve  
9 recommended levels of PA.

10           The identification of factors that promote recommended levels of PA and exercise are a  
11 priority for public health. Attention has focused on extrinsic (environmental) factors that are  
12 barriers to engaging in moderate-to-vigorous intensity exercise (Dishman et al., 1985; Trost et al.,  
13 2002). Intrinsic factors, including individual differences, and personality traits in particular, may  
14 also promote or impede PA and exercise.

15           The Five-Factor Model (FFM; Digman, 1990) is a prominent model of personality that  
16 has increasingly been used to study health behaviors, including PA and exercise (Deary et al.,  
17 2010). The FFM is a hierarchical multidimensional model that summarizes stable emotional,  
18 interpersonal, experiential, attitudinal, and motivational traits (McCrae & Costa, 1999). The  
19 Revised NEO Personality Inventory (NEO-PI-R; McCrae & Costa, 2010) operationalizes the  
20 FFM as five broad domains—Neuroticism, Extraversion, Openness to Experience,  
21 Agreeableness, and Conscientiousness—composed of six narrower level facets (Costa & McCrae,  
22 1995; McCrae & Costa, 2010). Neuroticism (N) includes tendencies to experience negative

23 affective states, such as fear, anger, shame, guilt, and disgust, as well as a proneness to have  
24 irrational ideas, lower ability to control impulses, and a tendency to cope more poorly with stress.  
25 Extraversion (E) reflects interpersonal and temperamental traits, such as warmth, gregariousness,  
26 assertiveness, excitement seeking, activity, and positive emotions. Openness to Experience (O)  
27 reflects an active imagination, aesthetic sensitivity, attending to one's feelings, a preference for  
28 variety, intellectual curiosity, and independence or judgement. Like E, Agreeableness (A) is  
29 primarily dimension of interpersonal tendencies. Agreeable people are altruistic, sympathetic to  
30 others and eager to help and they believe that others are likely to help in return. By contrast, low  
31 scorers on A (disagreeable or antagonistic people) are egocentric, skeptical of the intentions of  
32 others, and competitive rather than cooperative. Conscientiousness (C) involves self-regulatory  
33 processes and conscientious individuals are purposeful, strong-willed, and determined as well as  
34 scrupulous, punctual, and reliable. People low in C do not necessarily lack these moral principles.  
35 They are less scrupulous in applying them and more lackadaisical in working toward their goals.

36 Previous studies found associations between these five broad FFM domains and PA. A  
37 meta-analysis of 33 studies by Rhodes and Smith (2006) found associations between E ( $r = .23$ ),  
38 C ( $r = .20$ ), and N ( $r = -.11$ ) and PA; associations between PA and both O ( $r = .08$ ) and A ( $r$   
39  $< .01$ ) were negligible. Similarly, a meta-analysis by Wilson and Dishman (2015) of 64 studies  
40 identified significant effects for E ( $r = .11$ ), C ( $r = .10$ ), and N ( $r = -.07$ ), but not O ( $r = .03$ ) or A  
41 ( $r < .01$ ). Two meta-analyses by Sutin et al. (2016) of 16 population samples found significant  
42 associations between the FFM domains and physical inactivity and activity: The effect sizes  
43 (odds ratios) for associations of the FFM domains and inactivity were 1.177 (N), 0.793 (E),  
44 0.812 (O), 0.899 (A), and 0.818 (C); the effect sizes ( $\beta$ s) for associations with activity were  $-.07$   
45 (N),  $.11$  (E),  $.09$  (O),  $.04$  (A), and  $.10$  (C).

46           The effect sizes found in these meta-analyses of personality and PA are small and  
47 displayed considerable cross-study variation. Wilson and Dishman (2015) noted that the small  
48 size of the effects and their variability across studies of PA and exercise may have come about  
49 because the influence of one personality trait on PA might be influenced by another trait within  
50 the individual (p. 240). Indeed, the field's predominant emphasis has been examining  
51 associations between single traits and PA. Research on associations of personality and PA has  
52 not explored combinations of traits, which would reveal whether one trait can augment or  
53 dampen the effect of another trait. If traits can affect one another in this way, this would lead to  
54 differences in how traits are related to PA. Addressing this question could deepen our  
55 understanding of how personality influences PA.

56           Studying pairs of personality factors has been used to help understand how personality  
57 influences health outcomes. In a study of 104 HIV+ men, Ironson et al. (2008) found greater  
58 reductions in viral load and/or increases in CD4 cell counts across four years as a function of  
59 trait combinations: Participants high in E and O (E+O+), low in N and high in E (N-E+), or low  
60 in N and high in O (N-O+) or low in N and high in C (N-C+), and high in E and in A (E+A+),  
61 experienced less rapid disease progression. Ironson et al.'s results showed that being only  
62 socially engaged (E+), intellectually engaged (O+), emotionally stable (N-), or conscientiousness  
63 (C+), are necessary but not sufficient to slow disease progression. Rather, the traits in the pair  
64 combinations E+ and O+, N- and E+, N- and O+, N- and C+, and E+ and A+ worked together  
65 synergistically to improve disease progression. By contrast, participants low in E and O (E-O-)  
66 experienced more rapid disease progression. Thus, being only socially engaged (E-) or  
67 intellectually disengaged (O-) are necessary but not sufficient to worsen disease progression.  
68 Both E- and O- are needed as they operate synergistically to produce negative outcomes.





92           Requests for data may be made to Ilene C. Siegler. We conducted statistical analyses  
93 using R version 4.3.1 (R Core Team, 2022), and the mice (3.16.0; van Buuren & Groothuis-  
94 Oudshoorn, 2011), nnet (7.3-19; Venables & Ripley, 2002), and psych (2.3.6; Revelle, 2023)  
95 packages. To import data, we used the foreign (0.8-85; R Core Team, 2023) package, and to  
96 create tables, we used the kableExtra (1.3.4; Zhu, 2021) and umx packages (4.16.0; Bates et al.,  
97 2019). The code used to conduct our analyses is available at the Open Sciences Framework  
98 (Weiss, 2023). The studies and analyses were not pre-registered. We reported all exclusions.

## 99 **Ethics**

100           Ethical approval for UNCAHS was granted by the University of North Carolina  
101 Institutional Review Board and the Duke University Institutional Review Board. Participants  
102 signed written informed consent forms.

## 103 **Study 1**

104           Previous studies (Rhodes & Smith, 2006; Sutin et al., 2016; Wilson & Dishman, 2015)  
105 found that higher levels of activity and exercise were associated with higher E, higher C, and  
106 lower N, but not with O or A. We attempted to replicate these findings by examining Pearson  
107 correlations between PA and the FFM domains.

## 108 **Method**

### 109 *Participants*

110           A total of 2936 UNCAHS participants had Wave 2 (1989) and 4 (1991) personality data  
111 and Wave 5 (1992-1993) PA data. We excluded 29 participants who reported diagnosis of  
112 Alzheimer's disease leaving a sample of 2907 participants. These participants ranged in age from  
113 42 to 73 years ( $M = 44.56$ ,  $SD = 2.33$ ). The 2284 males ranged in age from 42 to 73 years ( $M =$

114 44.54,  $SD = 2.12$ ) and the 623 females ranged in age from 42 to 69 years ( $M = 44.66$ ,  $SD = 2.97$ ).  
115 Nearly all the participants ( $N = 2897$ ) reported their race as White.

### 116 *Procedures*

117 **Physical Activity Assessment.** From 1992 to 1993 (Wave 5), we used the University of  
118 Houston Non-Exercise Test for Predicting  $VO_2$ max (Ross & Jackson, 1990), a self-report  
119 questionnaire, to measure PA. This measure asks participants to report their average activity  
120 level for the past month. This measure was developed by NASA's Johnson Space Center and has  
121 been used in prediction models of cardiovascular fitness ( $VO_2$ max) (Jackson et al., 1990; Ross &  
122 Jackson, 1990).

123 The PA measure (Ross & Jackson, 1990, p. 103) asked participants to pick one of eight  
124 statements which best described their general activity level for the previous month: 0 (avoid  
125 walking or exertion), 1 (walk for pleasure), 2 (regular participation for 10 to 60 minutes per week  
126 in modest physical activity at work or recreation), 3 (regular participation for over one hour per  
127 week in modest physical activity at work or recreation), 4 (run less than one mile per week or  
128 spend less than 30 minutes per week in comparable physical activity), 5 (run one to five miles  
129 per week or spend 30 to 60 minutes per week in comparable physical activity), 6 (run five to 10  
130 miles per week or spend one to three hours per week in comparable physical activity), 7 (run  
131 over 10 miles per week or spend over three hours per week in comparable physical activity).  
132 Following the PA measure's scoring instructions, we classified responses as indicating no  
133 regular physical activity (responses of 0 or 1), moderate intensity activities (responses of 2 or 3),  
134 or vigorous physical activity (4 to 7).

135 **Personality Assessment.** In 1989 (Wave 2), participants completed the self-report form  
136 of the 181-item NEO Personality Inventory (NEO-PI; Costa & McCrae, 1985), which measures

137 the Five-Factor Model domains of N, E, O, A, and C, and only the six facets of N, E, and O  
138 (Herbst et al., 2000). In 1991 (Wave 4), these participants were administered the 74-item NEO  
139 Supplement, which added the six facets of A and C (Costa et al., 1991).

140 The NEO-PI and NEO Supplement items are answered using a five-point scale: “SD”  
141 (Strongly Disagree), “D” (Disagree), “N” (Neutral), “A” (Agree), “SA” (Strongly Agree), which  
142 are scored 0, 1, 2, 3, and 4, respectively. Items from the NEO-PI and NEO Supplement were  
143 combined to create the 240-item Revised NEO Personality Inventory (Costa & McCrae, 1992).  
144 These items operationalize a hierarchical personality structure: At the top level are the five broad  
145 domains, below which are six lower-order facets (Costa & McCrae, 1995; McCrae & Costa,  
146 2010). See Supplemental Text S1 for a brief description of all 30 facets.

147 Following the *NEO Inventories Professional Manual* (McCrae & Costa, 2010), we  
148 created the 30 raw facet scores by summing the eight items that defined each facet. We then used  
149 adult combined-gender norms (Costa & McCrae, 1992, p. 75; McCrae & Costa, 2010, p. 117) to  
150 convert the raw facet scores into *T*-scores ( $M = 50$ ,  $SD = 10$ ). We used combined-gender norms  
151 because the participants were adults and we wanted to control for sex in our later models. We  
152 then used the 30 facet *T*-scores to calculate factor *T*-scores for N, E, O, A, and C (Costa &  
153 McCrae, 1992, p. 8; McCrae & Costa, 2010, p. 11).

154 The NEO-PI-R *Professional Manual* reports considerable evidence for the reliability, re-  
155 test stability, and validity of the NEO-PI-R’s factors and facets. Internal consistencies for the  
156 domains ranged from .86 to .92 (Costa & McCrae, 1992, p. 44). Similar values have been  
157 reported for men and women, for clinical samples, and for college students (Costa & McCrae,  
158 1992, p. 44). Published studies have shown that the FFM structure of the NEO-PI-R is preserved  
159 across genders, age groups, cultures, and methods of measurement (Costa & McCrae, 2008; De

160 Fruyt et al., 2009; McCrae et al., 2005; McCrae & Costa, 2010, p. 72). Extensive evidence for  
161 the convergent validity of the NEO-PI-R factors is provided in the *Professional Manual* (see  
162 Table 6 in Costa & McCrae, 1992, p. 47).

### 163 **Analysis**

164 We used the “corr.test” function from the psych package to compute Pearson correlations  
165 between PA and the N, E, O, A, and C factor *T*-scores. For this analysis, we used the entire  
166 eight-point PA scale.

### 167 **Results**

168 A total of 581 (20.0%) participants engaged in no PA, 944 (32.5%) engaged in moderate  
169 PA, and 1382 (47.5%) engaged in high PA. The mean factor *T*-scores are comparable to the  
170 normative sample reported in McCrae and Costa (2010) for N, E, and C, about one third of a  
171 standard deviation higher for O, and about one third of a standard deviation lower for A (see  
172 Table 1).

173 Four of the five correlations between personality domains and PA were significant after  
174 adjusting for the family-wise error rate (Holm, 1979). These correlations were small and  
175 approximately equal in size. Both N ( $r = -.058$ , 95% confidence interval [*CI*] =  $-.099, -.016$ ,  $p$   
176 =  $.004$ ) and A ( $r = -.071$ , 95% *CI* =  $-0.115, -0.026$ ,  $p < .001$ ) were significantly and inversely  
177 related to PA. Both E ( $r = .076$ , 95% *CI* =  $.028, .123$ ,  $p < .001$ ) and C ( $r = .074$ , 95% *CI*  
178 =  $.027, .120$ ,  $p < .001$ ) were significantly and positively related to PA. Furthermore, O was not  
179 significantly associated with PA,  $r = .025$ , 95% *CI* =  $-.012, .061$ ,  $p = .181$ .

### 180 **Discussion**

181 Consistent with the literature (Rhodes & Smith, 2006; Sutin et al., 2016; Wilson &  
182 Dishman, 2015) on single domains and physical activity and exercise, we found that participants

183 who were lower in N and higher in E and C engaged in more PA. We also found that participants  
184 who were lower in A engaged in higher levels of PA. This had not been identified in previous  
185 studies. This association may reflect the tendency for disagreeable individuals to be more  
186 competitive (McCrae & Costa, 2010, p. 20). There was no association between O and PA.

## 187 **Study 2**

188 We examined associations between personality styles (*pairs* of NEO-PI-R personality  
189 factor *T*-scores) and PA. If personality styles were merely additive combinations of main effects,  
190 one would predict 12 significant effects: Six (N-E+, N-A-, N-C+, E+A-, E+C+, A-C+) related to  
191 higher PA and six (N+E-, N+A+, N+C-, E-A+, E-C-, A+C-) related to lower PA. The alternative  
192 hypothesis is that personality styles reflect nonadditive effects, i.e., traits work together  
193 synergistically or antagonistically, supporting the view that association between personality traits  
194 and physical activity vary as a function of other personality traits within an individual (Wilson &  
195 Dishman, 2015).

## 196 **Method**

### 197 *Participants*

198 For this sample, we did not exclude participants with missing Wave 5 (1992-1993) PA  
199 data. The 3291 participants ranged in age from 42 to 73 years ( $M = 44.59$ ,  $SD = 2.33$ ). The 2600  
200 men ranged in age from 42 to 73 years ( $M = 44.55$ ,  $SD = 2.09$ ) and the 691 women ranged in age  
201 from 42 to 69 years ( $M = 44.72$ ,  $SD = 3.06$ ). Nearly all the participants ( $N = 3280$ ) reported their  
202 race as White.

### 203 *Variables*

204 **Study Variables (Personality Styles).** Pairs of traits can be represented in a circumplex  
205 manner defined by a two-dimensional plane (see Figure 1). For each participant, the location on

206 this plane of a pair of traits indicates whether the participant is characterized by one of four  
207 quadrants or ‘styles’ (McCrae & Costa, 2010). If the plotted coordinate point for a participant’s  
208 pair of traits is located inside Figure 1’s shaded region (i.e., both traits are within the average  
209 range), a participant possesses features of all four quadrants; they are not characterized by a style  
210 (i.e., unstyled). If the plotted coordinate point is located outside Figure 1’s shaded region, in one  
211 of the four quadrants, the features of a particular style for that quadrant predominate.

212 To identify whether participants are characterized by a style, we first converted the factor  
213 *T*-scores for N, E, O, A, and C that we computed for Study 1 into *z*-scores ( $M = 0, SD = 1$ ). Next,  
214 for each pair of traits, we computed the length of a vector in standard deviation units ( $z_r$ ) from  
215 the origin (0, 0) to the location of the two traits on a two-dimension plane by squaring each  
216 trait’s *z*-score, summing these values, and then taking the sum’s square root. Next, we classified  
217 participants as unstyled if the location of the pair of traits was up to half a standard deviation  
218 from the origin ( $z_r \leq .5$ ). We classified the remaining participants based on whether they were  
219 above (+) or below (-) the mean on the two traits, that is, whether they were high-low (+,-;  
220 Quadrant 1), high-high (+,+; Quadrant 2), low-high (-,+; Quadrant 3), or low-low (-,-; Quadrant  
221 4).

