**Predicting Life Satisfaction from the Personality Traits Extraversion and Neuroticism: A Linear Mixed Effects Modeling Approach**

Tamar Gazit

Department of Psychiatry, Dalhousie University

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Dr. Sandra Meier

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This study examined how extraversion and neuroticism predict satisfaction with life using a linear mixed effects models framework. This modeling approach was selected because the dataset consisted of repeated daily assessments (Level 1) nested within individual participants (Level 2), and linear mixed effects models account for the non-independence of observations within individuals. The study tested three hypotheses: (H1) Extraversion will be positively associated with satisfaction with life; (H2) Neuroticism will be negatively associated with satisfaction with life; (H3) The effects of extraversion and neuroticism will be similar at Level 1 (within participants over time) and Level 2 (between participants).

**Results**

**Data Preparation**

The dataset (P6003.A4.sav) was imported from an SPSS file using the haven package in R. To prepare the data for analysis, only the variables relevant to the current assignment were retained: participant ID (*id*), measurement day (*day*), satisfaction with life (*swl*), extraversion (*tipm.E*), and neuroticism (*tipm.N*). The dataset consisted of 4252 observations collected across up to 20 days for 263 participants. The variable *id* was recoded as a factor. This step helped ensure that the lmer() function would treat individual participants as separate grouping units in the mixed effects models. The variable *day* was converted to a numeric type in case we were interested in modeling time-related effects in future analyses.

Descriptive statistics and structure checks were conducted to confirm the dataset was in long format, the correctness of data types and identify any missing values. A total of 1 missing value was observed for *day* and *swl*, and 3 missing values were observed for each of the predictors (*tipm.E* and *tipm.N*). These missing values were left unaltered, as multilevel modeling is great at handling incomplete data under the assumption of missing at random.

**Descriptive Statistics and Correlations**

Descriptive statistics and bivariate correlations among the study variables are presented in Table 1. On average, participants reported a satisfaction with life score of 4.43 (*SD* = 1.61), suggesting a moderately high level of life satisfaction in this sample. The mean score for extraversion was 4.18 (*SD* = 1.52), indicating that participants generally described themselves as moderately outgoing and socially engaged. The mean score for neuroticism was 3.49 (*SD* = 1.54), reflecting rather low levels of self-reported negative emotionality.

Satisfaction with life was significantly positively correlated with extraversion, *r* = .38, 95% CI [.35, .41], *p* < .01. This means that participants who were more extraverted tended to report higher life satisfaction. Since the confidence interval does not include zero and the *p*-value is small, we can be confident that this is a real and statistically significant effect. Satisfaction with life was significantly negatively correlated with neuroticism, *r* = -.45, 95% CI [-.47, -.43], *p* < .01, such that participants with higher levels of neuroticism tended to report lower life satisfaction. The narrow confidence interval which excludes zero provides strong evidence of a reliable negative association. Lastly, extraversion and neuroticism were significantly negatively correlated with each other, *r* = -.33, 95% CI [-.36, -.31], *p* < .01. This means that participants who were more extraverted tended to report lower levels of neuroticism. The small *p*-value as well as the narrow confidence interval that excludes zero suggests this is a strong and reliable effect.

Importantly, these correlations were calculated using all 4252 observations in the dataset, without accounting for the clustering of repeated measures within participants. This can lead to slightly inflated precision (e.g., narrower confidence intervals) because the assumption of independence is violated. While this approach is acceptable for the current assignment, per the instructions, future analyses should account for nesting. For example, computing correlations using participant-level averages may help produce more accurate estimates. For our purposes, the current correlations should be interpreted with mild caution as a result.

**Table 1**

*Means, standard deviations, and correlations with confidence intervals*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | ***M*** | ***SD*** | **1** | **2** |
| swl | 4.43 | 1.61 |  |  |
| tipm.E | 4.18 | 1.52 | .38\*\* |  |
|  |  |  | [.35, .41] |  |
| tipm.N | 3.49 | 1.54 | -.45\*\* | -.33\*\* |
|  |  |  | [-.47, -.43] | [-.36, -.31] |

*Note.* *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). \* indicates *p* < .05. \*\* indicates *p* < .01.

