Supplementary Materials

Supplementary Figure 1. **Top:** For all 13 traits, ratings of unnamed targets and ratings of named targets were significantly correlated. **Bottom:** For all 13 traits, trait distances calculated for pairs of unnamed targets and trait distances calculated for pairs of named targets were significantly correlated.
Supplementary Table 1. Results from 13 linear models predicting holistic similarity between pairs of unfamiliar people (with names and faces), using pairwise trait distance. P-values were corrected using the Holm-Bonferroni method.

<table>
<thead>
<tr>
<th>trait</th>
<th>theory</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>adjusted p</th>
</tr>
</thead>
<tbody>
<tr>
<td>openness</td>
<td>big 5</td>
<td>0.470</td>
<td>0.029</td>
<td>15.949</td>
<td>1.31E-50</td>
<td>3.93E-50</td>
</tr>
<tr>
<td>conscientiousness</td>
<td>big 5</td>
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<td>0.019</td>
<td>42.728</td>
<td>1.41E-218</td>
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<tr>
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<td>0.032</td>
<td>7.463</td>
<td>2.00E-13</td>
<td>4.00E-13</td>
</tr>
<tr>
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<td>big 5</td>
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<td>0.017</td>
<td>52.094</td>
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<td>face perception</td>
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<td>0.033</td>
<td>5.157</td>
<td>3.08E-07</td>
<td>3.08E-07</td>
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<td>0.017</td>
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<tr>
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<td>0.026</td>
<td>23.515</td>
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<tr>
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<td>mind perception</td>
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<td>1.18E-138</td>
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Supplementary Table 2. Results from a cumulative linear model predicting holistic similarity between pairs of unfamiliar people (with names and faces), using all 13 pairwise trait distances. This model significantly predicted holistic similarity ($F(13,886) = 267.70, p < 0.0001, CoD = 0.790$). Traits highlighted in yellow changed in significance after adding names and faces to the unfamiliar targets.

<table>
<thead>
<tr>
<th>variable</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>partial correlation</th>
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<tbody>
<tr>
<td>(Intercept)</td>
<td>0.000</td>
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<td>0.000</td>
<td>1.000</td>
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<tr>
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<td>0.017</td>
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<td>0.045 *</td>
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<tr>
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<td>4.189</td>
<td>3.08E-05 ***</td>
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<td>5.429</td>
<td>7.31E-06 ***</td>
<td>0.179</td>
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<td>3.476</td>
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<td>0.670</td>
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</tr>
<tr>
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<td>0.273</td>
<td>0.062</td>
<td>4.394</td>
<td>1.25E-05 ***</td>
<td>0.146 (prev. 0.021)</td>
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<td>0.044</td>
<td>2.992</td>
<td>0.003 **</td>
<td>0.100</td>
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<td>agency</td>
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<td>0.004 **</td>
<td>0.098 (prev. -0.044)</td>
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<tr>
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<td>0.026</td>
<td>-0.111</td>
<td>0.911</td>
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**Supplementary Figure 2.** Partial correlations between each trait distance and holistic similarity, controlling for the other 12 trait distances, in (1) the domain of unfamiliar people (with names and faces), and (2) the domain of famous people.

**Supplementary Table 3.** Results from 13 linear models predicting holistic similarity between pairs of famous people, using pairwise trait distance, controlling for concordance in: gender, race, nationality, and industry. Partial correlations were calculated between holistic similarity and trait distance, controlling for the four biographical covariates.

<table>
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<tr>
<th>trait</th>
<th>theory</th>
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<th>$t$</th>
<th>$p$</th>
<th>adjusted $p$</th>
<th>partial correlation</th>
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<td>0.094</td>
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<td>conscientiousness</td>
<td>Big 5</td>
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<td>0.027</td>
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<td>extraversion</td>
<td>Big 5</td>
<td>0.172</td>
<td>0.028</td>
<td>6.138</td>
<td>1.25E-09</td>
<td>7.5E-09</td>
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<td>0.053</td>
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<td>stereotype content model</td>
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<td>4.82E-21</td>
<td>4.15E-20</td>
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**Supplementary Table 4.** Results from a cumulative linear model predicting holistic similarity between pairs of famous people, using all 13 pairwise trait distances, controlling for concordance in: gender, race, nationality, and industry. This model significantly predicted holistic similarity ($F(17,882) = 62.08, p < 0.0001, CoD = 0.524$). Traits highlighted in yellow changed in significance after adding biographical covariates to the 13-trait model.