222 **Covariates (Sex, Age, Relationship Status Education, and Depression).** As covariates,  
223 we included sex, age in years, relationship status (partnered or married vs. neither partnered nor  
224 married), educational achievement (no college degree, college degree, college degree plus  
225 additional training, Master’s degree, Doctorate/law/medical degree), and depression. Sex and  
226 educational achievement were both recorded at Wave 1. The age and relationship status variables  
227 used were those closest in time to when personality was measured, that is, Wave 4 and Wave 3,  
228 respectively. Depression was measured at Wave 6 (1994-1996) using the Center for

229 Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). The CES-D instructs  
230 participants to answer how often they felt or behaved the way described by the item over the past  
231 week using a four-point scale: “Rarely or None of the Time (Less than 1 Day)”, “Some or a Little  
232 of the Time (1–2 days)”, “Occasionally or a Moderate Amount of Time (3–4 days)”, “Most or  
233 All of the Time (5–7 days)”. These responses are scored 0 to 3, respectively. There is  
234 considerable evidence for the internal consistency, reliability, and validity of the CES-D (Radloff,  
235 1977).

236 We did not include health-related variables, such as body mass index or obesity as  
237 covariates because personality traits and physical activity are often causally associated with  
238 health outcomes (Sutin et al., 2011; U.S. Department of Health and Human Services, 2018;  
239 World Health Organization, 2020). Thus, including these variables could lead to spurious  
240 correlations between personality and physical activity (Munafò et al., 2017).

#### 241 *Analyses*

242 To test whether personality styles or trait combinations were related to engaging in PA,  
243 we conducted multinomial logistic regressions on each of the 10 possible personality styles using  
244 the “multinom” function from the nnet package. For example, when the focal style was the  
245 combination of N and E (see Table S1), we represented the trait combination (the dependent  
246 variable) using a nominal variable. This variable indicated whether a participant was unstyled or  
247 was in a particular quadrant, e.g., N+E-, N+E+, N-E+, or N-E-. The predictor of interest was PA,  
248 which was represented by two dummy-coded variables with the low PA group serving as the  
249 reference category. The first of these two dummy-coded variables was equal to 1 if PA level was  
250 moderate and 0 if PA level was low or high. The second of these two dummy-coded variables  
251 was equal to 1 if PA level was high and 0 if PA level was low or moderate. In these models, we



252 adjusted for five covariates (sex, age, educational attainment, relationship status, and  
253 depression). Sex was a variable coded 0 if the participant was female and 1 if they were male.  
254 Age in years was a continuous variable. Educational achievement was represented by four  
255 dummy-coded variables indicating if the participant had no college degree (the reference  
256 category), a college degree, college degree plus additional training, Master's degree,  
257 Doctorate/law/medical degree. Relationship status was a variable coded 0 if the person was not  
258 partnered or married and 1 if the person was partnered or married. Depression was a continuous  
259 variable.<sup>1</sup>

260 Because 688 of the 3291 participants were missing CES-D, PA, and/or relationship status  
261 data, we used the mice package's "mice" function in R to create 10 multiply imputed datasets.  
262 This imputation model included all 10 personality styles, PA, sex, age, CES-D score, relationship  
263 status, and educational achievement. We fit multinomial logistic regression models to the 10  
264 imputed datasets and used the mice package's "pool" function to pool results using the method  
265 described by Rubin (1987).<sup>2</sup>

266 Following Weiss et al. (2009), we set the critical alpha value to .01 because we tested all  
267 ten styles.

## 268 **Results**

269 Participants who were closed introverts (Quadrant 4; E-O-) rather than unstyled were  
270 significantly less likely to be engaged in high levels of PA, relative risk ( $RR$ ) = 0.538, 95%  $CI$  =  
271 [0.367, 0.789],  $p$  = .002. Introverted, agreeable participants (Quadrant 3; E-A+) were also

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<sup>1</sup> For this and all other multinomial logistic regression analyses, we inspected the 95% confidence intervals for evidence of multicollinearity. We found none.

<sup>2</sup> For this and all other multiple imputations carried out in this paper, diagnostic checks indicated close correspondence between the distributions of observed and imputed data, and inspection of trace plots indicated that imputations converged.

272 significantly less likely to be engaged in high levels of PA,  $RR = 0.549$ , 95%  $CI = [0.384, 0.784]$ ,  
273  $p < .001$ . Introverted, disagreeable (Quadrant 4; E-A-) participants were also less likely to  
274 engage in high levels of PA,  $RR = 0.633$ , 95%  $CI = [0.450, 0.890]$ ,  $p = .008$ . Finally, introverted,  
275 unconscientious participants (Quadrant 4; E-C-) were significantly less likely to engage in high  
276 levels of PA,  $RR = 0.519$ , 95%  $CI = [0.358, 0.754]$ ,  $p < .001$ .

277 By contrast, none of the six style quadrants paired with N predicted to be significant  
278 under an additive model (N-E+, N-A-, N-C+, N+E-, N+A+, N+C-) were significant. Likewise,  
279 three style quadrants paired with C (E+C+, A-C+, A+C-) and the combination E+A- were not  
280 significant. The full results are presented in Supplementary Tables S1 to S10.

## 281 **Discussion**

282 These results refute the notion that only simple additive effects drive the relationship  
283 between personality and PA, supporting the importance of personality styles' nonadditive effects.  
284 As noted earlier, if personality styles reflected only additive effects, 12 specific personality style  
285 quadrants would be significant. However, only *two* were. Furthermore, if the effects of  
286 personality were only additive, the quadrants of E- and A- would not be expected to be  
287 significantly related to PA.

288 Also, *none* of the styles involving combinations of N, a trait which previous work  
289 (Rhodes & Smith, 2006; Sutin et al., 2016; Wilson & Dishman, 2015) identified as a risk factor  
290 for low PA, were significantly related to PA. Likewise, C was rendered non-significant in several  
291 personality styles.

292 Together, these findings suggest that some of the heterogeneity found in the literature is  
293 attributable to the fact that personality traits do not act in isolation. Along with additive effects,  
294 there are important nonadditive effects.

295 **Study 3**

296 In Study 3, we used Wave 7 (1997) personality data and Wave 9 (2001-2002) PA data  
297 from UNCAHS to replicate the four personality style quadrants—E-O-, E-A+, E-A-, and E-C—  
298 identified in Study 2. In a second set of analyses, we tested whether any of the effects of these  
299 quadrants were driven by E's facet of Activity (E4: Activity), as reported by the analyses of  
300 Rhodes and Smith (2006).

301 **Method**302 *Participants*

303 A total of 2726 participants had Wave 7 (1997) personality data and did not report a  
304 diagnosis of Alzheimer's disease.<sup>3</sup> The 2726 participants ranged in age from 42 to 73 years ( $M =$   
305  $44.59$ ,  $SD = 2.33$ ). The 2128 men ranged in age from 47 to 77 years ( $M = 50.21$ ,  $SD = 2.01$ ) and  
306 the 598 women ranged in age from 47 to 81 years ( $M = 50.43$ ,  $SD = 3.16$ ). Nearly all the  
307 participants ( $N = 2711$ ) reported their race as White.

308 *Procedures*

309 **Physical Activity Assessment.** From 2001 to 2002 (Wave 9), participants completed the  
310 same self-report measure of PA that they completed in Wave 5 (1992-1993) (see Study 1).

311 **Personality Assessment.** As described in Herbst et al. (2000), in 1997 (Wave 7),  
312 participants were sent a NEO-PI-R test booklet and machine-readable answer sheet, which they  
313 completed at home. As in Study 1, following the *Professional Manual*, we created combined-  
314 gender factor *T*-scores for N, E, O, A, and C.

315 *Variables*

---

<sup>3</sup> Of these participants, 1890 men and 547 women were participants in Study 1 and 2. The remaining 238 men and 51 women did not participate in Study 1 or in Study 2.

316 For the first set of analyses, we created personality style variables as we did in Study 2  
317 for the combinations of E and O, E and A, and E and C, namely as these personality styles were  
318 significant in Study 2.

319 For the second and third set of analyses, we created variations of the personality style  
320 variables that we examined in Studies 1 and 2. For the second set, we created facet-based styles  
321 by using the factor *T*-scores for O, A, and C, and the facet *T*-score for E4: Activity, to classify  
322 participants using trait combinations of E4 and O, E4 and A, and E4 and C. For the third set,  
323 before creating style variables, we recomputed the factor *T*-scores for E, O, A, and C after  
324 substituting a score of 50 (the mean facet *T*-score) for each participant's E4: Activity facet *T*-  
325 score. As a result, all participants had the same E4: Activity score, i.e., 50. This eliminated  
326 individual difference in E4: Activity from the factor *T*-scores.

327 As in Study 2, covariates included sex, age, relationship status, education, and depression.  
328 Sex and educational achievement were recorded at Wave 1. The age and relationship status  
329 variables used were those closest in time to when personality was measured, that is, Wave 6 and  
330 Wave 7, respectively. Depression was measured at Wave 6 using the CES-D.

### 331 *Analyses*

332 We used the multinomial logistic regression approach used in Study 2. Because both  
333 depression and relationship status were missing for 160 participants and a further 14 participants  
334 had missing relationship status data and a further 15 participants had missing depression data, we  
335 used multiple imputation to handle missing data. Because we examined personality styles that  
336 were significant in Study 2, we set our critical alpha value to .05.

### 337 **Results**

338 Of participants with complete PA data in Wave 9 (2001-2002), 518 (23.5%) engaged in  
339 no PA, 708 (32.1%) engaged in moderate levels of PA, and 979 (44.4%) engaged in high levels  
340 of PA. The means and standard deviations for participants with personality data in Wave 9  
341 (2001-2002) are presented in Table 1.

#### 342 *Styles Based on Domains*

343 The results of these analyses are presented in Supplementary Tables S11 to S13.  
344 Combinations of E and O, E and A, and E and C were significantly related to PA. Participants  
345 who engaged in high levels of PA were significantly more likely to be open extraverts, or in  
346 Quadrant 2 (E+O+), than unstyled,  $RR = 1.678$ , 95%  $CI = [1.128, 2.496]$ ,  $p = .011$ . Participants  
347 who engaged in high levels of PA were significantly more likely to be introverted and agreeable,  
348 or in Quadrant 3 (E-A+), than unstyled,  $RR = 0.578$ , 95%  $CI = [0.390, 0.856]$ ,  $p = .006$ .  
349 Participants who engaged in high levels of PA,  $RR = 0.594$ , 95%  $CI = [0.382, 0.925]$ ,  $p = .022$ ,  
350 were significantly less likely to be introverted and unconscientious, or in Quadrant 4 (E-C-), than  
351 unstyled. Quadrant 4 was also significant for participants who engaged in moderate levels of PA,  
352  $RR = 0.619$ , 95%  $CI = [0.406, 0.944]$ ,  $p = .026$ .

#### 353 *Styles Based on Domains and the E4: Activity Facet*

354 The results when the styles were based only on E4: Activity instead of the factor  $T$ -score  
355 for E are presented in Supplementary Tables S14 to S16. High levels of PA were significantly  
356 more likely among participants who were E4+ and O+ (Quadrant 2) than participants who were  
357 unstyled,  $RR = 2.057$ , 95%  $CI = [1.404, 3.016]$ ,  $p < .001$ . High levels of PA were significantly  
358 less likely among participants who were E4- and A+ (Quadrant 3) than participants who were  
359 unstyled,  $RR = 0.559$ , 95%  $CI = [0.364, 0.858]$ ,  $p = .008$ . High levels of PA were significantly

360 more likely among participants who were E4+ and C+ (Quadrant 2) than participants who were  
361 unstyled,  $RR = 1.501$ , 95%  $CI = [1.047, 2.151]$ ,  $p = .027$ .

### 362 *Styles Based on Domains from which E4: Activity was Removed*

363 The results for styles based on factor  $T$ -scores for E, O, A, and C from which E4: Activity  
364 variance was removed are presented in Supplementary Tables S17 to S19. High levels of PA  
365 were significantly more likely among participants who were E+ and O+ (Quadrant 2) than  
366 participants who were unstyled,  $RR = 1.535$ , 95%  $CI = [1.023, 2.304]$ ,  $p = .039$ . High levels of  
367 PA were significantly less likely among participants who were E- and A+ (Quadrant 3) than  
368 participants who were unstyled,  $RR = 0.653$ , 95%  $CI = [0.449, 0.951]$ ,  $p = .026$ . High levels of  
369 PA were significantly less likely among participants who were E- and C+ (Quadrant 3) than  
370 participants who were unstyled,  $RR = 0.621$ , 95%  $CI = [0.408, 0.946]$ ,  $p = .027$ .

### 371 **Discussion**

372 In the first set of analyses, we replicated two associations between personality styles and  
373 PA that were significant in Study 2. Combinations of low E with either high A (Quadrant 3) or  
374 low C (Quadrant 4) put participants at risk for engaging in lower levels of PA. A third result was  
375 consistent with our finding from Study 2: people who were low in both E and O (Quadrant 4)  
376 were less likely to engage in high levels of PA. Unlike Study 2, we did not find evidence that  
377 participants who were low in E and low in A (Quadrant 4) were less likely to engage in high  
378 levels of PA. These results suggest the importance of within-person non-additive effects whereby  
379 one trait suppresses or works synergistically with another trait to produce different levels of PA.  
380 Such effects may account for some of the heterogeneity in the literature.

381 One important result from the second set of analyses in which we examined the effect of  
382 styles based on the E4: Activity facet rather than styles based on the E domain was that Quadrant

383 2 based on the facet (E4+C+) was significant while Quadrant 2 based on the domains (E+C+)  
384 was not. Another important result was that compared to the effect size of Quadrant 2 (E+O+), the  
385 effect size of facet E4 Quadrant 2 (E4+O+) was considerably larger. These findings suggest that  
386 the E4: Activity facet drives the relationship between domain E+O+ and PA.

387 One important result from the third set of analyses, or styles from which E4's variance  
388 had been removed was that the effect size of E+O+ after E4 variance was removed was smaller  
389 than from the styles that included E4 variance. These findings also suggest that the E4: Activity  
390 facet drives the relationship between domain E+O+ and PA.

391 Another important result was that the effect sizes of E-A+ and E4-A+ were comparable  
392 but the effect size of E-A+ after E4 variance was removed was smaller. This suggests that unlike  
393 the case for E+O+ where E4 drives the relationship, for E-A+, while E4- is sufficient, it is not the  
394 sole reason for why E-A+ is associated with less PA.

395 A third important result was that removing E4 variance from Quadrant 4 (E-C-) led to a  
396 smaller effect size than was found for both domain Quadrant 4 (E-C-) and Quadrant 4 (E4-C-).  
397 Thus, E4 is necessary but not sufficient for the relationship between Quadrant 4 (E-C-) and PA.

### 398 **General Discussion**

399 The literature on personality and PA reveals inconsistent findings of single personality  
400 domains predicting PA. We tested two notions. First, studying personality styles would reveal  
401 within-person nonadditive effects, whereby one personality trait augments or weakens the effect  
402 of another. Results showed that such nonadditive effects were common. In two studies, we found  
403 that low E paired with high A or low C was related to lower PA, and that high O paired with high  
404 E was associated with higher PA. Second, a facet, E4: Activity of the domain E mainly but not  
405 solely drives the associations.

406           Meta-analyses by Rhodes and Smith (2006), Sutin et al. (2016), and by Wilson and  
407 Dishman (2015) revealed small but significant effects of low N, high E, and high C on physical  
408 activity. The sizes of these associations varied across studies. Neither O nor A were significantly  
409 related to PA. We replicated the N, E, and C associations with PA. We also found that A had a  
410 small, negative association with PA. We also did not find a significant association between O  
411 and PA.

412           We tested whether the association between one personality trait and physical activity can  
413 be modified by another trait. Our findings supported the view that the association between  
414 personality traits and physical activity vary as a function of other personality traits within an  
415 individual (Wilson & Dishman, 2015).

416           High A may increase or potentiate the risk posed by low E because these otherwise less  
417 active, less gregarious individuals who are highly communal and compassionate are likely to put  
418 other people's needs before their own and they also would not seek out or desire to engage in  
419 activities to challenge others or that involve competition. Likewise, low C may potentiate the risk  
420 conferred by low E in that these individuals would lack the motivation and self-discipline to  
421 follow through on their physical activity or exercise intentions.