**Visual Data Screening and Assumption Checking**

Before fitting the multilevel models, the data were inspected to evaluate univariate distributions, linearity, outliers, multicollinearity, and independence of observations. Histograms were generated for satisfaction with life, extraversion, and neuroticism (see Figure 1).

Satisfaction with life scores were slightly left-skewed, indicating that many participants reported moderately high levels of life satisfaction, with fewer individuals reporting lower satisfaction. This pattern suggests a general tendency toward greater satisfaction with life in the sample and supports the use of linear modeling, as the distribution was still approximately continuous and unimodal. Extraversion scores appeared normally distributed, meaning that the trait was well spread across participants, with most individuals scoring near the midpoint and fewer scoring at the extremes. The normal shape supports statistical assumptions of normality and suggests that the full range of extraversion is represented in the sample, increasing the likelihood of detecting associations with the outcome. Neuroticism scores were right-skewed, suggesting that most participants reported low levels of neuroticism. Although the distribution was skewed, it remained continuous and did not exhibit major floor effects. This implies that, while individuals higher in neuroticism were underrepresented relative to those lower in neuroticism, the data still contained sufficient variability to model meaningful relationships with satisfaction with life.

**Figure 1**

*Univariate distributions of satisfaction with life, extraversion, and neuroticism*

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*Note.* swl = satisfaction with life, tipm.E = extraversion, tipm.N = neuroticism.

To assess linearity, scatterplots with loess lines were used to examine the bivariate relationships between the predictors and satisfaction with life (see Figure 2). A positive linear association was observed between extraversion and satisfaction with life, providing preliminary support for H1. A negative association was observed between neuroticism and satisfaction with life, providing preliminary support for H2. Although the association between neuroticism and satisfaction with life appeared mostly linear, a slight downward curve was evident at higher levels of neuroticism. This pattern suggests that the negative association may become stronger as neuroticism increases. Despite this minor nonlinearity, the trend was generally consistent with model assumptions, and the data were considered appropriate for linear mixed effects modeling.

To assess multicollinearity, the correlation between extraversion and neuroticism from Table 1 was observed. Again, the correlation between extraversion and neuroticism was moderate (*r* = -.33), well below the threshold of concern (|*r*| > .80). This suggests that both variables can be included in the same model without concern for overlapping influence.

Finally, the assumption of independent observations across clusters (i.e., across participants) was evaluated conceptually. Because the dataset consisted of repeated daily measures nested within participants, multilevel modeling was deemed required to appropriately account for non-independence of observations within individuals.

Across all diagnostics, assumptions of linearity, homoscedasticity, and normality were reasonably met. Although minor deviations were noted, such as mild heteroscedasticity and slight non-linearity with neuroticism, there were no serious violations. It is important to note, however, that assumptions related to residual patterns (e.g., homoscedasticity of residuals, independence of residuals, and residual normality) could not be fully evaluated prior to fitting the models, as they depend on model-generated estimates. These were addressed in post-model residual diagnostics. Altogether, these preliminary checks confirmed that all necessary pre-modeling assumptions were adequately met, supporting the appropriateness of proceeding with linear mixed effects modeling.

**Figure 2**

*Bivariate scatterplots showing the relationships between extraversion (left), neuroticism (right), and satisfaction with life*

*A graph of a graph of a function

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*Note.* swl = satisfaction with life; tipm.E = extraversion; tipm.N = neuroticism.

**Baseline Model and Intraclass Correlation Coefficient (ICC)**

To quantify the extend of clustering in the data and justify the use of multilevel modeling, a random intercepts-only model was first fitted. This model estimated the proportion of variance in satisfaction with life that was attributable to between-person differences, as opposed to within-person variation over time. In this baseline model, satisfaction with life was entered as the outcome, and participant ID was included as a random effect to account for the nested structure of the data.