<table>
<thead>
<tr>
<th>variable</th>
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<th>SE</th>
<th>t</th>
<th>p</th>
<th>partial correlation</th>
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<tr>
<td>(Intercept)</td>
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<td>0.023</td>
<td>0.000</td>
<td>1.000</td>
<td></td>
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<tr>
<td>openness</td>
<td>0.136</td>
<td>0.030</td>
<td>4.576</td>
<td>5.42E-06 ***</td>
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<td>0.042</td>
<td>1.506</td>
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<td>agreeableness</td>
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<td>-2.575</td>
<td>0.010 **</td>
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<td>-0.068 (prev. -0.048)</td>
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**Supplementary Figure 3.** Partial correlations between each trait distance and holistic similarity, controlling for the other 12 trait distances, in (1) the domain of unfamiliar people, and (2) the domain of famous people. The model for famous people included, as covariates, concordance in: gender, race, nationality, and industry.
**Supplementary Table 5.** Within-domain predictive performance of models predicting pairwise holistic similarity using trait distance. The unfamiliar targets were presented with names and faces. Five-fold cross-validation was used to calculate performance measures. The bottom row reports performance for the cumulative model.

<table>
<thead>
<tr>
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<td>openness</td>
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</table>
Supplementary Table 6. Cross-domain predictive performance of models predicting holistic similarity using trait distance. The unfamiliar targets were presented with names and faces. Five-fold cross-validation was used to calculate performance measures. A negative coefficient of determination indicates poorer prediction than the mean value. The bottom row reports performance for the cumulative model.

<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
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<tbody>
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<td>0.059</td>
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<td>0.968</td>
<td>0.770</td>
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<td>0.804</td>
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<td>1.094</td>
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Supplementary Figure 4. Performance measures for models predicting holistic similarity, visualized as radar plots. (Top left) CoD values by dimension, within the domain of unfamiliar people (with names and faces) and within the domain of famous people. (Top right) Cross-domain CoD values between observed and predicted holistic similarity values. (Bottom left) RMSE values by dimension, within the domain of unfamiliar people and within the domain of famous people. (Bottom right) Cross-domain RMSE values between observed and predicted holistic similarity values.

Supplementary Table 7. Predicting holistic similarity between pairs of unfamiliar people, after controlling for whether the targets performed behaviors of the same valence. Each model consisted of two predictors: (1) concordance in valence for each pair, and (2) trait distance. Coefficients, t statistics, and p-values are reported for each dimension. P-values were adjusted using the Holm-Bonferroni method.

<table>
<thead>
<tr>
<th>trait</th>
<th>b</th>
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<th>t</th>
<th>p</th>
<th>adjusted p</th>
<th>CoD</th>
<th>RMSE</th>
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<tr>
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<td>0.026</td>
<td>20.51</td>
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<td>-0.02</td>
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<td>0.985 (ns)</td>
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Supplementary Table 8. Predicting holistic similarity between pairs of unfamiliar people who performed positive behaviors, using trait distance. P-values were adjusted using the Holm-Bonferroni method.

<table>
<thead>
<tr>
<th>trait</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>adjusted p</th>
<th>CoD</th>
<th>RMSE</th>
</tr>
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<tbody>
<tr>
<td>openness</td>
<td>0.245</td>
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<td>0.002</td>
<td>0.020 *</td>
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<td>0.968</td>
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<tr>
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<td>0.078</td>
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<td>0.011</td>
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<td>0.013</td>
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<tr>
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Supplementary Table 9. Predicting holistic similarity between pairs of unfamiliar people who performed negative behaviors, using trait distance. P-values were adjusted using the Holm-Bonferroni method.

<table>
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<tr>
<th>trait</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>adjusted p</th>
<th>CoD</th>
<th>RMSE</th>
</tr>
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<tbody>
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<td>openness</td>
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<td>0.849</td>
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<td>conscientiousness</td>
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<td>0.002</td>
<td>0.002 **</td>
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<td>0.960</td>
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<td>0.227</td>
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<td>2.962</td>
<td>0.004</td>
<td>0.028 *</td>
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<td>0.977</td>
</tr>
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<td>agreeableness</td>
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Supplementary Table 10. Predicting holistic similarity between pairs of unfamiliar people (with names and faces), after controlling for whether the targets performed behaviors of the same valence. Each model consisted of two predictors: (1) concordance in valence for each pair, and (2) trait distance. Coefficients, t statistics, and p-values are reported for each dimension. P-values were adjusted using the Holm-Bonferroni method.