422           Narrower traits may have a closer connection to PA than the broad heterogeneous  
423 domains. For example, Hough et al. (1998) showed that lower-level facets of Conscientiousness  
424 related differently to different lower-level criteria of success for management jobs. Vainik et al.  
425 (2019) meta-analyzed the associations between body mass index and FFM domains as well as  
426 the 30 FFM facets ( $N = 14,848$ ) and concluded that personality and body mass index are facet  
427 specific and that "...delineating them may help to explain obesity related behaviors..." (p. 1121).  
428 A similar position has been advocated by Rhodes and Smith (2006) who highlighted the promise



429 of studying lower-order traits or facets in the FFM as well as the broad domains by describing  
430 studies that showed how the Activity facet of E drove the E and PA associations.

431         Our study is not without limitations. Our measure of physical activity was based on a  
432 self-report measure so there is a risk that some of the relationships that we found primarily  
433 reflect presentation bias. However, previous studies found that this measure of physical activity  
434 predicted cardiovascular fitness (Jackson et al., 1990; Matthews et al., 1999). Furthermore,  
435 because our sample was almost exclusively well-educated, mostly male, and almost exclusively  
436 White, these findings may not generalize to other samples. In addition, although our study was  
437 prospective, it nevertheless relied on observational data, and so we cannot determine whether  
438 personality styles predict PA or vice versa (reverse causality).

439         In sum, our findings suggest that to increase our understanding of the shape of the  
440 relationships between personality traits and PA we need to consider the ways FFM domains, or  
441 their facets, work together. Furthermore, considering their combined or paired effects likely will  
442 increase our ability to predict physical activity. Such assessments may provide clinical utility for  
443 identifying individuals at risk for physical activity avoidance and sedentary behavior and could  
444 possibly be helpful for developing personalized or personality-style informed interventions.  
445

446 **References**

- 447 Bates, T. C., Maes, H., & Neale, M. C. (2019). umx: Twin and path-based structural equation  
448 modeling in R. *Twin Research and Human Genetics*, 22(1), 27–41.  
449 <https://doi.org/10.1017/thg.2019.2>
- 450 Calland, A. R., Siegler, I. C., Costa, P. T., Ross, L. M., Zucker, N., French, R., Hauser, E., &  
451 Huffman, K. M. (2020). Associations of self-reported eating disorder behaviors and  
452 personality in a college-educated sample. *Appetite*, 151.  
453 <https://doi.org/10.1016/j.appet.2020.104669>
- 454 Costa, P. T., Jr., & McCrae, R. R. (1985). *The NEO Personality Inventory manual*. Psychological  
455 Assessment Resources.
- 456 Costa, P. T., Jr., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and*  
457 *NEO Five-Factor Inventory (NEO-FFI) professional manual*. Psychological Assessment  
458 Resources.
- 459 Costa, P. T., Jr., & McCrae, R. R. (1995). Domains and facets: Hierarchical personality  
460 assessment using the Revised NEO Personality Inventory. *Journal of Personality*  
461 *Assessment*, 64(1), 21–50. [https://doi.org/10.1207/s15327752jpa6401\\_2](https://doi.org/10.1207/s15327752jpa6401_2)
- 462 Costa, P. T., Jr., & McCrae, R. R. (2008). The Revised NEO Personality Inventory. In *The SAGE*  
463 *handbook of personality theory and assessment, Vol 2: Personality measurement and*  
464 *testing* (pp. 179–198). SAGE Publications, Inc.
- 465 Costa, P. T., Jr., McCrae, R. R., & Dye, D. A. (1991). Facet scales for Agreeableness and  
466 Conscientiousness: A revision of the NEO Personality Inventory. *Personality and*  
467 *Individual Differences*, 12(9), 887–898. [https://doi.org/10.1016/0191-8869\(91\)90177-D](https://doi.org/10.1016/0191-8869(91)90177-D)

- 468 De Fruyt, F., De Bolle, M., McCrae, R. R., Terracciano, A., & Costa, P. T., Jr. (2009). Assessing  
469 the universal structure of personality in early adolescence: The NEO-PI-R and NEO-PI-3  
470 in 24 cultures. *Assessment*, *16*(3), 301–311. <https://doi.org/10.1177/1073191109333760>
- 471 Deary, I. J., Weiss, A., & Batty, G. D. (2010). Intelligence and personality as predictors of illness  
472 and death: How researchers in differential psychology and chronic disease epidemiology  
473 are collaborating to understand and address health inequalities. *Psychological Science in  
474 the Public Interest*, *11*(2), 53–79. <https://doi.org/10.1177/1529100610387081>
- 475 Digman, J. M. (1990). Personality structure: Emergence of the Five-Factor Model. *Annual  
476 Review of Psychology*, *41*, 417–440.  
477 <https://doi.org/10.1146/annurev.ps.41.020190.002221>
- 478 Dishman, R. K., Sallis, J. F., & Orenstein, D. R. (1985). The determinants of physical activity  
479 and exercise. *Public Health Reports*, *100*(2), 158–171.
- 480 Herbst, J. H., McCrae, R. R., Costa, P.T., Jr., Feaganes, J. R., & Siegler, I. C. (2000). Self-  
481 perceptions of stability and change in personality at midlife: The UNC Alumni Heart  
482 Study. *Assessment*, *7*(4), 379–388. <https://doi.org/10.1177/107319110000700406>
- 483 Hough, L. M., Ones, D. S., & Viswesvaran, C. (1998, April). *Personality correlates of  
484 managerial performance constructs*. 13th Annual Conference of the Society for Industrial  
485 and Organizational Psychology, Dallas, TX.
- 486 Ironson, G., O’Cleirigh, C., Weiss, A., Schneiderman, N., & Costa, P. T., Jr. (2008). Personality  
487 and HIV disease progression: The role of NEO-PI-R Openness, Extraversion, and  
488 profiles of engagement. *Psychosomatic Medicine*, *70*(2), 245–253.  
489 <https://doi.org/10.1097/PSY.0b013e31816422fc>

- 490 Jackson, A. S., Blair, S. N., Mahar, M. T., Wier, L. T., Ross, R. M., & Stuteville, J. E. (1990).  
491 Prediction of functional aerobic capacity without exercise testing. *Medicine & Science in*  
492 *Sports & Exercise*, 22(6). <https://doi.org/10.1249/00005768-199012000-00021>
- 493 Matthews, C. E., Heil, D. P., Freedson, P. S., & Pastides, H. (1999). Classification of  
494 cardiorespiratory fitness without exercise testing. *Medicine & Science in Sports &*  
495 *Exercise*, 31(3). <https://doi.org/10.1097/00005768-199903000-00019>
- 496 McCrae, R. R., & Costa, P. T., Jr. (1999). A Five-Factor Theory of personality. In L. Pervin & O.  
497 P. John (Eds.), *Handbook of Personality* (2nd ed., pp. 159–181). Guilford Press.
- 498 McCrae, R. R., & Costa, P. T., Jr. (2010). *NEO Inventories professional manual*. Psychological  
499 Assessment Resources.
- 500 McCrae, R. R., Terracciano, A., & Project, 78 Members of the Personality Profiles of Cultures.  
501 (2005). Universal features of personality traits from the observer’s perspective: Data from  
502 50 cultures. *Journal of Personality and Social Psychology*, 88(3), 547–561.  
503 <https://doi.org/10.1037/0022-3514.88.3.547>
- 504 Munafò, M. R., Tilling, K., Taylor, A. E., Evans, D. M., & Davey Smith, G. (2017). Collider  
505 scope: When selection bias can substantially influence observed associations.  
506 *International Journal of Epidemiology*, 47(1), 226–235.  
507 <https://doi.org/10.1093/ije/dyx206>
- 508 R Core Team. (2022). *R: A language and environment for statistical computing*. R Foundation  
509 for Statistical Computing. <https://www.R-project.org/>
- 510 R Core Team. (2023). *foreign: Read Data Stored by “Minitab”, “S”, “SAS”, “SPSS”, “Stata”,*  
511 *“Systat”, “Weka”, “dBase”, ...* R Foundation for Statistical Computing.  
512 <https://CRAN.R-project.org/package=foreign>

- 513 Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general  
514 population. *Applied Psychological Measurement, 1*(3), 385–401.
- 515 Revelle, W. (2023). *psych: Procedures for psychological, psychometric, and personality*  
516 *research*. Northwestern University. <https://CRAN.R-project.org/package=psych>
- 517 Rhodes, R. E., & Smith, N. E. I. (2006). Personality correlates of physical activity: A review and  
518 meta-analysis. *British Journal of Sports Medicine, 40*(12), 958–965.
- 519 Ross, R. M., & Jackson, A. S. (1990). *Exercise concepts, calculations, and computer*  
520 *applications*. Benchmark Press.
- 521 Rubin, D. B. (1987). *Multiple imputation for nonresponse in surveys*. John Wiley & Sons.
- 522 Siegler, I. C., Costa, P. T., Jr., Brummett, B. H., Helms, M. J., Barefoot, J. C., Williams, R. B.,  
523 Dahlstrom, W. G., Kaplan, B. H., Vitaliano, P. P., Nichaman, M. Z., Day, S., & Rimer, B.  
524 K. (2003). Patterns of change in hostility from college to midlife in the UNC Alumni  
525 Heart Study predict high-risk status. *Psychosomatic Medicine, 65*(5), 738–745.
- 526 Sutin, A. R., Ferrucci, L., Zonderman, A. B., & Terracciano, A. (2011). Personality and obesity  
527 across the adult life span. *Journal of Personality and Social Psychology, 101*(3), 579–592.  
528 <https://doi.org/10.1037/a0024286>
- 529 Sutin, A. R., Stephan, Y., Luchetti, M., Artese, A., Oshio, A., & Terracciano, A. (2016). The  
530 Five-Factor Model of personality and physical inactivity: A meta-analysis of 16 samples.  
531 *Journal of Research in Personality, 63*, 22–28. <https://doi.org/10.1016/j.jrp.2016.05.001>
- 532 Trost, S. G., Owen, N., Bauman, A. E., Sallis, J. F., & Brown, W. (2002). Correlates of adults'  
533 participation in physical activity: Review and update. *Medicine & Science in Sports &*  
534 *Exercise, 34*(12), 1996–2001. <https://doi.org/10.1097/00005768-200212000-00020>

- 535 U.S. Department of Health and Human Services. (2018). *Physical activity guidelines for*  
536 *Americans* (2nd ed.). U.S. Department of Health and Human Services.
- 537 Vainik, U., Dagher, A., Realo, A., Colodro-Conde, L., Mortensen, E. L., Jang, K., Ando, J.,  
538 Kandler, C., Sørensen, T. I. A., & Möttus, R. (2019). Personality-obesity associations are  
539 driven by narrow traits: A meta-analysis. *Obesity Review*, *20*, 1121–1131.
- 540 van Buuren, S., & Groothuis-Oudshoorn, K. (2011). mice: Multivariate imputation by chained  
541 equations in R. *Journal of Statistical Software*, *45*(3), 1–67.  
542 <https://doi.org/10.18637/jss.v045.i03>
- 543 Venables, W. N., & Ripley, B. D. (2002). *Modern applied statistics with S* (4th ed.). Springer.
- 544 Weiss, A. (2023). *Code for paper on physical activity and personality styles submitted to Health*  
545 *Psychology*. The Open Science Framework. <https://doi.org/10.17605/OSF.IO/UYXWD>
- 546 Weiss, A., Sutin, A. R., Duberstein, P. R., Friedman, B., Bagby, R. M., & Costa, P. T., Jr. (2009).  
547 The personality domains and styles of the Five-Factor Model predict incident depression  
548 in Medicare recipients aged 65 to 100. *American Journal of Geriatric Psychiatry*, *17*(7),  
549 591–601. <https://doi.org/10.1097/JGP.0b013e31819d859d>
- 550 Wilson, K., & Dishman, R. (2015). Personality and physical activity: A systematic review and  
551 meta-analysis. *Personality and Individual Differences*, *72*, 230–242.  
552 <https://doi.org/10.1016/j.paid.2014.08.023>
- 553 World Health Organization. (2020). *WHO guidelines on physical activity and sedentary*  
554 *behaviour*. World Health Organization.
- 555 World Health Organization. Regional Office for Europe (Ed.). (2018). *Physical activity*  
556 *factsheets for the 28 European Union member states of the WHO European region*.  
557 World Health Organization. Regional Office for Europe.

558 Zhu, H. (2021). *kableExtra: Construct complex table with “kable” and pipe syntax*.

559 <https://CRAN.R-project.org/package=kableExtra>

560

**Table 1****Means and Standard Deviations for the NEO-PI-R Personality Factor *T*-Scores**

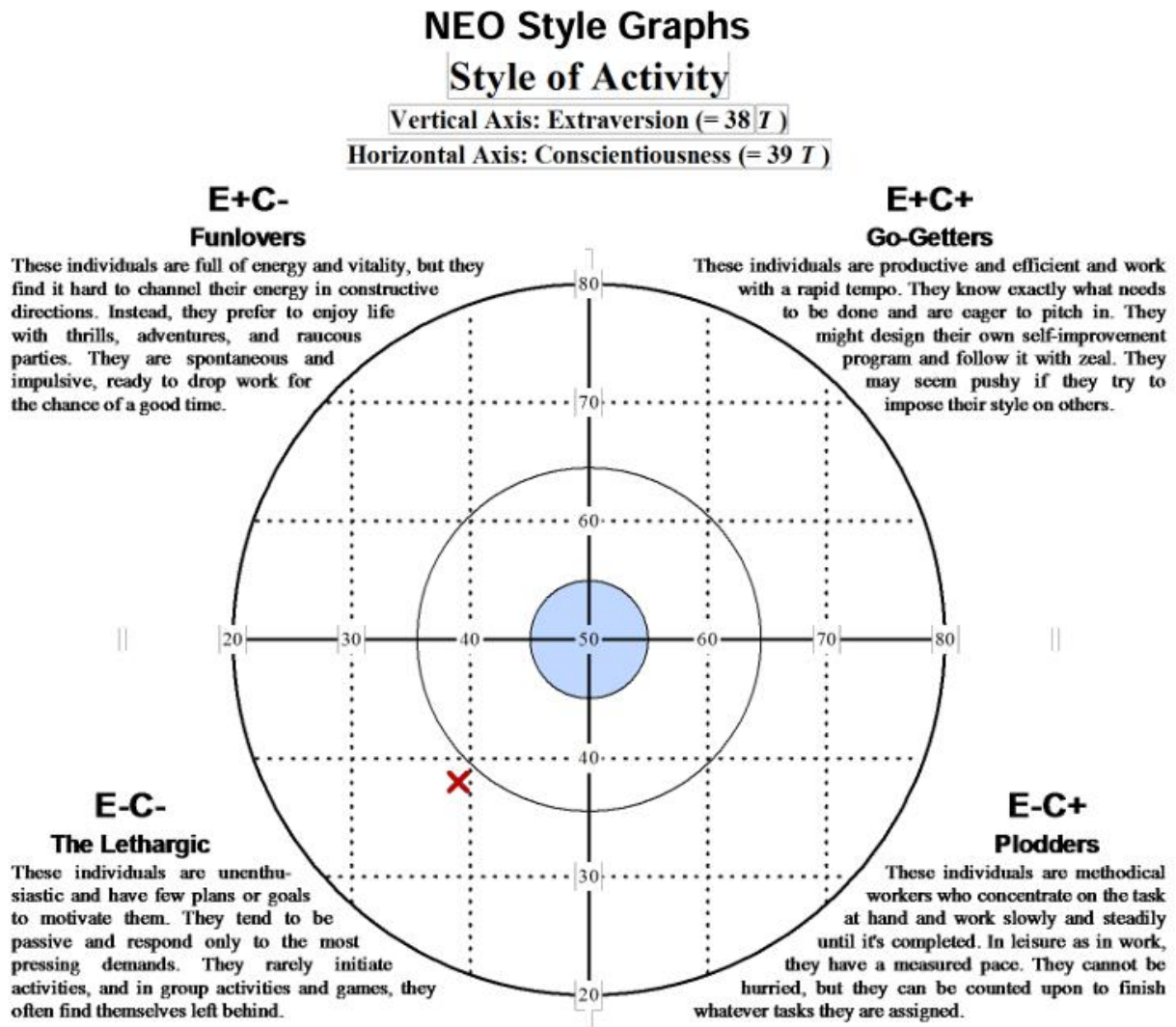
Factor	Study 1		Study 2 and 3	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Neuroticism	48.89	10.72	48.93	10.73
Extraversion	49.02	9.97	48.82	9.92
Openness	53.23	10.74	53.20	10.73
Agreeableness	46.89	9.61	46.95	9.67
Conscientiousness	51.93	10.60	52.38	10.49
<i>N</i>	3291		2437	

*Note.* Study 1 personality data collected in 1989 (Wave 2) and 1991 (Wave 4). Study 2 and Study 3 personality data collected in 1997 (Wave 7).



