**Table S1. Pearson product moment partial correlations between creative achievement, personality and intelligence, adjusting for age and sex.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | ∑CAQ | ∑ART | ∑SCI | BFI\_A | BFI\_C | BFI\_E | BFI\_N | BFI\_O |
| ∑ART | .90 |  |  |  |  |  |  |  |
| ∑SCI | .61 | .20 |  |  |  |  |  |  |
| BFI\_A | .04ns | .05 | .00ns |  |  |  |  |  |
| BFI\_C | −.05 | −.07 | .00ns | .30 |  |  |  |  |
| BFI\_E | .09 | .11 | .01ns | .29 | .30 |  |  |  |
| BFI\_N | .02ns | .03ns | −.03ns | −.44 | −.42 | −.39 |  |  |
| BFI\_O | .50 | .48 | .25 | .09 | .02ns | .26 | −.05 |  |
| WMT | .24 | .13 | .31 | .02ns | −.02ns | −.06 | −.06 | .11 |

Values are averages based on a split-half analysis for twin1 and twin2. Unless specified, correlations were significant at *p* < .05, two-tailed, in both samples. ∑ART = sum of artistic creative achievements, ∑CAQ = total sum of creative achievements, ∑SCI = sum of scientific achievements, BFI\_A = agreeableness, BFI\_C = conscientiousness, BFI\_E = extraversion, BFI\_N = neuroticism, BFI\_O = openness, WMT = Wiener Matrizen Test (intelligence)

ns Non-significant.

**Table S2. Commonality analysis and explained variance of creative achievement regressed on extraversion, openness, intelligence, age and sex.**

|  |  |  |
| --- | --- | --- |
|  | ∑ART | ∑SCI |
| Unique to BFI\_O | 20.43 | 4.78 |
| Unique to BFI\_E | 0.02 | 0.13 |
| Unique to WMT | 0.59 | 7.02 |
| Unique to AGE | 0.15 | 0.19 |
| Unique to SEX | 2.56 | 4.52 |
| Common to BFI\_O, and BFI\_E | 1.22 | -0.07 |
| Common to BFI\_O, and WMT | 1.19 | 1.67 |
| Common to BFI\_E, and WMT | 0.02 | 0.20 |
| Common to BFI\_O, and AGE | 0.02 | 0.01 |
| Common to BFI\_E, and AGE | 0.01 | 0.02 |
| Common to WMT, and AGE | 0.14 | 0.65 |
| Common to BFI\_O, and SEX | -0.30 | 0.21 |
| Common to BFI\_E, and SEX | -0.01 | 0.16 |
| Common to WMT, and SEX | -0.25 | 1.49 |
| Common to AGE, and SEX | 0.02 | -0.02 |
| Common to BFI\_O, BFI\_E, and WMT | -0.14 | -0.23 |
| Common to BFI\_O, BFI\_E, and AGE | -0.07 | -0.04 |
| Common to BFI\_O, WMT, and AGE | 0.13 | 0.12 |
| Common to BFI\_E, WMT, and AGE | 0.01 | 0.07 |
| Common to BFI\_O, BFI\_E, and SEX | 0.29 | -0.20 |
| Common to BFI\_O, WMT, and SEX | -0.19 | 0.27 |
| Common to BFI\_E, WMT, and SEX | -0.02 | 0.16 |
| Common to BFI\_O, AGE, and SEX | 0.00 | 0.00 |
| Common to BFI\_E, AGE, and SEX | -0.01 | 0.01 |
| Common to WMT, AGE, and SEX | -0.03 | 0.07 |
| Common to BFI\_O, BFI\_E, WMT, and AGE | -0.06 | -0.07 |
| Common to BFI\_O, BFI\_E, WMT, and SEX | -0.01 | -0.10 |
| Common to BFI\_O, BFI\_E, AGE, and SEX | 0.00 | 0.00 |
| Common to BFI\_O, WMT, AGE, and SEX | 0.00 | 0.01 |
| Common to BFI\_E, WMT, AGE, and SEX | -0.01 | 0.03 |
| Common to BFI\_O, BFI\_E, WMT, AGE, and SEX | 0.00 | -0.01 |
| Total | 25.69 | 21.04 |

∑ART = sum of artistic creative achievements, ∑SCI = sum of scientific achievements, BFI\_E = extraversion, BFI\_O = openness, WMT = Wiener Matrizen Test (intelligence)

**Table S3. Artistic creative achievement (MAX\_ART) regressed on openness to experience and intelligence.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | *β* | *SE* | *t* |
| BFI\_O | 1.20 | 0.07 | 16.55 |
| WMT | 16.90 | 1.95 | 8.66 |
| SEX(f) | 0.12 | 0.08 | 1.54ns |
| BFI\_O:SEX(f) | −0.35 | 0.08 | −4.21 |

‘:’ represents an interaction, BFI\_O = openness to experience, SEX(f) = being female, WMT = Wiener Matrizen Test (intelligence). Values are averages based on a split-half analysis for twin1 and twin2. Unless specified, only estimates significant at *p* < 0.05, two-tailed, in both samples, are reported with the exception of non-significant main effects of significant interactions.

ns non-significant

**Table S4. Scientific creative achievement regressed on openness to experience and intelligence.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | *β* | *SE* | *t* |
| AGE | −0.19 | 0.05 | −4.00 |
| BFI\_O | 0.91 | 0.05 | 17.29 |
| SEX(f) | −0.48 | 0.09 | −5.18 |
| WMT | 29.61 | 2.78 | 10.65 |

BFI\_O = openness to experience, SEX(f) = being female, WMT = Wiener Matrizen Test (intelligence). Values are averages based on a split-half analysis for twin1 and twin2. Only estimates significant at *p* < 0.05, two-tailed, in both samples, are reported.