The model indicated substantial between-person variability in satisfaction with life. The variance attributed to the random intercept (i.e., differences between participants) was 1.91 (*SD* = 1.38), whereas the residual variance (i.e., within-person differences across measurement occasions) was 0.66 (*SD* = 0.81). These results suggest that individuals differed meaningfully in their average levels of life satisfaction across the study period, with a larger portion of variance occurring at the between-person level than within-person level.

To further quantify the proportion of total variance in satisfaction with life attributable to between-person differences, an intraclass correlation coefficient (ICC) was calculated from the baseline model. The ICC was 0.74, indicating that 74% of the variability in satisfaction with life scores was due to stable differences between individuals (Level 2), rather than fluctuations within individuals over time (Level 1). This reflects a strong clustering effect and suggests that most of the variation in life satisfaction can be explained by who the person is, rather than day-to-day changes. The design effect was 12.30, further confirming that the repeated measures within each participant are not independent. This value substantially exceeds the conventional threshold of 2.0, above which ignoring clustering can bias standard errors and model estimates. These results strongly justify the use of linear mixed effects modeling to account for the nested structure of the data.

**Testing H1 and H2: Linear Mixed Effects Models**

***Model Building***

To test H1 and H2, a series of linear mixed effects models were fitted using the lme4 package in R. All models were fit using REML, which is preferred for estimating models when comparing random effect structures. Model summaries were inspected for fixed effect estimates, variance components, and convergence diagnostics.

The first model specified extraversion and neuroticism as fixed effects, assuming that the effects of these personality traits on satisfaction with life were constant across participants. This model included a random intercept for participants ID to account for between-person differences in average levels of satisfaction with life across the measurement period. This first model can be expressed formally with Level 1 and Level 2 equations, as well as a combined full equation:

Level 1 (within-person) model:

SWL*ij* = π0*j* + π1*j*(Extraversion*ij*) + π2*j*(Neuroticism*ij*) + ε*ij*

Level 2 (between-person):

π0*j* = *β*0 + *u*0*j*

π1*j* = *β*1

π2*j* = *β*2

Combined (full) model:

SWL*ij* = *β*0 + *β*1(Extraversion*ij*) + *β*2(Neuroticism*ij*) + *u*0*j*+ ε*ij*

At Level 1, the model describes each participant’s daily satisfaction with life score (SWL*ij*) as a function of their own baseline (intercept; π0*j*), the effects of extraversion (π1*j*) and neuroticism (π2*j*) for that person, and the residual error (ε*ij*) that captures day-to-day variability not explained by the model. At Level 2, the intercept (π0*j*) is modeled as a function of the grand mean intercept across participants (*β*0) plus a person-specific deviation (*u*0*j*). The slopes for extraversion (π1*j*) and neuroticism (π2*j*) are modeled as fixed across participants (i.e., equal to *β*1 and *β*2, respectively), meaning they do not vary from one participant to another. In the combined model, each person’s satisfaction with life on a given day is estimated as the sum of the overall intercept (*β*0), the fixed effects of extraversion (*β*1) and neuroticism (*β*2), their personal deviation from the grand mean (*u*0*j*), and the daily residual error (ε*ij*).

To test whether the strength of the relationships between personality traits and satisfaction with life varied across individuals, a second model was fit that included random slopes for both extraversion and neuroticism in addition to the random intercept. This full model allowed the predictive effects of both personality traits to vary between participants. The model can be formally expressed as follows:

Level 1 (within-person model):

SWL*ij* = π0*j* + π1*j*(Extraversion*ij*) + π2*j*(Neuroticism*ij*) + ε*ij*

Level 2 (between-person model):

π0*j* = *β*0 + *u*0*j*

π1*j* = *β*1 + *u*1*j*

π2*j* = *β*2 + *u*2*j*

Combined model (full equation):

SWL*ij* = *β*0 + *β*1(Extraversion*ij*) + *β*2(Neuroticism*ij*) + *u*0*j*+ *u*1*j*(Extraversion*ij*)+ *u*2*j*(Neuroticism*ij*)+ ε*ij*