**Figure 1**

*Style Graph Showing Combinations of Extraversion and Conscientiousness*



*Note.* The figure illustrates the NEO-PI-R Style of Activity graph. From Sample Client NEO PI-R Interpretive Report (generated by software PARiConnect). The client's location on the graph ("X") is determined by their Extraversion and Conscientiousness factor *T*-scores ( $M = 50, SD = 10$ ). The farther the "X" is from the center of the graph, the more accurate the description is likely to be. If the "X" falls in the shaded area in the center of the graph, the person is likely to show features of all four styles, i.e., they are considered 'unstyled'. Used by permission from Psychological Assessment Resources, Inc. (PAR).

## **Supplementary Materials**

**Supplementary Text**

Text S1

**Reproduction of Physical Activity Scale**

Adapted from Figure 4-13 in Ross, R. M. & Jackson, A. S. (1990). Exercise concepts, calculations, and computer applications. Benchmark Press.

**CODE FOR PHYSICAL ACTIVITY**

Use the appropriate number (0 to 7) which best describes your general **ACTIVITY LEVEL** for the **PREVIOUS MONTH**.

***DO NOT PARTICIPATE REGULARLY IN PROGRAMMED RECREATION SPORT OR HEAVY PHYSICAL ACTIVITY.***

- 0 - Avoid walking or exertion, e.g., always use elevator, drive whenever possible instead of walking.
- 1 - Walk for pleasure, routinely use stairs, occasional exercise sufficiently to cause heavy breathing or perspiration.

***PARTICIPATED REGULARLY IN RECREATION OR WORK REQUIRING MODEST PHYSICAL ACTIVITY, SUCH AS GOLF, HORSEBACK RIDING, CALISTHENICS, GYMNASTICS, TABLE TENNIS, BOWLING, WEIGHT LIFTING, YARD WORK.***

- 2 - 10 to 60 minutes per week.
- 3 - Over one hour per week.

***PARTICIPATE REGULARLY IN HEAVY PHYSICAL EXERCISE SUCH AS RUNNING OR JOGGING, SWIMMING, CYCLING, ROWING, SKIPPING ROP, RUNNING IN PLACE OR ENGAGING IN VIGOROUS, AEROBIC ACTIVITY TYPE EXERCISES SUCH AS TENNIS, BASKETBALL OR HANDBALL.***

- 4 - Run less than one mile per week or spend less than 30 minutes per week in comparable physical activity.
- 5 - Run 1 to 5 miles per week or spend 30 to 60 minutes per week in comparable physical activity.
- 6 - Run 5 to 10 miles per week or spend 1 to 3 hours per week in comparable physical activity.
- 7 - Run over 10 miles per week or spend over 3 hours per week in comparable physical activity.

Text S2

### **Descriptions of the NEO-PI-R Facets**

Adapted from pages 21-24 in McCrae, R. R. & Costa, P. T., Jr. (2010). NEO Inventories for the NEO Personality Inventory-3 (NEO-PI-3), NEO Five-Factor Inventory-3 (NEO-FFI-3), NEO Personality Inventory-Revised (NEO-PI-R) Professional Manual. PAR Incorporated.

#### **Neuroticism Facets**

##### **N1: Anxiety**

Anxious individuals are apprehensive, fearful, prone to worry, nervous, tense, and jittery. Low scorers are calm and relaxed. They do not dwell on things that might go wrong.

##### **N2: Angry Hostility**

Angry hostility represents the tendency to experience anger and related states such as frustration and bitterness. This scale measures the individual's readiness to experience anger. Low scorers are easy-going and slow to anger.

##### **N3: Depression**

This scale measures individual differences in the tendency to experience depressive affect. High scorers are prone to feelings of guilt, sadness, hopelessness, and loneliness. They are easily discouraged and often dejected. Low scorers rarely experience such emotions, but they are not necessarily cheerful and lighthearted—characteristics associated instead with Extraversion.

##### **N4: Self-Consciousness**

The emotions of shame and embarrassment form the core of this facet. Self-conscious individuals are uncomfortable around others, sensitive to ridicule, and prone to feelings of inferiority. Self-consciousness is akin to shyness and social anxiety. Low scorers do not necessarily have poise or good social skills, they are simply less disturbed by awkward social situations.

##### **N5: Impulsiveness**

Impulsiveness refers to the inability to control cravings and urges. Desires (e.g., for food, cigarettes, possessions) are perceived as being so strong that the individual cannot resist them, although he or she may later regret the behavior. Low scorers find it easier to resist such temptations and have a high tolerance for frustration.

##### **N6: Vulnerability**

Vulnerability to differences in how vulnerable individuals are to stress. Individuals who score high on this scale feel unable to cope with stress, becoming dependent, hopeless, or panicked when facing emergency situations. Low scorers perceive themselves as capable of handling themselves in difficult situations.

## Extraversion Facets

### **E1: Warmth**

Warmth is the facet of Extraversion most relevant to issues of interpersonal intimacy. Warm people are affectionate and friendly. They genuinely like people and easily form close attachments to others. Low scorers are neither hostile nor necessarily lacking in compassion, but they are more formal, reserved, and distant in manner than high scorers.

### **E2: Gregariousness**

Gregariousness is the preference for other people's company. Gregarious people enjoy the company of others—"the more the merrier." Low scorers on this scale tend to be loners who do not seek or who even actively avoid social stimulation.

### **E3: Assertiveness**

High scorers on this facet are dominant, forceful, and socially ascendant. They speak without hesitation and often become group leaders. Low scorers prefer to keep in the background and let others do the talking.

### **E4: Activity**

A high Activity score is seen in rapid tempo and vigorous movement, a sense of energy, and a need to keep busy. Active people lead fast-paced lives. Low scorers are more leisurely and relaxed in tempo, though they are not necessarily sluggish or lazy.

### **E5: Excitement-Seeking**

High scorers on this scale crave excitement and stimulation. They like bright colors and noisy environments. Low scorers feel little need for thrills and prefer a lifestyle that high scorers might find boring.

### **E6: Positive Emotions**

This facet assesses the tendency to experience positive emotions such as joy, happiness, love, and excitement. High scorers on the Positive Emotions scale laugh easily and often. They are cheerful and optimistic. Low scorers are not necessarily unhappy; they are merely less exuberant and high-spirited.

## Openness Facets

### **O1: Fantasy**

Individuals who are open to fantasy have a vivid imagination and an active fantasy life. They daydream not simply as an escape, but as a way of creating an interesting inner world for themselves. They elaborate and develop their fantasies and believe that imagination contributes to a rich and creative life. Low scorers are more prosaic and prefer to keep their minds on the task at hand.

### **O2: Aesthetics**

High scorers on this scale have a deep appreciation for art and beauty. They are moved by poetry, absorbed in music, and intrigued by art. They need not have artistic talent, nor even necessarily what most people would consider good taste, but for many of them, their interest in the arts will lead them to develop a wider knowledge and appreciation than that of the average individual. Low scorers are relatively insensitive to and uninterested in art and beauty.

### **O3: Feelings**

Openness to feelings implies receptivity to one's own inner feelings and emotions and the evaluation of emotion as an important part of life. High scorers experience deeper and more differentiated emotional states and feel both happiness and unhappiness more keenly than others do. Low scorers have somewhat blunted affect and do not believe that feeling states are of much importance. They may be characterized by alexithymia.

### **O4: Actions**

High scorers are willing to try different activities, to go new places, or eat unusual foods. High scorers on this scale prefer novelty and variety to familiarity and routine. Over time, they may engage in a series of different hobbies. Low scorers find change difficult and prefer to stick with the tried-and-true.

### **O5: Ideas**

This trait is seen not only in an active pursuit of intellectual interests for their own sake, but also in open-mindedness and a willingness to consider new, perhaps unconventional, ideas. High scorers enjoy both philosophical arguments and brain teasers. Openness to ideas does not necessarily imply high intelligence, though it can contribute to the development of intellectual potential. Low scorers on the scale have limited curiosity and, if highly intelligent, narrowly focus their resources on limited topics.

### **O6: Values**

Openness to values assesses the readiness to re-examine social, political, and religious values. Closed individuals tend to accept authority and to honor tradition and, as a consequence, are generally conservative, regardless of political party affiliation.

## Agreeableness Facets

### **A1: Trust**

High scorers in this facet are disposed to believe that others are honest and well-intentioned. Low scorers on this scale tend to be cynical and skeptical and to assume that others may be dishonest or dangerous.

### **A2: Straightforwardness**

Individuals with high scores on this scale are frank, sincere, and ingenuous. Low scorers on this scale are more willing to manipulate others through flattery, craftiness, or deception. They view these tactics as necessary social skills and may regard more straightforward people as naïve. A low scorer on this scale is more likely to stretch the truth or to be guarded in expressing his or her true feelings, but this should not be interpreted to mean that he or she is a dishonest or manipulative person.

### **A3: Altruism**

High scorers on the Altruism scale have an active concern for others' welfare as shown in generosity, consideration of others, and a willingness to assist others in need of help. Low scorers on this scale are somewhat more self-centered and are reluctant to get involved in the problems of others.

### **A4: Compliance**

This facet of Agreeableness concerns characteristic reactions to interpersonal conflict. The high scorer tends to defer to others, to inhibit aggression, and to forgive and forget. Compliant people are meek and mild. The low scorer is aggressive, prefers to compete rather than to cooperate, and has no reluctance to express anger when necessary.

### **A5: Modesty**

High scorers on this scale are humble and self-effacing, though they are not necessarily lacking in self-confidence or self-esteem. Low scorers believe they are superior people and may be considered conceited or arrogant by others.

### **A6: Tender-Mindedness**

This facet scale measures attitudes of sympathy and concern for others. High scorers are moved by others' needs and emphasize the human side of social policies. Low scorers are more hardheaded and less moved by appeals to pity. They would consider themselves realists who make rational decisions based on cold logic.



## Conscientiousness Facets

### **C1: Competence**

Competence refers to the sense that one is capable, sensible, prudent, and effective. High scorers on this scale feel well-prepared to deal with life. Low scorers have a lower opinion of their abilities and admit that they are often unprepared and inept.

### **C2: Order**

High scorers on this scale are neat, tidy, and well-organized. They keep things in their proper places. Low scorers are unable to get organized and describe themselves as unmethodical.

### **C3: Dutifulness**

In one sense, conscientious means "governed by conscience," and that aspect of Conscientiousness is assessed as Dutifulness. High scorers on this scale adhere strictly to their ethical principles and scrupulously fulfill their moral obligations as they understand them. Low scorers are more casual about such matters and may be somewhat undependable or unreliable.

### **C4: Achievement Striving**

Individuals who score high on this facet have high aspiration levels and work hard to achieve their goals. They are diligent and purposeful and have a sense of direction in life. Very high scorers, however, may invest too much in their careers and become workaholics. Low scorers are lackadaisical and perhaps even lazy. They are not driven to succeed. They lack ambition and may seem aimless, but they are often perfectly content with their low levels of achievement.

### **C5: Self-Discipline**

This facet refers to an individual's ability to begin tasks and carry them through to completion, despite boredom or other distractions. High scorers can motivate themselves to get the job done. Low scorers procrastinate in beginning chores and are easily discouraged and eager to quit.

### **C6: Deliberation**

The final facet of C is deliberation-the tendency to think carefully before acting. High scorers on this facet are cautious and deliberate. Low scorers are hasty and often speak or act without considering the consequences. At best, low scorers are spontaneous and able to make decisions when necessary.

## **Supplementary Tables**

Tables S1-S10 describe the results of the initial multinomial logistic regressions from Study 2 that examined the four quadrants for each of the 10 pair combinations.

Table S1

Study 2 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 2/4 Neuroticism and Extraversion and Wave 5 Physical Activity

Style	Effect	RR	95% Confidence Interval	
			2.5%	97.5% p
1. N+E-	Intercept	2.701	0.273	26.763 0.396
1. N+E-	Male vs. Female	0.838	0.621	1.130 0.246
1. N+E-	Age in Years	0.995	0.947	1.045 0.836
1. N+E-	College Degree	0.723	0.404	1.294 0.274
1. N+E-	College Degree + Training	0.777	0.446	1.354 0.374
1. N+E-	Master's Degree	0.745	0.426	1.304 0.303
1. N+E-	Doctorate	0.765	0.436	1.345 0.353
1. N+E-	Married or Partnered	0.722	0.517	1.007 0.055
1. N+E-	Depression	1.073	1.055	1.091 < 0.001
1. N+E-	Moderate vs. Low PA	0.754	0.510	1.115 0.157
1. N+E-	High vs. Low PA	0.845	0.587	1.217 0.365
2. N+E+	Intercept	20.807	1.253	345.625 0.034
2. N+E+	Male vs. Female	0.645	0.470	0.884 0.006
2. N+E+	Age in Years	0.949	0.893	1.009 0.095
2. N+E+	College Degree	0.898	0.486	1.658 0.730
2. N+E+	College Degree + Training	0.867	0.481	1.562 0.634
2. N+E+	Master's Degree	0.635	0.348	1.158 0.138
2. N+E+	Doctorate	0.744	0.407	1.363 0.339
2. N+E+	Married or Partnered	0.739	0.518	1.056 0.097
2. N+E+	Depression	1.029	1.010	1.049 0.003
2. N+E+	Moderate vs. Low PA	0.929	0.619	1.394 0.722
2. N+E+	High vs. Low PA	1.081	0.713	1.637 0.714
3. N-E+	Intercept	10.113	0.859	119.088 0.066
3. N-E+	Male vs. Female	1.786	1.314	2.428 < 0.001
3. N-E+	Age in Years	0.967	0.917	1.020 0.216
3. N-E+	College Degree	0.938	0.532	1.653 0.825
3. N-E+	College Degree + Training	0.999	0.581	1.720 0.998
3. N-E+	Master's Degree	0.824	0.476	1.426 0.488
3. N-E+	Doctorate	0.664	0.381	1.156 0.148
3. N-E+	Married or Partnered	1.180	0.834	1.670 0.349
3. N-E+	Depression	0.933	0.914	0.953 < 0.001
3. N-E+	Moderate vs. Low PA	0.890	0.604	1.310 0.554
3. N-E+	High vs. Low PA	1.150	0.802	1.650 0.447
4. N-E-	Intercept	1.096	0.105	11.478 0.939

Style	Effect	95% Confidence Interval		
		RR	2.5%	97.5% p
4. N-E-	Male vs. Female	2.180	1.582	3.005 < 0.001
4. N-E-	Age in Years	0.996	0.948	1.047 0.880
4. N-E-	College Degree	1.724	0.919	3.236 0.090
4. N-E-	College Degree + Training	1.768	0.963	3.248 0.066
4. N-E-	Master's Degree	1.910	1.038	3.517 0.038
4. N-E-	Doctorate	1.803	0.977	3.328 0.059
4. N-E-	Married or Partnered	1.175	0.828	1.667 0.367
4. N-E-	Depression	0.962	0.943	0.981 < 0.001
4. N-E-	Moderate vs. Low PA	0.817	0.565	1.180 0.281
4. N-E-	High vs. Low PA	0.664	0.465	0.950 0.025

Note. N = Neuroticism, E = Extraversion, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.