**Table S5. Frequency table of MZ and DZ twins (of complete pairs) by the level of MAX\_ART and MAX\_SCI.**

|  |  |  |
| --- | --- | --- |
|  | MAX\_ART | MAX\_SCI  |
| Level | MZ | DZ | MZ | DZ |
| 1 | 344 | 190 | 344 | 190 |
| 2 | 209 | 115 | 173 | 114 |
| 3 | 661 | 383 | 214 | 104 |
| 4 | 241 | 138 | 157 | 69 |
| Total | 1455 | 826 | 888 | 477 |

MAX\_ART = artistic creative achievement, MAX\_SCI = scientific creative achievement, MZ = monozygotic twins, DZ = dizygotic twins

**Table S6. Univariate model fitting results for creative achievement (artistic/scientific), openness to experience and intelligence, corrected for age and sex.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | model | *AIC* | *−2LL* | *df* | *∆−2LL* | *∆−df* | *p* | A | D | G | C | E |
| MAX\_ART | **ACE** | **1129.27** | **5753.27** | **2312** |  |  |  | **0.37** |  |  | **0.32** | **0.32** |
|  | AE | 1133.14 | 5759.14 | 2313 | 5.87 | 1 | 0.015 | 0.70 |  |  |  | 0.30 |
|  | CE | 1136.92 | 5762.92 | 2313 | 9.65 | 1 | 0.002 |  |  |  | 0.63 | 0.37 |
|  | E | 1389.99 | 6017.99 | 2314 | 258.85 | 1 | < 0.001 |  |  |  |  | 1.00 |
| MAX\_SCI | ADE | 919.46 | 3997.46 | 1539 |  |  |  | 0.68ns | 0.00ns |  |  | 0.32 |
|  | **AE** | **917.46** | **3997.46** | **1540** | **0.00** | **1** | **1.000** | **0.68** |  |  |  | **0.32** |
|  | DE | 920.64 | 4000.64 | 1540 | 3.18 | 1 | 0.075 |  | 0.69 |  |  | 0.31 |
|  | E | 1052.11 | 4134.11 | 1541 | 136.65 | 1 | < 0.001 |  |  |  |  | 1.00 |
|  | GE | 919.46 | 3997.46 | 1539 |  |  |  |  |  | 0.68 |  | 0.32 |
| BFI\_O | ADE | 2798.74 | 10350.74 | 3776 |  |  |  | 0.54ns | 0.03ns |  |  | 0.43 |
|  | **AE** | **2796.79** | **10350.79** | **3777** | **0.05** | **1** | **0.818** | **0.57** |  |  |  | **0.43** |
|  | DE | 2809.81 | 10363.81 | 3777 | 13.07 | 1 | < 0.001 |  | 0.58 |  |  | 0.42 |
|  | E | 3263.83 | 10819.83 | 3778 | 469.04 | 1 | < 0.001 |  |  |  |  | 1.00 |
|  | GE | 2798.74 | 10350.74 | 3776 |  |  |  |  |  | 0.57 |  | 0.43 |
| WMT | ACE | 2225.55 | 8995.55 | 3385 |  |  |  | 0.45 |  |  | 0.13 | 0.42 |
|  | **AE** | **2226.44** | **8998.44** | **3386** | **2.89** | **1** | **0.089** | **0.59** |  |  |  | **0.41** |
|  | CE | 2259.04 | 9031.04 | 3386 | 35.49 | 1 | < 0.001 |  |  |  | 0.50 | 0.50 |
|  | E | 2659.97 | 9433.97 | 3387 | 435.53 | 1 | < 0.001 |  |  |  |  | 1.00 |

The most parsimonious models are shown in bold face. AE and CE/DE models were compared to the ACE/ADE models. The E models were compared to the AE models. ADE and GE models are not nested and thus cannot be compared. −2LL = log-likelihood ratio, A = additive genetic, AIC = Akaike information criterion, BFI\_O = openness, C = shared environmental, D = dominant genetic, df = degrees of freedom, E = non-shared environmental, G = genetic (A+D), MAX\_ART = artistic creative achievement, MAX\_SCI = scientific creative achievement, WMT = intelligence.



**Figure S1. Trivariate ACE Cholesky decomposition for artistic creative achievement (MAX\_ART), openness to experience (BFI\_O) and intelligence (WMT), for additive genetic (A), shared environmental (C), and non-shared environmental influences (E), corrected for age and sex.** Numerical values represent standardized path coefficients with confidence intervals in parenthesis.



**Figure S2. Trivariate ACE Cholesky decomposition for scientific creative achievement (MAX\_SCI), openness to experience (BFI\_O) and intelligence (WMT), for additive genetic (A), shared environmental (C), and non-shared environmental influences (E), corrected for age and sex.** Numerical values represent standardized path coefficients with confidence intervals in parenthesis.