At Level 1, the model describes each participant’s daily satisfaction with life score (SWL*ij*) as a function of their own baseline level of life satisfaction (π0*j*), the effects of extraversion for that individual (π1*j*), and neuroticism for that individual (π2*j*), and a residual error term (ε*ij*). At Level 2, the intercept (π0*j*) is modeled as a function of the grand mean intercept across participants (*β*0) plus a person-specific deviation (*u*0*j*). Unlike the first model, the slopes for extraversion (π1*j*) and neuroticism (π2*j*) are also allowed to vary across participants. These person-specific slopes are modeled as the average fixed effect of each predictor (*β*1 and *β*2) plus a random effect for each individual (*u*1*j* and *u*2*j*), representing how much each participant’s relationship between personality and life satisfaction differs from that average. In the combined model, each participant’s satisfaction with life on a given day is estimated as the sum of the grand mean (*β*0), the fixed effects of extraversion (*β*1) and neuroticism (*β*2), the participant-specific deviations in intercept (*u*0*j*) and slopes (*u*1*j, u*2*j*), and the residual error (ε*ij*). This model allows both the baseline level of life satisfaction and the strength of personality effects to vary across individuals.

***Model Comparison***

A model comparison between the reduced model (random intercepts only) and the full model (random intercepts and random slopes) was conducted to determine whether the inclusion of random slopes improved model fit. To conduct model comparisons, the models were re-estimated using maximum likelihood (ML) estimation. ML is appropriate when comparing models that differ in their fixed effects (e.g., adding new predictors). Plus, the Flexplot package automatically refits models using ML for all comparisons.

The full model provided substantially better fit to the data. Specifically, the full model yielded a lower Akaike Information Criterion (AIC = 10,364.47) and Bayesian Information Criterion (BIC = 10,428.02) compared to the reduced model (AIC = 10,561.75; BIC = 10,593.52), indicating improved fit. Additionally, the Bayes Factor comparing the two models was 8.70 x 1035, providing overwhelming evidence in favour of the full model.

Furthermore, the predicted differences in outcome values between the two models reached as high as 1.37 points on the satisfaction with life scale, a difference that is practically meaningful given the 1 to 7 range of the scale.

These results indicate that the relationship between personality traits and satisfaction with life is not uniform across individuals. Therefore, the final linear mixed effects model included both fixed and random slopes for extraversion and neuroticism, as well as a random intercept for participant ID.

***Final Model Results***

Fixed effect estimates from the final model are presented in Table 2. Extraversion was a significant positive predictor of satisfaction with life, *b* = 0.16, *SE* = 0.02, *t*(206.06) = 10.55, *p* < .001, 95% CI [0.13, 0.19]. This means that for each one-point increase in a participant’s daily extraversion score, their predicted satisfaction with life score increased by 0.16 points. The small standard error and narrow confidence interval indicate that this estimate is precise and statistically reliable. Because the confidence interval does not include zero, the effect can be interpreted as consistently positive in the population. These findings provide strong support for H1.

Neuroticism was a significant negative predictor of satisfaction with life, *b* = -0.21, *SE* = 0.02, *t*(250.44) = -12.32, *p* < .001, 95% CI [-0.24, -0.18], indicating that higher neuroticism was associated with lower life satisfaction. This means that for every one-point increase in a participant’s daily neuroticism score (on a 1 to 7 scale), their predicted satisfaction with life score decreased by approximately 0.21 points on the same scale. The small standard error and narrow confidence interval indicate that this estimate is precise and statistically reliable. Because the confidence interval is entirely negative and excludes zero, we can be confident that the relationship is consistently negative in the population. These results provide strong support for H2.

The model also estimated substantial between-person variability in both intercepts and slopes. The variance of the random intercept was 2.02 (*SD* = 1.42), meaning that some participants consistently reported higher life satisfaction than others. Additionally, there was meaningful variance in the slopes for extraversion (*SD* = 0.14) and neuroticism (*SD* = 0.19). This tells us that the strength of these relationships was not the same for every participant; some participants showed stronger or weaker links between their personality and life satisfaction compared to others.

Although the model returned a minor convergence warning (max|grad| = 0.00265, just above the 0.002 threshold), the estimates were stable, and diagnostics indicated that the model was interpretable for the purposes of this analysis. In future analyses, convergence issues could be addressed by increasing model iterations, rescaling predictors, or using a different optimizer.