Table S2

Study 2 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 2/4 Neuroticism and Openness to Experience and Wave 5 Physical Activity

		<b>95% Confidence Interval</b>		
<b>Style</b>	<b>Effect</b>	<b>RR</b>	<b>2.5%</b>	<b>97.5% p</b>
1. N+O-	Intercept	1.348	0.038	48.368 0.870
1. N+O-	Male vs. Female	1.347	0.939	1.931 0.105
1. N+O-	Age in Years	0.992	0.917	1.074 0.848
1. N+O-	College Degree	1.255	0.635	2.479 0.514
1. N+O-	College Degree + Training	0.997	0.513	1.938 0.994
1. N+O-	Master's Degree	0.689	0.347	1.366 0.286
1. N+O-	Doctorate	0.586	0.295	1.166 0.128
1. N+O-	Married or Partnered	0.992	0.634	1.552 0.971
1. N+O-	Depression	1.054	1.032	1.077 < 0.001
1. N+O-	Moderate vs. Low PA	0.676	0.435	1.052 0.082
1. N+O-	High vs. Low PA	0.798	0.527	1.209 0.286
2. N+O+	Intercept	1.428	0.077	26.519 0.811
2. N+O+	Male vs. Female	0.711	0.521	0.969 0.031
2. N+O+	Age in Years	1.030	0.966	1.098 0.365
2. N+O+	College Degree	0.530	0.285	0.986 0.045
2. N+O+	College Degree + Training	0.756	0.418	1.366 0.354
2. N+O+	Master's Degree	0.786	0.432	1.430 0.430
2. N+O+	Doctorate	0.764	0.420	1.393 0.380
2. N+O+	Married or Partnered	0.436	0.299	0.637 < 0.001
2. N+O+	Depression	1.055	1.034	1.077 < 0.001
2. N+O+	Moderate vs. Low PA	0.932	0.610	1.423 0.742
2. N+O+	High vs. Low PA	1.152	0.778	1.707 0.479
3. N-O+	Intercept	0.646	0.036	11.549 0.766
3. N-O+	Male vs. Female	1.575	1.150	2.155 0.005
3. N-O+	Age in Years	1.041	0.978	1.109 0.205
3. N-O+	College Degree	0.912	0.487	1.707 0.773
3. N-O+	College Degree + Training	1.267	0.694	2.313 0.440
3. N-O+	Master's Degree	1.416	0.771	2.598 0.262
3. N-O+	Doctorate	1.222	0.665	2.245 0.517
3. N-O+	Married or Partnered	0.716	0.486	1.054 0.090
3. N-O+	Depression	0.951	0.931	0.971 < 0.001
3. N-O+	Moderate vs. Low PA	0.901	0.598	1.357 0.616
3. N-O+	High vs. Low PA	0.917	0.618	1.362 0.667
4. N-O-	Intercept	0.763	0.030	19.509 0.870

Style	Effect	95% Confidence Interval		
		RR	2.5%	97.5% p
4. N-O-	Male vs. Female	3.760	2.590	5.459 < 0.001
4. N-O-	Age in Years	1.008	0.939	1.082 0.823
4. N-O-	College Degree	1.220	0.646	2.303 0.540
4. N-O-	College Degree + Training	1.010	0.545	1.874 0.974
4. N-O-	Master's Degree	0.866	0.462	1.624 0.654
4. N-O-	Doctorate	0.601	0.320	1.129 0.113
4. N-O-	Married or Partnered	1.185	0.776	1.808 0.432
4. N-O-	Depression	0.960	0.939	0.982 < 0.001
4. N-O-	Moderate vs. Low PA	0.792	0.506	1.239 0.305
4. N-O-	High vs. Low PA	0.905	0.594	1.378 0.640

Note. N = Neuroticism, O = Openness, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.

Table S3

Study 2 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 2/4 Neuroticism and Agreeableness and Wave 5 Physical Activity

Style	Effect	RR	95% Confidence Interval	
			2.5%	97.5% p
1. N+A-	Intercept	8.529	0.827	87.989 0.072
1. N+A-	Male vs. Female	1.427	1.053	1.934 0.022
1. N+A-	Age in Years	0.954	0.907	1.003 0.067
1. N+A-	College Degree	1.187	0.670	2.103 0.557
1. N+A-	College Degree + Training	1.089	0.630	1.882 0.761
1. N+A-	Master's Degree	0.810	0.467	1.405 0.453
1. N+A-	Doctorate	1.162	0.667	2.024 0.596
1. N+A-	Married or Partnered	0.751	0.534	1.055 0.099
1. N+A-	Depression	1.062	1.044	1.080 < 0.001
1. N+A-	Moderate vs. Low PA	0.804	0.539	1.198 0.283
1. N+A-	High vs. Low PA	0.996	0.683	1.452 0.985
2. N+A+	Intercept	13.020	1.160	146.181 0.038
2. N+A+	Male vs. Female	0.410	0.303	0.556 < 0.001
2. N+A+	Age in Years	0.970	0.920	1.021 0.245
2. N+A+	College Degree	0.788	0.434	1.429 0.432
2. N+A+	College Degree + Training	0.827	0.470	1.455 0.510
2. N+A+	Master's Degree	0.655	0.371	1.154 0.143
2. N+A+	Doctorate	0.593	0.327	1.076 0.086
2. N+A+	Married or Partnered	0.601	0.419	0.861 0.006
2. N+A+	Depression	1.049	1.030	1.069 < 0.001
2. N+A+	Moderate vs. Low PA	0.771	0.518	1.148 0.201
2. N+A+	High vs. Low PA	0.768	0.525	1.125 0.175
3. N-A+	Intercept	2.602	0.263	25.706 0.413
3. N-A+	Male vs. Female	1.042	0.769	1.411 0.792
3. N-A+	Age in Years	0.996	0.949	1.046 0.881
3. N-A+	College Degree	1.643	0.891	3.029 0.112
3. N-A+	College Degree + Training	1.457	0.808	2.629 0.211
3. N-A+	Master's Degree	1.322	0.733	2.381 0.353
3. N-A+	Doctorate	1.339	0.734	2.440 0.341
3. N-A+	Married or Partnered	1.011	0.699	1.462 0.953
3. N-A+	Depression	0.925	0.903	0.946 < 0.001
3. N-A+	Moderate vs. Low PA	0.777	0.521	1.157 0.213
3. N-A+	High vs. Low PA	0.744	0.512	1.083 0.122
4. N-A-	Intercept	6.758	0.693	65.888 0.100



Style	Effect	95% Confidence Interval		
		RR	2.5%	97.5% p
4. N-A-	Male vs. Female	3.891	2.815	5.379 < 0.001
4. N-A-	Age in Years	0.957	0.911	1.005 0.080
4. N-A-	College Degree	1.225	0.705	2.128 0.472
4. N-A-	College Degree + Training	1.453	0.859	2.457 0.164
4. N-A-	Master's Degree	1.106	0.653	1.873 0.709
4. N-A-	Doctorate	1.189	0.697	2.029 0.524
4. N-A-	Married or Partnered	1.051	0.748	1.475 0.776
4. N-A-	Depression	0.964	0.945	0.984 < 0.001
4. N-A-	Moderate vs. Low PA	0.861	0.598	1.239 0.419
4. N-A-	High vs. Low PA	0.929	0.658	1.312 0.677

Note. N = Neuroticism, A = Agreeableness, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.

Table S4

Study 2 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 2/4 Neuroticism and Conscientiousness and Wave 5 Physical Activity

		<b>95% Confidence Interval</b>			
<b>Style</b>	<b>Effect</b>	<b>RR</b>	<b>2.5%</b>	<b>97.5%</b>	<b>p</b>
1. N+C-	Intercept	0.668	0.034	12.985	0.790
1. N+C-	Male vs. Female	0.610	0.435	0.856	0.004
1. N+C-	Age in Years	1.033	0.968	1.103	0.325
1. N+C-	College Degree	0.702	0.380	1.297	0.258
1. N+C-	College Degree + Training	0.644	0.358	1.159	0.142
1. N+C-	Master's Degree	0.639	0.353	1.157	0.139
1. N+C-	Doctorate	0.394	0.214	0.725	0.003
1. N+C-	Married or Partnered	0.526	0.366	0.758	< 0.001
1. N+C-	Depression	1.069	1.047	1.091	< 0.001
1. N+C-	Moderate vs. Low PA	0.985	0.640	1.516	0.945
1. N+C-	High vs. Low PA	0.872	0.569	1.335	0.527
2. N+C+	Intercept	0.648	0.038	10.959	0.764
2. N+C+	Male vs. Female	0.697	0.509	0.956	0.025
2. N+C+	Age in Years	1.025	0.964	1.091	0.428
2. N+C+	College Degree	1.129	0.619	2.059	0.692
2. N+C+	College Degree + Training	1.160	0.654	2.060	0.611
2. N+C+	Master's Degree	0.950	0.530	1.703	0.864
2. N+C+	Doctorate	1.102	0.617	1.966	0.743
2. N+C+	Married or Partnered	0.996	0.697	1.424	0.982
2. N+C+	Depression	1.046	1.027	1.066	< 0.001
2. N+C+	Moderate vs. Low PA	0.817	0.546	1.224	0.327
2. N+C+	High vs. Low PA	0.929	0.628	1.376	0.713
3. N-C+	Intercept	1.092	0.059	20.372	0.953
3. N-C+	Male vs. Female	1.722	1.240	2.392	0.001
3. N-C+	Age in Years	1.000	0.938	1.065	0.989
3. N-C+	College Degree	2.127	1.134	3.989	0.019
3. N-C+	College Degree + Training	2.185	1.192	4.002	0.011
3. N-C+	Master's Degree	2.145	1.165	3.952	0.014
3. N-C+	Doctorate	1.700	0.924	3.129	0.088
3. N-C+	Married or Partnered	1.396	0.968	2.012	0.074
3. N-C+	Depression	0.924	0.903	0.944	< 0.001
3. N-C+	Moderate vs. Low PA	1.092	0.747	1.598	0.649
3. N-C+	High vs. Low PA	1.116	0.767	1.623	0.567
4. N-C-	Intercept	0.290	0.018	4.722	0.384

Style	Effect	RR	95% Confidence Interval		p
			2.5%	97.5%	
4. N-C-	Male vs. Female	1.481	1.061	2.066	0.021
4. N-C-	Age in Years	1.053	0.991	1.119	0.094
4. N-C-	College Degree	0.838	0.466	1.505	0.553
4. N-C-	College Degree + Training	0.925	0.530	1.616	0.785
4. N-C-	Master's Degree	0.902	0.513	1.585	0.720
4. N-C-	Doctorate	0.740	0.421	1.300	0.294
4. N-C-	Married or Partnered	0.942	0.657	1.352	0.747
4. N-C-	Depression	0.969	0.948	0.990	0.004
4. N-C-	Moderate vs. Low PA	0.890	0.606	1.307	0.553
4. N-C-	High vs. Low PA	0.734	0.504	1.068	0.106

Note. N = Neuroticism, C = Conscientiousness, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.

Table S5

Study 2 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 2/4 Extraversion and Openness to Experience and Wave 5 Physical Activity

		<b>95% Confidence Interval</b>			
<b>Style</b>	<b>Effect</b>	<b>RR</b>	<b>2.5%</b>	<b>97.5%</b>	<b>p</b>
1. E+O-	Intercept	0.610	0.016	23.737	0.791
1. E+O-	Male vs. Female	1.699	1.178	2.451	0.005
1. E+O-	Age in Years	1.015	0.936	1.100	0.719
1. E+O-	College Degree	0.977	0.517	1.845	0.943
1. E+O-	College Degree + Training	0.648	0.349	1.203	0.170
1. E+O-	Master's Degree	0.574	0.302	1.093	0.091
1. E+O-	Doctorate	0.648	0.334	1.256	0.199
1. E+O-	Married or Partnered	1.233	0.805	1.886	0.335
1. E+O-	Depression	0.997	0.976	1.018	0.776
1. E+O-	Moderate vs. Low PA	0.899	0.585	1.383	0.628
1. E+O-	High vs. Low PA	1.029	0.691	1.534	0.887
2. E+O+	Intercept	1.505	0.064	35.572	0.800
2. E+O+	Male vs. Female	0.656	0.482	0.894	0.008
2. E+O+	Age in Years	1.040	0.970	1.116	0.265
2. E+O+	College Degree	0.504	0.275	0.924	0.027
2. E+O+	College Degree + Training	0.625	0.351	1.113	0.110
2. E+O+	Master's Degree	0.809	0.448	1.461	0.482
2. E+O+	Doctorate	1.163	0.633	2.139	0.626
2. E+O+	Married or Partnered	0.556	0.387	0.800	0.002
2. E+O+	Depression	0.986	0.966	1.007	0.185
2. E+O+	Moderate vs. Low PA	0.849	0.567	1.270	0.424
2. E+O+	High vs. Low PA	0.947	0.649	1.381	0.775
3. E-O+	Intercept	0.168	0.008	3.610	0.254
3. E-O+	Male vs. Female	0.829	0.609	1.128	0.232
3. E-O+	Age in Years	1.077	1.007	1.153	0.030
3. E-O+	College Degree	0.579	0.314	1.065	0.079
3. E-O+	College Degree + Training	0.719	0.402	1.285	0.265
3. E-O+	Master's Degree	1.135	0.627	2.055	0.676
3. E-O+	Doctorate	1.670	0.907	3.074	0.100
3. E-O+	Married or Partnered	0.555	0.388	0.793	0.001
3. E-O+	Depression	1.037	1.018	1.056	< 0.001
3. E-O+	Moderate vs. Low PA	0.934	0.637	1.370	0.726
3. E-O+	High vs. Low PA	0.798	0.552	1.153	0.229
4. E-O-	Intercept	0.421	0.013	13.769	0.627

Style	Effect	95% Confidence Interval			p
		RR	2.5%	97.5%	
4. E-O-	Male vs. Female	1.788	1.244	2.570	0.002
4. E-O-	Age in Years	1.026	0.950	1.108	0.514
4. E-O-	College Degree	0.993	0.520	1.896	0.983
4. E-O-	College Degree + Training	0.686	0.366	1.285	0.239
4. E-O-	Master's Degree	0.868	0.455	1.654	0.666
4. E-O-	Doctorate	1.173	0.607	2.268	0.635
4. E-O-	Married or Partnered	1.041	0.693	1.565	0.845
4. E-O-	Depression	1.031	1.011	1.052	0.002
4. E-O-	Moderate vs. Low PA	0.588	0.392	0.880	0.010
4. E-O-	High vs. Low PA	0.538	0.367	0.789	0.002

Note. E= Extraversion, O = Openness to Experience, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.

Table S6

Study 2 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 2/4 Extraversion and Agreeableness and Wave 5 Physical Activity

Style	Effect	95% Confidence Interval		
		RR	2.5%	97.5% p
1. E+A-	Intercept	10.501	0.969	113.809 0.053
1. E+A-	Male vs. Female	2.004	1.488	2.699 < 0.001
1. E+A-	Age in Years	0.954	0.906	1.004 0.073
1. E+A-	College Degree	0.693	0.398	1.208 0.196
1. E+A-	College Degree + Training	0.725	0.427	1.230 0.233
1. E+A-	Master's Degree	0.587	0.342	1.006 0.053
1. E+A-	Doctorate	0.731	0.422	1.264 0.262
1. E+A-	Married or Partnered	1.323	0.972	1.800 0.075
1. E+A-	Depression	1.006	0.987	1.025 0.528
1. E+A-	Moderate vs. Low PA	0.825	0.566	1.204 0.318
1. E+A-	High vs. Low PA	0.970	0.685	1.373 0.863
2. E+A+	Intercept	23.183	1.544	348.127 0.023
2. E+A+	Male vs. Female	0.616	0.458	0.828 0.001
2. E+A+	Age in Years	0.952	0.898	1.010 0.104
2. E+A+	College Degree	0.886	0.483	1.625 0.696
2. E+A+	College Degree + Training	0.670	0.373	1.205 0.181
2. E+A+	Master's Degree	0.733	0.405	1.326 0.304
2. E+A+	Doctorate	0.715	0.387	1.322 0.285
2. E+A+	Married or Partnered	1.191	0.839	1.689 0.328
2. E+A+	Depression	0.979	0.959	1.000 0.054
2. E+A+	Moderate vs. Low PA	0.768	0.505	1.168 0.216
2. E+A+	High vs. Low PA	0.650	0.432	0.979 0.039
3. E-A+	Intercept	1.139	0.135	9.584 0.905
3. E-A+	Male vs. Female	0.747	0.560	0.997 0.048
3. E-A+	Age in Years	1.015	0.970	1.062 0.518
3. E-A+	College Degree	0.719	0.395	1.310 0.281
3. E-A+	College Degree + Training	0.715	0.404	1.266 0.250
3. E-A+	Master's Degree	0.802	0.450	1.427 0.452
3. E-A+	Doctorate	0.905	0.501	1.635 0.741
3. E-A+	Married or Partnered	1.028	0.744	1.420 0.869
3. E-A+	Depression	1.032	1.013	1.052 0.001
3. E-A+	Moderate vs. Low PA	0.660	0.446	0.977 0.038
3. E-A+	High vs. Low PA	0.549	0.384	0.784 < 0.001
4. E-A-	Intercept	2.654	0.289	24.396 0.388

Style	Effect	95% Confidence Interval		
		RR	2.5%	97.5% p
4. E-A-	Male vs. Female	2.547	1.884	3.442 < 0.001
4. E-A-	Age in Years	0.969	0.924	1.016 0.198
4. E-A-	College Degree	1.046	0.586	1.866 0.879
4. E-A-	College Degree + Training	0.999	0.574	1.740 0.998
4. E-A-	Master's Degree	1.114	0.636	1.952 0.705
4. E-A-	Doctorate	1.457	0.826	2.571 0.194
4. E-A-	Married or Partnered	1.301	0.962	1.760 0.088
4. E-A-	Depression	1.048	1.030	1.067 < 0.001
4. E-A-	Moderate vs. Low PA	0.710	0.495	1.018 0.062
4. E-A-	High vs. Low PA	0.633	0.450	0.890 0.009

Note. E = Extraversion, A = Agreeableness, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.