<table>
<thead>
<tr>
<th>trait</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>adjusted p</th>
<th>CoD</th>
<th>RMSE</th>
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</thead>
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<tr>
<td>openness</td>
<td>0.090</td>
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Supplementary Table 11. Predicting pairwise similarity between pairs of unfamiliar people (with names and faces) who performed positive behaviors, using trait distance. P-values were adjusted using the Holm-Bonferroni method.

<table>
<thead>
<tr>
<th>trait</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>adjusted p</th>
<th>CoD</th>
<th>RMSE</th>
</tr>
</thead>
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<tr>
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<td>0.315</td>
<td>0.753</td>
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<td>1.002</td>
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<td>0.901</td>
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<td>0.996</td>
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<tr>
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<td>1.000</td>
<td>0.041</td>
<td>0.994</td>
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**Supplementary Table 12.** Predicting pairwise similarity between pairs of unfamiliar people (with names and faces) who performed negative behaviors, using trait distance. P-values were adjusted using the Holm-Bonferroni method.

<table>
<thead>
<tr>
<th>trait</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>adjusted p</th>
<th>CoD</th>
<th>RMSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>openness</td>
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<td>0.079</td>
<td>0.952</td>
<td>0.343</td>
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</tr>
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<td>0.251</td>
<td>0.076</td>
<td>3.286</td>
<td>0.001</td>
<td>0.014 *</td>
<td>0.092</td>
<td>0.974</td>
</tr>
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<td>extraversion</td>
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<td>0.079</td>
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<td>0.667</td>
<td>1.000</td>
<td>0.012</td>
<td>0.999</td>
</tr>
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<td>0.077</td>
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<td>0.002</td>
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<td>0.000</td>
<td>0.001</td>
<td>0.120</td>
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<td>agency</td>
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<td>0.079</td>
<td>0.147</td>
<td>0.883</td>
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<td>experience</td>
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<td>0.050</td>
<td>0.348</td>
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**Supplementary Figure 5.** Histograms of PC1 scores for negative, neutral, and positive unfamiliar targets.
Supplementary Table 13. Principal component loadings: Trait ratings of unfamiliar people (without names and faces)

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<tr>
<th></th>
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<th>PC7</th>
<th>PC8</th>
<th>PC9</th>
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<th>PC11</th>
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<tr>
<td>agency</td>
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<td>0.172</td>
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<td>-0.860</td>
<td>-0.170</td>
<td>0.121</td>
<td>-0.059</td>
<td>0.067</td>
<td>-0.223</td>
<td>0.137</td>
<td>-0.060</td>
<td>0.055</td>
</tr>
<tr>
<td>agreeableness</td>
<td>-0.302</td>
<td>-0.020</td>
<td>-0.016</td>
<td>-0.129</td>
<td>0.016</td>
<td>-0.118</td>
<td>-0.200</td>
<td>-0.007</td>
<td>0.133</td>
<td>-0.031</td>
<td>-0.074</td>
<td>0.113</td>
<td>-0.895</td>
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<td>attractiveness</td>
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<td>-0.029</td>
<td>0.030</td>
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<td>0.011</td>
<td>-0.182</td>
<td>-0.195</td>
<td>-0.033</td>
<td>0.395</td>
<td>0.097</td>
<td>-0.452</td>
<td>0.564</td>
<td>0.354</td>
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<td>-0.010</td>
<td>0.042</td>
<td>0.310</td>
<td>0.308</td>
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<td>-0.287</td>
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<td>conscientiousness</td>
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<td>-0.058</td>
<td>-0.042</td>
<td>0.446</td>
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<td>0.609</td>
<td>0.330</td>
<td>0.207</td>
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<td>dominance</td>
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<td>0.586</td>
<td>0.696</td>
<td>-0.267</td>
<td>0.128</td>
<td>-0.175</td>
<td>0.031</td>
<td>-0.114</td>
<td>-0.021</td>
<td>0.068</td>
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<td>experience</td>
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<td>-0.048</td>
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<td>0.328</td>
<td>0.534</td>
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<td>0.029</td>
<td>0.128</td>
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<td>neuroticism</td>
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<td>0.046</td>
<td>-0.320</td>
<td>0.769</td>
<td>0.100</td>
<td>-0.262</td>
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<td>-0.040</td>
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<td>0.173</td>
<td>-0.038</td>
<td>0.585</td>
<td>0.379</td>
<td>-0.550</td>
<td>0.187</td>
<td>0.017</td>
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<td>-0.181</td>
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<td>0.401</td>
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<td>-0.063</td>
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<td>0.213</td>
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Supplementary Table 14. Principal component loadings: Trait ratings of famous people