**Table 2**

*Fixed effects estimates and model fit statistics for the final model (model 4)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Predictor** | ***b*** | ***SE*** | ***t*(df)** | ***p*** | **95% CI** |
| Fixed Effects |  |  |  |  |  |
| (Intercept) | 4.51 | 0.12 | 38.10 (229.52) | < .001 | [4.27, 4.74] |
| Extraversion | 0.16 | 0.02 | 10.55 (206.06) | < .001 | [0.13, 0.19] |
| Neuroticism | -0.21 | 0.02 | -12.33 (250.44) | < .001 | [-0.24, -0.18] |
|  |  |  |  |  |  |
| **ICC** |  |  |  |  |  |
| Adjusted | 0.77 |  |  |  |  |
| Unadjusted | 0.69 |  |  |  |  |
|  |  |  |  |  |  |
| **R²** |  |  |  |  |  |
| Conditional | 0.79 |  |  |  |  |
| Marginal | 0.09 |  |  |  |  |

*Note.* The final model includes fixed effects for extraversion and neuroticism, random intercepts, and random slopes for both predictors. ICC = intraclass correlation coefficient. Marginal R² reflects variance explained by fixed effects only; conditional R² reflects variance explained by both fixed and random effects.

***Final Model Visualization and Residual Diagnostics***

To examine individual variability in slopes and potential interactions with neuroticism, the final model was visualized using a facet plot of satisfaction with life by extraversion across levels of neuroticism. The average slope between extraversion and life satisfaction (bold black line) remained positive across all neuroticism ranges, but the individual lines (coloured by participant ID) revealed variability in slope strength. This supports the inclusion of random slopes in the model and visually confirms that the relationship between personality traits and life satisfaction is not uniform across individuals

Residual diagnostics were then visualized to evaluate whether the final linear mixed effects model met the core assumptions of linearity, normality of residuals, homoscedasticity, independence of residuals, and appropriate specification of random effects. These visual diagnostics are presented in Figure 3.

The relationships between satisfaction with life and both predictors appeared mostly linear based on scatterplots and model visualizations. Therefore, the linearity assumption was reasonably satisfied. The histogram of residuals appeared approximately normal, with a symmetric, bell-shaped distribution centered around zero. This supports the assumption that residuals are normally distributed, which is important for the accuracy of *p*-values and confidence intervals associated with fixed effects.

The residuals vs. fitted values plot revealed some heteroskedasticity. Specifically, the spread of residuals was greater at lower fitted values (i.e., when predicted life satisfaction was low) and narrower at higher fitted values. This funneling pattern indicates non-constant variance across the range of predicted values, which technically violates the assumption of homoscedasticity. However, the degree of heteroskedasticity observed was modest and unlikely to have meaningfully distorted the fixed effect estimates, especially given the large sample size. Nevertheless, it does suggest that residual error varies depending on the level of life satisfaction being predicted. In future analyses, this issue could be addressed by using robust standard errors or modeling the residual variance directly.

The spread-location (S-L) plot also showed a mild downward trend, where the absolute value of residuals decreased as predicted satisfaction with life increased. This further supports the presence of non-constant error variance, but again, the pattern was not severe. In future analyses, weighted least squares estimation could help correct for this issue. Regardless, the linear trendline remained relatively flat, and the majority of residuals were tightly clustered near the center, indicating that the model still performed reasonably well across most of the range of fitted values.

Independence was accounted for by including random intercepts and slopes by participant ID, which control for the nested data structure. The absence of patterning in residual plots suggests this assumption was adequately addressed. Finally, our model comparison earlier showed that including random slopes significantly improved model fit, confirming the appropriateness of the random effects structure.

Minor deviations from model assumptions warrant some caution when interpreting the precision of the estimates. However, the strong statistical significance and narrow confidence intervals suggest the findings are robust. That said, standard errors may be slightly underestimated, making some effects appear more precise than they truly are.