Table S7

Study 2 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 2/4 Extraversion and Conscientiousness and Wave 5 Physical Activity

		<b>95% Confidence Interval</b>			
<b>Style</b>	<b>Effect</b>	<b>RR</b>	<b>2.5%</b>	<b>97.5% p</b>	
1. E+C-	Intercept	4.878	0.299	79.690	0.266
1. E+C-	Male vs. Female	0.909	0.659	1.255	0.563
1. E+C-	Age in Years	0.991	0.932	1.053	0.766
1. E+C-	College Degree	0.591	0.331	1.055	0.075
1. E+C-	College Degree + Training	0.718	0.414	1.247	0.240
1. E+C-	Master's Degree	0.611	0.349	1.068	0.084
1. E+C-	Doctorate	0.546	0.309	0.966	0.038
1. E+C-	Married or Partnered	0.715	0.503	1.016	0.061
1. E+C-	Depression	1.022	1.000	1.044	0.051
1. E+C-	Moderate vs. Low PA	0.793	0.524	1.200	0.272
1. E+C-	High vs. Low PA	0.789	0.534	1.164	0.232
2. E+C+	Intercept	3.323	0.224	49.286	0.383
2. E+C+	Male vs. Female	0.972	0.715	1.321	0.854
2. E+C+	Age in Years	0.984	0.928	1.044	0.597
2. E+C+	College Degree	1.180	0.658	2.115	0.578
2. E+C+	College Degree + Training	1.239	0.705	2.176	0.456
2. E+C+	Master's Degree	0.946	0.535	1.675	0.850
2. E+C+	Doctorate	1.021	0.574	1.815	0.945
2. E+C+	Married or Partnered	1.157	0.810	1.651	0.422
2. E+C+	Depression	0.998	0.977	1.020	0.883
2. E+C+	Moderate vs. Low PA	0.909	0.605	1.366	0.643
2. E+C+	High vs. Low PA	1.090	0.743	1.599	0.659
3. E-C+	Intercept	1.287	0.101	16.431	0.846
3. E-C+	Male vs. Female	1.154	0.851	1.566	0.357
3. E-C+	Age in Years	0.997	0.943	1.053	0.906
3. E-C+	College Degree	1.352	0.743	2.463	0.324
3. E-C+	College Degree + Training	1.554	0.872	2.769	0.135
3. E-C+	Master's Degree	1.559	0.871	2.790	0.135
3. E-C+	Doctorate	1.803	1.005	3.235	0.048
3. E-C+	Married or Partnered	1.044	0.742	1.468	0.805
3. E-C+	Depression	1.050	1.030	1.070	< 0.001
3. E-C+	Moderate vs. Low PA	0.758	0.514	1.117	0.160
3. E-C+	High vs. Low PA	0.743	0.512	1.078	0.117
4. E-C-	Intercept	0.310	0.025	3.809	0.360



Style	Effect	95% Confidence Interval		
		RR	2.5%	97.5% p
4. E-C-	Male vs. Female	1.037	0.753	1.427 0.824
4. E-C-	Age in Years	1.046	0.991	1.105 0.101
4. E-C-	College Degree	0.749	0.418	1.344 0.332
4. E-C-	College Degree + Training	0.752	0.429	1.319 0.320
4. E-C-	Master's Degree	0.813	0.462	1.432 0.474
4. E-C-	Doctorate	0.731	0.412	1.299 0.286
4. E-C-	Married or Partnered	0.691	0.485	0.983 0.040
4. E-C-	Depression	1.065	1.045	1.086 < 0.001
4. E-C-	Moderate vs. Low PA	0.734	0.496	1.087 0.123
4. E-C-	High vs. Low PA	0.519	0.358	0.754 < 0.001

Note. E = Extraversion, C = Conscientiousness, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.

Table S8

Study 2 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 2/4 Openness to Experience and Agreeableness and Wave 5 Physical Activity

		<b>95% Confidence Interval</b>		
<b>Style</b>	<b>Effect</b>	<b>RR</b>	<b>2.5%</b>	<b>97.5% p</b>
1. O+A-	Intercept	7.172	0.624	82.396 0.114
1. O+A-	Male vs. Female	1.396	1.024	1.905 0.035
1. O+A-	Age in Years	0.987	0.936	1.040 0.612
1. O+A-	College Degree	0.488	0.258	0.921 0.027
1. O+A-	College Degree + Training	0.587	0.321	1.073 0.083
1. O+A-	Master's Degree	0.773	0.417	1.432 0.413
1. O+A-	Doctorate	0.928	0.499	1.725 0.814
1. O+A-	Married or Partnered	0.609	0.425	0.872 0.007
1. O+A-	Depression	1.015	0.998	1.032 0.075
1. O+A-	Moderate vs. Low PA	1.309	0.890	1.924 0.170
1. O+A-	High vs. Low PA	1.188	0.841	1.677 0.328
2. O+A+	Intercept	4.988	0.430	57.920 0.199
2. O+A+	Male vs. Female	0.428	0.315	0.580 < 0.001
2. O+A+	Age in Years	1.016	0.964	1.071 0.549
2. O+A+	College Degree	0.526	0.272	1.017 0.056
2. O+A+	College Degree + Training	0.532	0.283	0.998 0.049
2. O+A+	Master's Degree	0.831	0.438	1.576 0.571
2. O+A+	Doctorate	0.778	0.406	1.490 0.449
2. O+A+	Married or Partnered	0.491	0.337	0.713 < 0.001
2. O+A+	Depression	0.997	0.978	1.016 0.726
2. O+A+	Moderate vs. Low PA	1.163	0.767	1.762 0.475
2. O+A+	High vs. Low PA	0.939	0.654	1.348 0.732
3. O-A+	Intercept	4.025	0.156	103.679 0.401
3. O-A+	Male vs. Female	0.836	0.584	1.198 0.330
3. O-A+	Age in Years	0.984	0.917	1.057 0.664
3. O-A+	College Degree	0.813	0.401	1.646 0.564
3. O-A+	College Degree + Training	0.540	0.272	1.071 0.078
3. O-A+	Master's Degree	0.497	0.244	1.012 0.054
3. O-A+	Doctorate	0.376	0.181	0.782 0.009
3. O-A+	Married or Partnered	1.068	0.675	1.690 0.779
3. O-A+	Depression	0.994	0.972	1.016 0.600
3. O-A+	Moderate vs. Low PA	1.271	0.808	1.997 0.298
3. O-A+	High vs. Low PA	0.796	0.519	1.220 0.294
4. O-A-	Intercept	10.399	0.536	201.607 0.122

Style	Effect	95% Confidence Interval		
		RR	2.5%	97.5% p
4. O-A-	Male vs. Female	3.450	2.365	5.032 < 0.001
4. O-A-	Age in Years	0.945	0.886	1.008 0.084
4. O-A-	College Degree	0.983	0.507	1.905 0.960
4. O-A-	College Degree + Training	0.680	0.359	1.289 0.237
4. O-A-	Master's Degree	0.703	0.365	1.355 0.293
4. O-A-	Doctorate	0.634	0.328	1.227 0.176
4. O-A-	Married or Partnered	1.126	0.755	1.681 0.560
4. O-A-	Depression	1.013	0.994	1.032 0.188
4. O-A-	Moderate vs. Low PA	0.947	0.641	1.400 0.785
4. O-A-	High vs. Low PA	0.949	0.667	1.349 0.769

Note. O = Openness to Experience, A = Agreeableness, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.

Table S9

Study 2 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 2/4 Openness to Experience and Conscientiousness and Wave 5 Physical Activity

		<b>95% Confidence Interval</b>			
<b>Style</b>	<b>Effect</b>	<b>RR</b>	<b>2.5%</b>	<b>97.5%</b>	<b>p</b>
1. O+C-	Intercept	0.315	0.016	6.221	0.448
1. O+C-	Male vs. Female	0.658	0.475	0.911	0.012
1. O+C-	Age in Years	1.065	0.997	1.137	0.060
1. O+C-	College Degree	0.742	0.423	1.301	0.297
1. O+C-	College Degree + Training	0.696	0.415	1.166	0.169
1. O+C-	Master's Degree	1.221	0.715	2.086	0.465
1. O+C-	Doctorate	1.141	0.659	1.977	0.637
1. O+C-	Married or Partnered	0.515	0.361	0.734	< 0.001
1. O+C-	Depression	1.012	0.994	1.031	0.185
1. O+C-	Moderate vs. Low PA	1.306	0.890	1.916	0.172
1. O+C-	High vs. Low PA	1.024	0.708	1.481	0.899
2. O+C+	Intercept	0.586	0.029	11.908	0.728
2. O+C+	Male vs. Female	0.644	0.468	0.887	0.007
2. O+C+	Age in Years	1.032	0.966	1.103	0.349
2. O+C+	College Degree	1.394	0.775	2.506	0.267
2. O+C+	College Degree + Training	1.389	0.806	2.394	0.237
2. O+C+	Master's Degree	2.067	1.176	3.636	0.012
2. O+C+	Doctorate	2.800	1.581	4.961	< 0.001
2. O+C+	Married or Partnered	0.790	0.552	1.133	0.200
2. O+C+	Depression	0.994	0.977	1.013	0.542
2. O+C+	Moderate vs. Low PA	1.320	0.891	1.956	0.165
2. O+C+	High vs. Low PA	1.480	1.026	2.135	0.036
3. O-C+	Intercept	1.045	0.034	31.650	0.980
3. O-C+	Male vs. Female	1.429	1.002	2.037	0.049
3. O-C+	Age in Years	0.987	0.916	1.064	0.737
3. O-C+	College Degree	2.553	1.382	4.715	0.003
3. O-C+	College Degree + Training	1.486	0.830	2.661	0.183
3. O-C+	Master's Degree	1.813	0.989	3.323	0.054
3. O-C+	Doctorate	1.735	0.938	3.212	0.079
3. O-C+	Married or Partnered	1.548	1.030	2.326	0.035
3. O-C+	Depression	0.995	0.977	1.014	0.609
3. O-C+	Moderate vs. Low PA	1.138	0.778	1.665	0.505
3. O-C+	High vs. Low PA	1.159	0.805	1.670	0.427
4. O-C-	Intercept	0.312	0.008	11.643	0.528

Style	Effect	95% Confidence Interval		
		RR	2.5%	97.5% p
4. O-C-	Male vs. Female	1.496	1.000	2.240 0.050
4. O-C-	Age in Years	1.022	0.944	1.107 0.588
4. O-C-	College Degree	1.290	0.702	2.372 0.412
4. O-C-	College Degree + Training	0.692	0.388	1.234 0.212
4. O-C-	Master's Degree	0.634	0.342	1.176 0.148
4. O-C-	Doctorate	0.781	0.420	1.451 0.434
4. O-C-	Married or Partnered	1.032	0.672	1.584 0.886
4. O-C-	Depression	1.018	0.999	1.038 0.070
4. O-C-	Moderate vs. Low PA	1.061	0.690	1.629 0.788
4. O-C-	High vs. Low PA	1.083	0.711	1.651 0.710

Note. O = Openness to Experience, C = Conscientiousness, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.

Table S10

Study 2 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 2/4 Agreeableness and Conscientiousness and Wave 5 Physical Activity

		<b>95% Confidence Interval</b>		
<b>Style</b>	<b>Effect</b>	<b>RR</b>	<b>2.5%</b>	<b>97.5% p</b>
1. A+C-	Intercept	0.167	0.013	2.195 0.173
1. A+C-	Male vs. Female	0.586	0.436	0.788 < 0.001
1. A+C-	Age in Years	1.061	1.003	1.122 0.039
1. A+C-	College Degree	0.735	0.424	1.275 0.273
1. A+C-	College Degree + Training	0.937	0.551	1.593 0.810
1. A+C-	Master's Degree	0.908	0.533	1.548 0.723
1. A+C-	Doctorate	0.814	0.466	1.422 0.470
1. A+C-	Married or Partnered	0.805	0.575	1.127 0.206
1. A+C-	Depression	1.010	0.991	1.029 0.286
1. A+C-	Moderate vs. Low PA	0.987	0.685	1.424 0.945
1. A+C-	High vs. Low PA	0.800	0.561	1.140 0.216
2. A+C+	Intercept	0.614	0.039	9.653 0.728
2. A+C+	Male vs. Female	0.642	0.479	0.862 0.003
2. A+C+	Age in Years	1.017	0.958	1.080 0.581
2. A+C+	College Degree	1.176	0.662	2.089 0.580
2. A+C+	College Degree + Training	1.407	0.805	2.460 0.230
2. A+C+	Master's Degree	1.265	0.720	2.220 0.414
2. A+C+	Doctorate	1.438	0.808	2.560 0.217
2. A+C+	Married or Partnered	1.148	0.813	1.621 0.433
2. A+C+	Depression	0.993	0.974	1.012 0.463
2. A+C+	Moderate vs. Low PA	0.938	0.644	1.365 0.736
2. A+C+	High vs. Low PA	1.016	0.710	1.454 0.930
3. A-C+	Intercept	0.329	0.026	4.199 0.392
3. A-C+	Male vs. Female	1.911	1.431	2.551 < 0.001
3. A-C+	Age in Years	1.011	0.957	1.069 0.688
3. A-C+	College Degree	1.474	0.866	2.509 0.153
3. A-C+	College Degree + Training	2.062	1.230	3.456 0.006
3. A-C+	Master's Degree	1.664	0.987	2.803 0.056
3. A-C+	Doctorate	2.231	1.315	3.783 0.003
3. A-C+	Married or Partnered	1.445	1.057	1.975 0.021
3. A-C+	Depression	1.009	0.992	1.026 0.291
3. A-C+	Moderate vs. Low PA	0.978	0.698	1.371 0.896
3. A-C+	High vs. Low PA	1.158	0.832	1.611 0.384
4. A-C-	Intercept	0.371	0.025	5.435 0.469

Style	Effect	95% Confidence Interval		
		RR	2.5%	97.5% p
4. A-C-	Male vs. Female	2.310	1.667	3.201 < 0.001
4. A-C-	Age in Years	1.019	0.961	1.081 0.521
4. A-C-	College Degree	0.702	0.416	1.184 0.185
4. A-C-	College Degree + Training	0.901	0.545	1.491 0.685
4. A-C-	Master's Degree	0.820	0.493	1.364 0.445
4. A-C-	Doctorate	0.881	0.524	1.480 0.632
4. A-C-	Married or Partnered	0.845	0.614	1.162 0.300
4. A-C-	Depression	1.033	1.016	1.051 < 0.001
4. A-C-	Moderate vs. Low PA	0.926	0.639	1.341 0.682
4. A-C-	High vs. Low PA	0.908	0.638	1.293 0.591

Note. A = Agreeableness, C= Conscientiousness, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.

Supplementary tables S11-S13 describe the results of the multinomial logistic regressions from Study 3 that examined the four quadrants for the significant pair combinations found in Study 2.