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<td>-0.211</td>
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<td>-0.198</td>
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<td>-0.174</td>
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**Supplementary Table 15.** Predicting trait ratings of unfamiliar people using target valence (whether the target performed a positive or negative behavior).

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</table>
Supplementary Figure 6. Left: Pearson’s correlations for all pairwise combinations of the 13 trait dimensions in the domain of unfamiliar people with names and faces. Comparing the trait ratings of unfamiliar people with trait ratings of famous people, we found a significant difference between the correlation matrices produced using these datasets ($\chi^2(78) = 2540.13, p < 0.0001$). Permutation testing revealed that the degree of intercorrelatedness among the 13 trait dimensions is stable in the set of unfamiliar people with names and faces (Kendall’s $\tau = 0.861, p < 0.0001$). Thus, when observers are judging unfamiliar people – whether given their names, faces, and behaviors, or just given their behaviors – their trait representations seem to differ from when they’re judging famous people. Right: Scree plot displaying proportion of total variance explained by each principal component in the domain of unfamiliar people with names and faces. The first PC accounted for 76.9% of variance.

Supplementary Figure 7. Kendall’s tau distributions for permuted data in the domain of unfamiliar people with names and faces (top left), positive unfamiliar people with names and faces (top right), negative unfamiliar people with names and faces (bottom left), unfamiliar people with names and faces after the 1st PC was removed (bottom right).
**Supplementary Figure 8.** Top: Pearson’s correlations for all pairwise combinations of the 13 trait dimensions in the domains of positive unfamiliar people with names and faces, and negative unfamiliar people with names and faces. The following comparisons between correlation matrices were significant: between all unfamiliar people and positive unfamiliar people ($\chi^2(78) = 7104.44, p < 0.0001$); between all unfamiliar people and negative unfamiliar people ($\chi^2(78) = 5571.21, p < 0.0001$); and between positive unfamiliar people and negative unfamiliar people ($\chi^2(78) = 544.69, p < 0.0001$). Permutation testing revealed that the degree of intercorrelatedness among the 13 trait dimensions is stable in the set of positive unfamiliar people with names and faces (Kendall’s $\tau = 0.403, p = 0.0001$), and in the set of negative unfamiliar people with names and faces (Kendall’s $\tau = 0.638, p < 0.0001$).

Bottom: Scree plots displaying proportion of total variance explained by each principal component in the domains of positive unfamiliar people with names and faces, and negative unfamiliar people with names and faces. The first PC for each valence subset explained less than half of all variance (positive behaviors: 30.0%; negative behaviors: 38.7%).

**Supplementary Figure 9.** Pearson’s correlations for all pairwise combinations of the 13 trait dimensions for the domain of unfamiliar people with names and faces, after removing the 1st PC. After removing the first PC, the correlation matrix for unfamiliar people with names and faces was significantly different from the original ($\chi^2(78) = 18487.02, p < 0.0001$). The resulting correlation structure was still reliable (Kendall’s $\tau = 0.420$, permutation $p < 0.0001$).
Supplementary Figure 10. Measures of biographical similarity between pairs of famous people. For each pair of famous people, we coded whether or not the targets shared the same: (a) Gender, (b) Race, (c) Nationality, and (d) Industry (arts, athletics, business, media, politics, sciences), based on Wikipedia entries (entering NAs where information was not available). (e) Holistic similarity ratings (for comparison with biographical similarities).
Participant instructions: similarity ratings
In this study you will be asked to rate how similar two people are to each other, given information about their behavior.
Please make your ratings on a scale from 0 (extremely dissimilar) to 100 (extremely similar).