**Figure 3**

*Residual diagnostic plots for the final mixed effects model*

A group of graphs showing residuals

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***Final Model Fit and Explained Variance***

To evaluate how well the final model explained variance in satisfaction with life, both marginal and conditional R2 values were calculated (Table 2). The marginal R2 reflects the proportion of variance explained by the fixed effects alone (i.e., extraversion and neuroticism), while the conditional R2 reflects the proportion of variance explained by both fixed and random effects (i.e., personality traits *plus* individual differences in baseline levels and slopes).

The marginal R2 was 0.094, indicating that the fixed effects of extraversion and neuroticism together explained approximately 9.4% of the variance in satisfaction with life. The conditional R2 was 0.788, indicating that the full model explained 78.8% of the total variance in satisfaction with life. This substantial difference suggests that a large portion of the variance in life satisfaction was due to stable individual differences (random intercepts and slopes).

Consistent with this interpretation, the adjusted ICC for the final model was 0.77, meaning that 77% of the variance in satisfaction with life was attributable to between-person difference, even after accounting for daily fluctuations in extraversion and neuroticism. The unadjusted ICC from the intercept-only model was 0.69, suggesting that controlling for personality increased the relative contribution of person-level differences to overall model fit. Together, these metrics reinforce the importance of modeling individual variability and confirm that multilevel modeling was necessary to account for the nested structure of the data.

**Testing H3: Comparing Within and Between-Person Effects**

Although the previous linear mixed model provided evidence that extraversion and neuroticism predicted satisfaction with life, it did not formally test whether these associations differed within participants over time (Level 1) versus between participants on average (Level 2). Because extraversion and neuroticism scores varied both between participants (some individuals were more extraverted or neurotic than others) and within participants over time (daily fluctuations), simply including random slopes does not disentangle the sources of variation. Thus, the previous models could not determine whether personality traits predicted satisfaction with life consistently within people or only reflected between-person differences.

To formally evaluate this, a decomposition was fitted. This model separated each predictor into two components: (1) the participant’s mean score across all days, and (2) the daily deviation from their own mean on a given day. This approach allowed the model to isolate whether daily changes in personality trait levels predicted satisfaction with life (Level 1), and whether individuals with higher average personality trait levels reported higher or lower satisfaction with life overall (Level 2). The decomposition model was fit using REML, and included a random intercept for participant ID.

The model revealed significant effects for both between- and within-person predictors (see Table 3). At the between-person level, participants who were generally higher in extraversion reported significantly higher satisfaction with life, *b* = 0.36, *SE* = 0.07, *t*(257.89) = 5.33, *p* < .001, 95% CI [0.23, 0.50]. This means that for every one-point increase in a participant’s average extraversion score, their average satisfaction with life score increased by approximately 0.36 points, holding daily fluctuations constant. The relatively narrow range of the confidence interval and the fact that it does not include zero suggests this estimate is reliable and precise.

Similarly, individuals higher in average neuroticism reported significantly lower life satisfaction, *b* = -0.52, *SE* = 0.07, *t*(258.21) = -7.81, *p* < .001, 95% CI [-0.66, -0.39]. This means that for every one-point increase in a participant’s mean neuroticism score, their mean satisfaction with life decreased by approximately 0.52 points. The narrow confidence interval that excludes zero supports the strength and precision of this negative association.

At the within-person level, day-to-day increases in extraversion were also significantly associated with increased satisfaction with life, *b* = 0.15, *SE* = 0.01, *t*(3986.15) = 12.73, *p* < .001, 95% CI [0.13, 0.17]. This unstandardized coefficient indicates that, holding trait-level personality constant, a one-point increase in extraversion relative to a participant’s own average was associated with a 0.15-point increase in their daily satisfaction with life score. The narrow confidence interval around this estimate suggests great precision, and because it does not include zero, the effect is statistically reliable.

Conversely, daily increases in neuroticism were associated with significantly lower satisfaction with life, *b* = -0.22, *SE* = 0.01, *t*(3986.15) = -19.36, *p* < .001, 95% CI [-0.24, -0.20]. This means that a one-point increase in daily neuroticism, relatice to the participant’s average, was associated with a 0.22-point decrease in life satisfaction on that day. Again, the confidence interval is narrow and does not cross zero, suggesting the estimate is statistically meaningful and reliable.