Table S11

Study 3 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 7 Extraversion and Openness to Experience and Wave 9 Physical Activity

		<b>95% Confidence Interval</b>		
<b>Style</b>	<b>Effect</b>	<b>RR</b>	<b>2.5%</b>	<b>97.5% p</b>
1. E+O-	Intercept	21.452	0.203	2263.282 0.197
1. E+O-	Male vs. Female	1.199	0.789	1.821 0.396
1. E+O-	Age in Years	0.957	0.873	1.049 0.350
1. E+O-	College Degree	0.857	0.445	1.652 0.644
1. E+O-	College Degree + Training	0.729	0.381	1.392 0.337
1. E+O-	Master's Degree	0.489	0.253	0.945 0.033
1. E+O-	Doctorate	0.523	0.267	1.023 0.058
1. E+O-	Married or Partnered	1.056	0.653	1.707 0.823
1. E+O-	Depression	0.973	0.950	0.997 0.028
1. E+O-	Moderate vs. Low PA	0.844	0.548	1.298 0.438
1. E+O-	High vs. Low PA	1.012	0.657	1.559 0.957
2. E+O+	Intercept	2.899	0.063	134.207 0.586
2. E+O+	Male vs. Female	0.438	0.304	0.631 < 0.001
2. E+O+	Age in Years	1.016	0.943	1.095 0.670
2. E+O+	College Degree	0.539	0.279	1.045 0.067
2. E+O+	College Degree + Training	1.078	0.573	2.027 0.816
2. E+O+	Master's Degree	0.911	0.484	1.716 0.773
2. E+O+	Doctorate	1.084	0.568	2.069 0.806
2. E+O+	Married or Partnered	0.585	0.385	0.889 0.012
2. E+O+	Depression	0.977	0.956	0.999 0.040
2. E+O+	Moderate vs. Low PA	1.145	0.755	1.736 0.523
2. E+O+	High vs. Low PA	1.678	1.128	2.496 0.011
3. E-O+	Intercept	0.153	0.004	5.719 0.309
3. E-O+	Male vs. Female	0.508	0.355	0.727 < 0.001
3. E-O+	Age in Years	1.067	0.994	1.145 0.072
3. E-O+	College Degree	0.823	0.429	1.579 0.559
3. E-O+	College Degree + Training	1.220	0.649	2.294 0.536
3. E-O+	Master's Degree	1.299	0.691	2.441 0.416
3. E-O+	Doctorate	1.681	0.885	3.191 0.112
3. E-O+	Married or Partnered	0.626	0.416	0.942 0.025
3. E-O+	Depression	1.033	1.012	1.053 0.001
3. E-O+	Moderate vs. Low PA	1.053	0.697	1.590 0.805
3. E-O+	High vs. Low PA	1.282	0.876	1.877 0.201
4. E-O-	Intercept	0.883	0.015	51.400 0.952

Style	Effect	95% Confidence Interval		
		RR	2.5%	97.5% p
4. E-O-	Male vs. Female	1.224	0.818	1.830 0.325
4. E-O-	Age in Years	1.015	0.937	1.099 0.716
4. E-O-	College Degree	0.891	0.464	1.711 0.729
4. E-O-	College Degree + Training	0.977	0.517	1.847 0.943
4. E-O-	Master's Degree	0.629	0.329	1.203 0.161
4. E-O-	Doctorate	0.805	0.418	1.550 0.516
4. E-O-	Married or Partnered	0.996	0.632	1.570 0.986
4. E-O-	Depression	1.024	1.003	1.045 0.026
4. E-O-	Moderate vs. Low PA	0.759	0.488	1.181 0.220
4. E-O-	High vs. Low PA	0.856	0.563	1.302 0.465

Note. E = Extraversion, O = Openness to Experience, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.

Table S12

Study 3 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 7 Extraversion and Agreeableness and Wave 9 Physical Activity

		<b>95% Confidence Interval</b>		
<b>Style</b>	<b>Effect</b>	<b>RR</b>	<b>2.5%</b>	<b>97.5% p</b>
1. E+A-	Intercept	16.974	0.696	413.763 0.082
1. E+A-	Male vs. Female	1.591	1.137	2.225 0.007
1. E+A-	Age in Years	0.952	0.895	1.013 0.119
1. E+A-	College Degree	0.846	0.475	1.507 0.570
1. E+A-	College Degree + Training	0.954	0.549	1.659 0.869
1. E+A-	Master's Degree	0.861	0.492	1.508 0.601
1. E+A-	Doctorate	0.906	0.513	1.597 0.732
1. E+A-	Married or Partnered	0.889	0.607	1.303 0.547
1. E+A-	Depression	0.990	0.970	1.011 0.345
1. E+A-	Moderate vs. Low PA	1.064	0.710	1.593 0.764
1. E+A-	High vs. Low PA	0.971	0.659	1.431 0.883
2. E+A+	Intercept	46.591	1.592	1363.839 0.026
2. E+A+	Male vs. Female	0.509	0.367	0.705 < 0.001
2. E+A+	Age in Years	0.953	0.893	1.017 0.149
2. E+A+	College Degree	0.780	0.422	1.440 0.426
2. E+A+	College Degree + Training	0.873	0.485	1.572 0.652
2. E+A+	Master's Degree	0.860	0.476	1.555 0.618
2. E+A+	Doctorate	0.714	0.385	1.323 0.284
2. E+A+	Married or Partnered	0.685	0.456	1.029 0.069
2. E+A+	Depression	0.968	0.945	0.991 0.007
2. E+A+	Moderate vs. Low PA	0.865	0.565	1.325 0.504
2. E+A+	High vs. Low PA	0.776	0.523	1.152 0.208
3. E-A+	Intercept	2.575	0.152	43.740 0.513
3. E-A+	Male vs. Female	0.515	0.377	0.704 < 0.001
3. E-A+	Age in Years	0.998	0.946	1.054 0.956
3. E-A+	College Degree	1.063	0.578	1.956 0.843
3. E-A+	College Degree + Training	1.118	0.622	2.010 0.709
3. E-A+	Master's Degree	1.138	0.630	2.057 0.668
3. E-A+	Doctorate	1.242	0.679	2.272 0.481
3. E-A+	Married or Partnered	0.823	0.555	1.220 0.332
3. E-A+	Depression	1.025	1.005	1.045 0.014
3. E-A+	Moderate vs. Low PA	0.862	0.582	1.277 0.458
3. E-A+	High vs. Low PA	0.578	0.390	0.856 0.006
4. E-A-	Intercept	1.748	0.110	27.785 0.692

Style	Effect	95% Confidence Interval		
		RR	2.5%	97.5% p
4. E-A-	Male vs. Female	2.179	1.566	3.034 < 0.001
4. E-A-	Age in Years	0.987	0.937	1.041 0.633
4. E-A-	College Degree	1.157	0.650	2.058 0.621
4. E-A-	College Degree + Training	1.283	0.738	2.231 0.378
4. E-A-	Master's Degree	1.256	0.718	2.198 0.424
4. E-A-	Doctorate	1.536	0.875	2.697 0.135
4. E-A-	Married or Partnered	0.795	0.553	1.144 0.216
4. E-A-	Depression	1.044	1.025	1.063 < 0.001
4. E-A-	Moderate vs. Low PA	0.784	0.545	1.128 0.190
4. E-A-	High vs. Low PA	0.729	0.508	1.047 0.087

Note. E = Extraversion, A = Agreeableness, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.

Table S13  
 Study 3 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 7 Extraversion and Conscientiousness and Wave 9 Physical Activity

		<b>95% Confidence Interval</b>		
<b>Style</b>	<b>Effect</b>	<b>RR</b>	<b>2.5%</b>	<b>97.5% p</b>
1. E+C-	Intercept	2.454	0.079	76.732 0.609
1. E+C-	Male vs. Female	0.890	0.638	1.241 0.493
1. E+C-	Age in Years	1.000	0.936	1.070 0.992
1. E+C-	College Degree	0.687	0.382	1.237 0.211
1. E+C-	College Degree + Training	0.974	0.558	1.702 0.927
1. E+C-	Master's Degree	0.882	0.500	1.555 0.664
1. E+C-	Doctorate	0.954	0.530	1.718 0.876
1. E+C-	Married or Partnered	0.761	0.519	1.115 0.161
1. E+C-	Depression	0.996	0.976	1.016 0.701
1. E+C-	Moderate vs. Low PA	0.729	0.478	1.109 0.139
1. E+C-	High vs. Low PA	0.760	0.487	1.187 0.225
2. E+C+	Intercept	19.089	0.497	732.677 0.113
2. E+C+	Male vs. Female	1.091	0.788	1.510 0.601
2. E+C+	Age in Years	0.952	0.887	1.023 0.178
2. E+C+	College Degree	1.077	0.601	1.930 0.803
2. E+C+	College Degree + Training	1.271	0.724	2.233 0.403
2. E+C+	Master's Degree	1.089	0.615	1.928 0.771
2. E+C+	Doctorate	1.415	0.788	2.539 0.245
2. E+C+	Married or Partnered	1.098	0.740	1.630 0.641
2. E+C+	Depression	0.958	0.938	0.979 < 0.001
2. E+C+	Moderate vs. Low PA	0.842	0.564	1.256 0.398
2. E+C+	High vs. Low PA	1.025	0.691	1.519 0.902
3. E-C+	Intercept	1.393	0.058	33.617 0.838
3. E-C+	Male vs. Female	1.117	0.820	1.522 0.483
3. E-C+	Age in Years	0.995	0.936	1.059 0.886
3. E-C+	College Degree	1.506	0.839	2.703 0.170
3. E-C+	College Degree + Training	1.766	1.002	3.112 0.049
3. E-C+	Master's Degree	1.768	0.997	3.133 0.051
3. E-C+	Doctorate	2.581	1.441	4.623 0.001
3. E-C+	Married or Partnered	1.078	0.755	1.541 0.678
3. E-C+	Depression	1.018	1.000	1.036 0.055
3. E-C+	Moderate vs. Low PA	0.726	0.482	1.094 0.125
3. E-C+	High vs. Low PA	0.766	0.518	1.134 0.181
4. E-C-	Intercept	0.152	0.007	3.329 0.232

Style	Effect	95% Confidence Interval		
		RR	2.5%	97.5% p
4. E-C-	Male vs. Female	0.999	0.721	1.383 0.994
4. E-C-	Age in Years	1.054	0.993	1.118 0.086
4. E-C-	College Degree	0.861	0.485	1.526 0.608
4. E-C-	College Degree + Training	0.914	0.526	1.588 0.750
4. E-C-	Master's Degree	1.011	0.579	1.766 0.970
4. E-C-	Doctorate	1.126	0.633	2.004 0.686
4. E-C-	Married or Partnered	0.646	0.451	0.926 0.018
4. E-C-	Depression	1.047	1.029	1.066 < 0.001
4. E-C-	Moderate vs. Low PA	0.619	0.406	0.944 0.026
4. E-C-	High vs. Low PA	0.594	0.382	0.925 0.022

Note. E = Extraversion, C = Conscientiousness, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.

Supplementary tables S14-S16 describe the results of the multinomial logistic regressions from Study 3 that examined the four quadrants for pair combinations of the facet E4: Activity and domains.

Table S14

Study 3 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 7 E4: Activity and Openness to Experience and Wave 9 Physical Activity

		<b>95% Confidence Interval</b>		
<b>Style</b>	<b>Effect</b>	<b>RR</b>	<b>2.5%</b>	<b>97.5% p</b>
1. E4+O-	Intercept	8.679	0.112	669.973 0.330
1. E4+O-	Male vs. Female	1.372	0.911	2.067 0.130
1. E4+O-	Age in Years	0.953	0.875	1.038 0.272
1. E4+O-	College Degree	1.333	0.708	2.510 0.373
1. E4+O-	College Degree + Training	1.250	0.678	2.305 0.474
1. E4+O-	Master's Degree	1.246	0.661	2.347 0.496
1. E4+O-	Doctorate	1.239	0.658	2.332 0.506
1. E4+O-	Married or Partnered	1.783	1.182	2.689 0.006
1. E4+O-	Depression	0.987	0.967	1.008 0.219
1. E4+O-	Moderate vs. Low PA	1.047	0.677	1.619 0.837
1. E4+O-	High vs. Low PA	1.473	0.956	2.268 0.079
2. E4+O+	Intercept	0.867	0.021	35.299 0.940
2. E4+O+	Male vs. Female	0.469	0.327	0.673 < 0.001
2. E4+O+	Age in Years	1.024	0.953	1.102 0.515
2. E4+O+	College Degree	0.887	0.482	1.634 0.701
2. E4+O+	College Degree + Training	1.303	0.729	2.330 0.372
2. E4+O+	Master's Degree	1.872	1.032	3.395 0.039
2. E4+O+	Doctorate	2.152	1.186	3.907 0.012
2. E4+O+	Married or Partnered	1.095	0.754	1.589 0.634
2. E4+O+	Depression	0.992	0.973	1.011 0.390
2. E4+O+	Moderate vs. Low PA	1.228	0.819	1.842 0.319
2. E4+O+	High vs. Low PA	2.057	1.404	3.016 < 0.001
3. E4-O+	Intercept	0.076	0.002	3.254 0.179
3. E4-O+	Male vs. Female	0.512	0.350	0.750 < 0.001
3. E4-O+	Age in Years	1.073	0.997	1.155 0.058
3. E4-O+	College Degree	0.881	0.465	1.671 0.698
3. E4-O+	College Degree + Training	1.179	0.642	2.165 0.595
3. E4-O+	Master's Degree	1.551	0.831	2.895 0.168
3. E4-O+	Doctorate	1.110	0.587	2.096 0.749
3. E4-O+	Married or Partnered	0.721	0.489	1.063 0.099
3. E4-O+	Depression	1.026	1.007	1.046 0.007
3. E4-O+	Moderate vs. Low PA	1.153	0.748	1.778 0.517
3. E4-O+	High vs. Low PA	1.084	0.709	1.657 0.709
4. E4-O-	Intercept	0.267	0.004	19.921 0.548



Style	Effect	95% Confidence Interval		
		RR	2.5%	97.5% p
4. E4-O-	Male vs. Female	1.113	0.729	1.701 0.619
4. E4-O-	Age in Years	1.031	0.948	1.122 0.475
4. E4-O-	College Degree	1.110	0.591	2.085 0.746
4. E4-O-	College Degree + Training	0.884	0.480	1.631 0.694
4. E4-O-	Master's Degree	0.686	0.359	1.311 0.254
4. E4-O-	Doctorate	0.524	0.271	1.013 0.054
4. E4-O-	Married or Partnered	1.609	1.019	2.543 0.041
4. E4-O-	Depression	1.012	0.992	1.034 0.241
4. E4-O-	Moderate vs. Low PA	0.768	0.492	1.199 0.244
4. E4-O-	High vs. Low PA	0.670	0.435	1.032 0.069

Note. E4 = Activity facet of Extraversion, O = Openness to Experience, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.

Table S15  
 Study 3 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 7 E4: Activity and Agreeableness and Wave 9 Physical Activity

Style	Effect	95% Confidence Interval		
		RR	2.5%	97.5% p
1. E4+A-	Intercept	29.023	1.801	467.693 0.018
1. E4+A-	Male vs. Female	1.312	0.940	1.831 0.110
1. E4+A-	Age in Years	0.940	0.891	0.991 0.023
1. E4+A-	College Degree	0.922	0.523	1.625 0.778
1. E4+A-	College Degree + Training	1.212	0.702	2.095 0.490
1. E4+A-	Master's Degree	1.235	0.713	2.139 0.452
1. E4+A-	Doctorate	1.716	0.979	3.007 0.060
1. E4+A-	Married or Partnered	1.259	0.889	1.784 0.194
1. E4+A-	Depression	1.014	0.995	1.034 0.143
1. E4+A-	Moderate vs. Low PA	0.958	0.650	1.411 0.827
1. E4+A-	High vs. Low PA	1.327	0.892	1.974 0.160
2. E4+A+	Intercept	42.200	1.809	984.341 0.020
2. E4+A+	Male vs. Female	0.344	0.245	0.484 < 0.001
2. E4+A+	Age in Years	0.943	0.888	1.002 0.057
2. E4+A+	College Degree	0.951	0.499	1.811 0.878
2. E4+A+	College Degree + Training	1.197	0.643	2.229 0.570
2. E4+A+	Master's Degree	1.136	0.609	2.121 0.688
2. E4+A+	Doctorate	1.705	0.900	3.230 0.101
2. E4+A+	Married or Partnered	1.088	0.736	1.609 0.671
2. E4+A+	Depression	0.990	0.968	1.012 0.348
2. E4+A+	Moderate vs. Low PA	1.072	0.699	1.645 0.749
2. E4+A+	High vs. Low PA	1.305	0.884	1.927 0.179
3. E4-A+	Intercept	6.996	0.406	120.428 0.180
3. E4-A+	Male vs. Female	0.437	0.310	0.616 < 0.001
3. E4-A+	Age in Years	0.985	0.933	1.040 0.596
3. E4-A+	College Degree	0.895	0.487	1.644 0.720
3. E4-A+	College Degree + Training	0.947	0.525	1.709 0.856
3. E4-A+	Master's Degree	0.800	0.440	1.456 0.465
3. E4-A+	Doctorate	0.760	0.405	1.427 0.393
3. E4-A+	Married or Partnered	0.896	0.605	1.325 0.581
3. E4-A+	Depression	1.028	1.008	1.049 0.006
3. E4-A+	Moderate vs. Low PA	0.715	0.479	1.067 0.100
3. E4-A+	High vs. Low PA	0.559	0.364	0.858 0.008
4. E4-A-	Intercept	2.385	0.123	46.369 0.566

Style	Effect	95% Confidence Interval		
		RR	2.5%	97.5% p
4. E4-A-	Male vs. Female	1.624	1.093	2.414 0.017
4. E4-A-	Age in Years	0.983	0.929	1.040 0.553
4. E4-A-	College Degree	0.867	0.466	1.613 0.652
4. E4-A-	College Degree + Training	1.040	0.572	1.888 0.898
4. E4-A-	Master's Degree	0.783	0.426	1.441 0.432
4. E4-A-	Doctorate	0.885	0.474	1.654 0.702
4. E4-A-	Married or Partnered	0.774	0.527	1.137 0.191
4. E4-A-	Depression	1.045	1.024	1.065 < 0.001
4. E4-A-	Moderate vs. Low PA	0.855	0.551	1.328 0.483
4. E4-A-	High vs. Low PA	0.662	0.420	1.043 0.075

Note. E4 = Activity facet of Extraversion, A = Agreeableness, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.