Participant instructions: trait ratings

In this study you will be asked to rate people's openness to experience, based on their behaviors. High openness to experience reflects intellectual curiosity, creativity, and desire for novelty. Low openness to experience reflects conventionality, concreteness and a preference for familiarity. Please make your ratings on a scale from 1 (very closed) to 7 (very open).

In this study you will be asked to rate the conscientiousness of people, based on their behaviors. High conscientiousness reflects self-discipline, organization and planning. Low conscientiousness reflects spontaneity, carelessness and impulsivity. Please make your ratings on a scale from 1 (very impulsive) to 7 (very conscientious).

In this study you will be asked to rate the extraversion of people, based on their behaviors. High extraversion reflects assertiveness, sociability and finding enjoyment and energy in the company of others. Low extraversion reflects quietness, introversion and a desire for solitary time. Please make your ratings on a scale from 1 (very introverted) to 7 (very extraverted).

In this study you will be asked to rate the agreeableness of people, based on their behaviors. High agreeableness reflects friendliness, altruism and the desire to cooperate. Low agreeableness reflects self-interest, lack of sympathy and pessimism about the character of others. Please make your ratings on a scale from 1 (very disagreeable) to 7 (very agreeable).

In this study you will be asked to rate the neuroticism of people, based on their behaviors. High neuroticism reflects susceptibility to negative emotions such as anxiety, anger and stress. Low neuroticism reflects greater emotional stability and resistance to negative feelings. Please make your ratings on a scale from 1 (very stable) to 7 (very neurotic).

In this study you will be asked to rate the warmth of people, based on their behaviors. Warm people are those that are generally regarded with positive feelings such as trust, admiration, empathy or pity rather than suspicion, contempt, envy or disgust. Please make your ratings on a scale from 1 (not at all warm) to 7 (very warm).

In this study you will be asked to rate the competence of people, based on their behaviors. Competence reflects people's intelligence, common sense, social dominance and ability to solve a variety of problems in an efficient manner. Please make your ratings on a scale from 1 (not at all competent) to 7 (very competent).

In this study you will be asked to rate the agency of people, based on their behaviors. Agency refers a person's ability to enact their intentions, control themselves and the degree to which they possess a will of their own. A fictional intelligent robot would be high in agency even though it might not have rich emotions like a human. Please make your ratings on a scale from 1 (no agency) to 7 (very agentic).

In this study you will be asked to rate the level of experience of people, based on their behaviors.
Experience refers to a person’s capacity to have internal feelings and perceive the world around them. An animal or baby might be very high in experience even though they don't necessarily have all of the same mental abilities as an adult human. Please make your ratings on a scale from 1 (no experience) to 7 (high experience).

In this study you will be asked to rate the intelligence of people, based on their behaviors. Intelligence refers to a person’s ability for learning, thinking, and abstract problem solving as well as how much they know about the world. Please make your ratings on a scale from 1 (very unintelligent) to 7 (very intelligent).

In this study you will be asked to rate the attractiveness of people, based on their behaviors. Attractiveness refers a person's romantic or sexual desirability to other people. This includes both their physical beauty and the desirability of their personality. Please make your ratings on a scale from 1 (very unattractive) to 7 (very attractive).

In this study you will be asked to rate the social dominance of people, based on their behaviors. Social dominance reflects a person's tendency to exert their authority over other people in social situations. Dominant individuals are thought of as strong and commanding. Less dominant individuals are thought of more as followers. Please make your ratings on a scale from 1 (not at all dominant) to 7 (very dominant).

In this study you will be asked to rate the trustworthiness of people, based on their behaviors. Trustworthiness refers to a person’s honesty, reliability and good nature. A highly trustworthy individual could be given heavy responsibility or placed in the path of large temptations without worry. Please make your ratings on a scale from 1 (not at all trustworthy) to 7 (very trustworthy).
Demographics: participants who rated holistic similarity between unfamiliar targets
Age: $M = 30.1$, $SD = 12.8$

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<tr>
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Demographics: participants who gave trait ratings for unfamiliar targets
Age: $M = 37.2$, $SD = 11.2$

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Demographics: participants who gave trait ratings for unfamiliar targets with names and faces
Age: $M = 39.4$, $SD = 12.0$

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