These results provide partial support for H3. The effects of personality traits on satisfaction with life were evident at both the between- and within-person levels. However, the effect size differed. For extraversion, the between-person effect (*b* = 0.36) was more than twice as large as the within-person effect (*b* = 0.15). For neuroticism, the between-person effect (*b* = -0.52) was also stronger than the within-person effect (*b* = -0.22). This suggests that while personality traits fluctuate over time and impact daily life satisfaction, an individual’s typical level of extraversion or neuroticism is a stronger predictor of life satisfaction than short-term fluctuations.

As with the final model selected for testing H1 and H2, residual diagnostics were conducted to assess the assumptions of the decomposition model. The histogram of residuals appeared approximately normally distributed, supporting the assumption of normality. The residuals vs. fitted values plot showed a familiar pattern of mild heteroskedasticity, with slightly wider residual spread at lower predicted life satisfaction levels. The S-L plot showed a slight downward trend, indicating that absolute residuals were slightly smaller at higher predicted values. Although these patterns suggest minor deviations from homoscedasticity, the trends were no pronounced and the majority of residuals remained tightly clustered. These findings indicate that the deviations from assumptions were not severe enough to undermine interpretability.

To further evaluate model performance, the ICC and R2 values were calculated. The adjusted ICC was 0.69, meaning that approximately 69% of the total variance in satisfaction with life was attributable to stable between-person differences, even after accounting for daily fluctuations in personality traits. The marginal R2 was 0.305, indicating that the fixed effects (i.e., between- and within-person components of extraversion and neuroticism) explained 30.5% of the variance in satisfaction with life. The conditional R2 was 0.785, indicating that the full decomposed model (fixed and random effects) explained 78.5% of the variance. These model fit statistics reinforce the robustness of the decomposition model used to test H3.

**Table 3**

*Fixed effects estimates for within- and between-person effects (disaggregated model)*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Predictor** | ***b*** | ***SE*** | ***t*(df)** | ***p*** | **95% CI** |
| **Fixed Effects** |  |  |  |  |  |
| (Intercept) | 4.76 | 0.44 | 10.86 (257.26) | < .001 | [3.90, 5.63] |
| Extraversion  (within) | 0.15 | 0.01 | 12.73 (3986.15) | < .001 | [0.13, 0.17] |
| Extraversion  (between) | 0.36 | 0.07 | 5.33 (257.89) | < .001 | [0.23, 0.49] |
| Neuroticism  (within) | -0.22 | 0.01 | –19.36 (3986.15) | < .001 | [-0.24, -0.20] |
| Neuroticism  (between) | -0.52 | 0.07 | –7.81 (258.21) | < .001 | [-0.66, -0.39] |
|  |  |  |  |  |  |
| **ICC** |  |  |  |  |  |
| Adjusted | 0.69 |  |  |  |  |
| Unadjusted | 0.48 |  |  |  |  |
|  |  |  |  |  |  |
| **R²** |  |  |  |  |  |
| Conditional | 0.79 |  |  |  |  |
| Marginal | 0.09 |  |  |  |  |

*Note*. ICC = intraclass correlation coefficient. Marginal R² reflects variance explained by fixed effects only; conditional R² reflects variance explained by both fixed and random effects.

**Conclusion and Lay Summary**

This study found that extraversion and neuroticism are meaningful predictors of how satisfied people feel with their lives. Supporting H1, people who were more extraverted (i.e., outgoing, energetic, and socially engaged) tended to report higher life satisfaction. Supporting H2, people who were higher in neuroticism (i.e., prone to negative emotions like anxiety or irritability) reported lower life satisfaction. For H3, the results showed that both daily changes and stable personality traits matter. On days when someone felt more extraverted than usual, they also felt more satisfied with life; when they felt more neurotic than usual, their satisfaction went down. However, stable, long-term personality traits explained more of the variation in life satisfaction that daily ups and downs. While both levels are important, who you are most of the time may matter more for how satisfied you are with life than how you feel on any single day.