Table S16

Study 3 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 7 E4: Activity and Conscientiousness and Wave 9 Physical Activity

		<b>95% Confidence Interval</b>			
<b>Style</b>	<b>Effect</b>	<b>RR</b>	<b>2.5%</b>	<b>97.5%</b>	<b>p</b>
1. E4+C-	Intercept	1.263	0.035	46.031	0.899
1. E4+C-	Male vs. Female	0.609	0.427	0.867	0.006
1. E4+C-	Age in Years	1.015	0.947	1.089	0.675
1. E4+C-	College Degree	0.391	0.201	0.759	0.006
1. E4+C-	College Degree + Training	0.600	0.319	1.130	0.114
1. E4+C-	Master's Degree	0.649	0.343	1.228	0.184
1. E4+C-	Doctorate	0.979	0.512	1.873	0.949
1. E4+C-	Married or Partnered	0.909	0.620	1.332	0.624
1. E4+C-	Depression	1.011	0.990	1.031	0.308
1. E4+C-	Moderate vs. Low PA	0.945	0.611	1.462	0.800
1. E4+C-	High vs. Low PA	1.199	0.785	1.831	0.399
2. E4+C+	Intercept	3.569	0.130	98.176	0.452
2. E4+C+	Male vs. Female	0.816	0.594	1.120	0.208
2. E4+C+	Age in Years	0.990	0.928	1.056	0.761
2. E4+C+	College Degree	0.811	0.442	1.489	0.499
2. E4+C+	College Degree + Training	1.027	0.568	1.856	0.931
2. E4+C+	Master's Degree	1.087	0.598	1.974	0.785
2. E4+C+	Doctorate	1.563	0.850	2.873	0.150
2. E4+C+	Married or Partnered	1.357	0.955	1.926	0.088
2. E4+C+	Depression	0.997	0.979	1.015	0.740
2. E4+C+	Moderate vs. Low PA	1.016	0.693	1.490	0.935
2. E4+C+	High vs. Low PA	1.501	1.047	2.151	0.027
3. E4-C+	Intercept	0.343	0.007	16.838	0.590
3. E4-C+	Male vs. Female	0.777	0.528	1.144	0.201
3. E4-C+	Age in Years	1.030	0.955	1.111	0.437
3. E4-C+	College Degree	0.814	0.400	1.658	0.570
3. E4-C+	College Degree + Training	0.885	0.442	1.772	0.731
3. E4-C+	Master's Degree	0.648	0.317	1.323	0.234
3. E4-C+	Doctorate	0.825	0.398	1.709	0.604
3. E4-C+	Married or Partnered	1.034	0.684	1.563	0.876
3. E4-C+	Depression	1.008	0.986	1.030	0.486
3. E4-C+	Moderate vs. Low PA	0.834	0.531	1.310	0.430
3. E4-C+	High vs. Low PA	0.674	0.441	1.030	0.068
4. E4-C-	Intercept	0.140	0.005	3.793	0.243

Style	Effect	95% Confidence Interval		
		RR	2.5%	97.5% p
4. E4-C-	Male vs. Female	0.806	0.572	1.134 0.215
4. E4-C-	Age in Years	1.069	1.003	1.140 0.040
4. E4-C-	College Degree	0.499	0.271	0.919 0.026
4. E4-C-	College Degree + Training	0.566	0.313	1.024 0.060
4. E4-C-	Master's Degree	0.520	0.284	0.950 0.033
4. E4-C-	Doctorate	0.485	0.259	0.907 0.024
4. E4-C-	Married or Partnered	0.758	0.529	1.086 0.131
4. E4-C-	Depression	1.042	1.023	1.061 < 0.001
4. E4-C-	Moderate vs. Low PA	0.746	0.503	1.107 0.145
4. E4-C-	High vs. Low PA	0.665	0.432	1.025 0.064

Note. E4 = Activity facet of Extraversion, C = Conscientiousness, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.

Supplementary tables S17-S19 describe the results of the multinomial logistic regressions from Study 3 that examined the four quadrants for pair combinations in which E4 variance was removed from the factor scores.

Table S17  
 Study 3 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 7 Extraversion and Openness to Experience After Removing E4: Activity Variance and Wave 9 Physical Activity

Style	Effect	RR	95% Confidence Interval	
			2.5%	97.5% p
1. e+O-	Intercept	167.560	1.682	16691.580 0.029
1. e+O-	Male vs. Female	0.967	0.626	1.492 0.879
1. e+O-	Age in Years	0.920	0.840	1.007 0.069
1. e+O-	College Degree	1.000	0.526	1.900 0.999
1. e+O-	College Degree + Training	0.760	0.405	1.424 0.391
1. e+O-	Master's Degree	0.502	0.264	0.955 0.036
1. e+O-	Doctorate	0.493	0.256	0.950 0.035
1. e+O-	Married or Partnered	1.040	0.640	1.688 0.875
1. e+O-	Depression	0.976	0.953	0.999 0.038
1. e+O-	Moderate vs. Low PA	0.858	0.545	1.351 0.508
1. e+O-	High vs. Low PA	1.009	0.653	1.559 0.969
2. e+O+	Intercept	16.267	0.461	574.542 0.125
2. e+O+	Male vs. Female	0.390	0.266	0.572 < 0.001
2. e+O+	Age in Years	0.983	0.917	1.053 0.626
2. e+O+	College Degree	0.644	0.337	1.231 0.183
2. e+O+	College Degree + Training	1.157	0.627	2.133 0.641
2. e+O+	Master's Degree	0.972	0.525	1.800 0.929
2. e+O+	Doctorate	1.157	0.619	2.161 0.648
2. e+O+	Married or Partnered	0.560	0.370	0.849 0.006
2. e+O+	Depression	0.979	0.958	1.001 0.058
2. e+O+	Moderate vs. Low PA	1.101	0.719	1.687 0.657
2. e+O+	High vs. Low PA	1.535	1.023	2.304 0.039
3. e-O+	Intercept	0.766	0.030	19.856 0.872
3. e-O+	Male vs. Female	0.396	0.273	0.574 < 0.001
3. e-O+	Age in Years	1.034	0.972	1.102 0.290
3. e-O+	College Degree	1.020	0.539	1.932 0.951
3. e-O+	College Degree + Training	1.458	0.790	2.690 0.227
3. e-O+	Master's Degree	1.565	0.848	2.888 0.152
3. e-O+	Doctorate	1.996	1.073	3.713 0.029
3. e-O+	Married or Partnered	0.635	0.424	0.951 0.028
3. e-O+	Depression	1.030	1.010	1.050 0.003
3. e-O+	Moderate vs. Low PA	1.009	0.663	1.537 0.966
3. e-O+	High vs. Low PA	1.284	0.885	1.862 0.187

Style	Effect	95% Confidence Interval			
		RR	2.5%	97.5%	p
4. e-O-	Intercept	6.188	0.139	276.073	0.347
4. e-O-	Male vs. Female	1.041	0.688	1.575	0.851
4. e-O-	Age in Years	0.977	0.908	1.052	0.540
4. e-O-	College Degree	1.170	0.618	2.214	0.630
4. e-O-	College Degree + Training	1.121	0.604	2.080	0.718
4. e-O-	Master's Degree	0.799	0.427	1.499	0.485
4. e-O-	Doctorate	0.908	0.481	1.713	0.765
4. e-O-	Married or Partnered	0.962	0.612	1.513	0.867
4. e-O-	Depression	1.022	1.002	1.043	0.033
4. e-O-	Moderate vs. Low PA	0.719	0.463	1.118	0.141
4. e-O-	High vs. Low PA	0.815	0.539	1.234	0.332

Note. e = Extraversion, C = Conscientiousness, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.



Table S18  
 Study 3 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 7 Extraversion and Agreeableness After Removing E4: Activity Variance and Wave 9 Physical Activity

Style	Effect	RR	95% Confidence Interval	
			2.5%	97.5% p
1. e+A-	Intercept	11.163	0.421	296.076 0.149
1. e+A-	Male vs. Female	1.960	1.381	2.784 < 0.001
1. e+A-	Age in Years	0.954	0.895	1.016 0.144
1. e+A-	College Degree	0.918	0.517	1.630 0.770
1. e+A-	College Degree + Training	1.009	0.582	1.748 0.975
1. e+A-	Master's Degree	0.749	0.428	1.311 0.312
1. e+A-	Doctorate	0.889	0.506	1.565 0.684
1. e+A-	Married or Partnered	0.841	0.573	1.234 0.376
1. e+A-	Depression	1.002	0.982	1.023 0.812
1. e+A-	Moderate vs. Low PA	0.958	0.650	1.412 0.829
1. e+A-	High vs. Low PA	0.970	0.665	1.413 0.872
2. e+A+	Intercept	35.311	1.284	970.711 0.035
2. e+A+	Male vs. Female	0.531	0.386	0.730 < 0.001
2. e+A+	Age in Years	0.954	0.895	1.017 0.153
2. e+A+	College Degree	0.876	0.479	1.602 0.667
2. e+A+	College Degree + Training	0.955	0.535	1.705 0.877
2. e+A+	Master's Degree	0.939	0.526	1.678 0.833
2. e+A+	Doctorate	0.832	0.454	1.522 0.549
2. e+A+	Married or Partnered	0.707	0.469	1.066 0.098
2. e+A+	Depression	0.977	0.954	1.000 0.046
2. e+A+	Moderate vs. Low PA	0.787	0.527	1.174 0.239
2. e+A+	High vs. Low PA	0.787	0.538	1.153 0.219
3. e-A+	Intercept	1.896	0.120	30.023 0.650
3. e-A+	Male vs. Female	0.507	0.373	0.688 < 0.001
3. e-A+	Age in Years	1.003	0.951	1.057 0.918
3. e-A+	College Degree	1.106	0.605	2.023 0.743
3. e-A+	College Degree + Training	1.275	0.715	2.274 0.410
3. e-A+	Master's Degree	1.207	0.674	2.159 0.527
3. e-A+	Doctorate	1.285	0.707	2.334 0.410
3. e-A+	Married or Partnered	0.762	0.521	1.116 0.162
3. e-A+	Depression	1.030	1.010	1.050 0.003
3. e-A+	Moderate vs. Low PA	0.782	0.531	1.151 0.212
3. e-A+	High vs. Low PA	0.653	0.449	0.951 0.026

Style	Effect	95% Confidence Interval		
		RR	2.5%	97.5% p
4. e-A-	Intercept	2.666	0.172	41.303 0.483
4. e-A-	Male vs. Female	2.080	1.511	2.864 < 0.001
4. e-A-	Age in Years	0.980	0.930	1.032 0.439
4. e-A-	College Degree	1.202	0.687	2.103 0.518
4. e-A-	College Degree + Training	1.297	0.758	2.219 0.342
4. e-A-	Master's Degree	1.251	0.728	2.147 0.417
4. e-A-	Doctorate	1.562	0.905	2.695 0.109
4. e-A-	Married or Partnered	0.777	0.543	1.113 0.168
4. e-A-	Depression	1.048	1.030	1.067 < 0.001
4. e-A-	Moderate vs. Low PA	0.714	0.498	1.024 0.067
4. e-A-	High vs. Low PA	0.787	0.542	1.142 0.205

Note. e = Extraversion, A = Agreeableness, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.

Table S19  
 Study 3 Multinomial Logistic Regression Test for Associations Between Combinations of Wave 7 Extraversion and Conscientiousness After Removing E4: Activity Variance and Wave 9 Physical Activity

Style	Effect	RR	95% Confidence Interval	
			2.5%	97.5% p
1. e+C-	Intercept	3.608	0.135	96.557 0.444
1. e+C-	Male vs. Female	0.978	0.709	1.349 0.891
1. e+C-	Age in Years	0.991	0.930	1.056 0.778
1. e+C-	College Degree	0.778	0.440	1.378 0.390
1. e+C-	College Degree + Training	0.999	0.579	1.725 0.998
1. e+C-	Master's Degree	0.885	0.510	1.538 0.666
1. e+C-	Doctorate	0.837	0.473	1.479 0.540
1. e+C-	Married or Partnered	0.659	0.449	0.966 0.033
1. e+C-	Depression	1.007	0.987	1.028 0.493
1. e+C-	Moderate vs. Low PA	0.768	0.511	1.154 0.203
1. e+C-	High vs. Low PA	0.726	0.486	1.084 0.117
2. e+C+	Intercept	133.586	2.833	6299.949 0.013
2. e+C+	Male vs. Female	1.249	0.900	1.735 0.184
2. e+C+	Age in Years	0.914	0.847	0.986 0.020
2. e+C+	College Degree	1.126	0.626	2.026 0.691
2. e+C+	College Degree + Training	1.363	0.773	2.401 0.284
2. e+C+	Master's Degree	1.024	0.575	1.822 0.936
2. e+C+	Doctorate	1.200	0.669	2.154 0.541
2. e+C+	Married or Partnered	0.797	0.540	1.178 0.255
2. e+C+	Depression	0.971	0.950	0.993 0.011
2. e+C+	Moderate vs. Low PA	0.858	0.574	1.281 0.453
2. e+C+	High vs. Low PA	0.941	0.635	1.395 0.763
3. e-C+	Intercept	2.209	0.112	43.404 0.602
3. e-C+	Male vs. Female	1.148	0.855	1.541 0.359
3. e-C+	Age in Years	0.989	0.934	1.047 0.701
3. e-C+	College Degree	1.413	0.809	2.469 0.224
3. e-C+	College Degree + Training	1.696	0.988	2.909 0.055
3. e-C+	Master's Degree	1.657	0.963	2.852 0.068
3. e-C+	Doctorate	2.106	1.215	3.652 0.008
3. e-C+	Married or Partnered	0.963	0.673	1.378 0.836
3. e-C+	Depression	1.027	1.009	1.046 0.004
3. e-C+	Moderate vs. Low PA	0.716	0.481	1.067 0.100
3. e-C+	High vs. Low PA	0.697	0.477	1.017 0.061

Style	Effect	95% Confidence Interval		
		RR	2.5%	97.5% p
4. e-C-	Intercept	0.215	0.011	4.036 0.304
4. e-C-	Male vs. Female	1.118	0.811	1.542 0.494
4. e-C-	Age in Years	1.042	0.985	1.102 0.153
4. e-C-	College Degree	0.893	0.501	1.590 0.699
4. e-C-	College Degree + Training	1.030	0.592	1.793 0.916
4. e-C-	Master's Degree	1.122	0.643	1.957 0.686
4. e-C-	Doctorate	1.168	0.661	2.064 0.593
4. e-C-	Married or Partnered	0.532	0.371	0.764 < 0.001
4. e-C-	Depression	1.056	1.036	1.076 < 0.001
4. e-C-	Moderate vs. Low PA	0.659	0.435	1.001 0.050
4. e-C-	High vs. Low PA	0.621	0.408	0.946 0.027

Note. e = Extraversion, A = Conscientiousness, RR = Relative Risk, PA = Physical Activity. Unshaded rows show results of the multinomial logistic regression associations between covariates and personality trait combinations. Shaded rows show multinomial logistic regression associations between physical activity and personality trait combinations.