Causal Claims Tables

# Summary Statistics

Table :**Summary Statistics for NLSY Variables** Physical Health scale ranges from 10 to 70. Depression measure from CES-D, ranging from 0 to 24; Neuroticism and Conscientiousness derived from TIPI, ranging from 1 to 7; Education represents highest grade completed, ranging from 0 (none) to 20 (eight years of college or more); Income represents total net family income in 2014 dollars

| **Variable** | **Mean** | **Standard Deviation** | **Minimum** | **25th Percentile** | **50th Percentile** | **75th Percentile** | **Maximum** | **Number of Observations** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Physical Healthi | 51.99 | 8.08 | 11.22 | 51.26 | 54.84 | 56.51 | 68.37 | 8,402 |
| Physical Healthii | 49.09 | 10.29 | 11.22 | 46.67 | 53.55 | 55.50 | 67.31 | 7,804 |
| Depressionii | 3.88 | 4.51 | 0.00 | 0.00 | 2.00 | 6.00 | 21.00 | 7,813 |
| Neuroticism | 2.90 | 1.39 | 1.00 | 2.00 | 3.00 | 4.00 | 7.00 | 6,969 |
| Conscientiousness | 5.73 | 1.32 | 1.00 | 5.00 | 6.00 | 7.00 | 7.00 | 6,966 |
| Educationii | 13.33 | 2.57 | 0.00 | 12.00 | 12.00 | 15.00 | 20.00 | 7,693 |
| Incomeii | 68,487.81 | 85,978.38 | -3.26 | 11,342.18 | 47,000.00 | 94,861.85 | 595,986.00 | 7,693 |
| iAs measured at age 40 | | | | | | | | |
| iiAs measured at age 50 | | | | | | | | |

# Illustration 1: Does conscientiousness causally influence physical health?

## OLS: Does Conscientiousness Causally Influence Physical Health (At Age 50)?

| Characteristic | Beta | SE1 | t-statistic | p-value |
| --- | --- | --- | --- | --- |
| (Intercept) | -0.128 | 0.035 | -3.72 | <0.001 |
| conscientiousness | 0.057 | 0.019 | 2.93 | 0.003 |
| race | 0.228 | 0.041 | 5.59 | <0.001 |
| sex | 0.161 | 0.041 | 3.95 | <0.001 |
| 1SE = Standard Error | | | | |
| R² = 0.027; F-statistic = 18.5; DF1 = 3; DF2 = 1,963; p-value = <0.001; No. Obs. = 1,967 | | | | |

## Discordant: Does Conscientiousness Causally Influence Physical Health (At Age 50)?

| Characteristic | Beta | SE1 | t-statistic | p-value |
| --- | --- | --- | --- | --- |
| (Intercept) | 0.921 | 0.031 | 29.9 | <0.001 |
| age\_50\_physical\_health\_mean | -0.853 | 0.022 | -39.3 | <0.001 |
| conscientiousness\_diff | 0.014 | 0.011 | 1.26 | 0.209 |
| conscientiousness\_mean | 0.052 | 0.021 | 2.45 | 0.014 |
| sex\_1 | 0.016 | 0.031 | 0.504 | 0.615 |
| race\_1 | -0.047 | 0.032 | -1.49 | 0.138 |
| sex\_2 | -0.065 | 0.031 | -2.09 | 0.037 |
| 1SE = Standard Error | | | | |
| R² = 0.454; F-statistic = 271; DF1 = 6; DF2 = 1,960; p-value = <0.001; No. Obs. = 1,967 | | | | |

## Standardized

## MODEL INFO:  
## Observations: 1967  
## Dependent Variable: age\_50\_physical\_health  
## Type: OLS linear regression   
##   
## MODEL FIT:  
## F(3,1963) = 18.452, p = 0.000  
## R² = 0.027  
## Adj. R² = 0.026   
##   
## Standard errors: OLS  
## ---------------------------------------------------------  
## Est. S.E. t val. p  
## ----------------------- -------- ------- -------- -------  
## (Intercept) -0.204 0.038 -5.414 0.000  
## conscientiousness 0.065 0.022 2.932 0.003  
## race 0.249 0.045 5.586 0.000  
## sex 0.176 0.045 3.951 0.000  
## ---------------------------------------------------------  
##   
## Continuous variables are mean-centered and scaled by 1 s.d.

## MODEL INFO:  
## Observations: 1967  
## Dependent Variable: age\_50\_physical\_health\_diff  
## Type: OLS linear regression   
##   
## MODEL FIT:  
## F(6,1960) = 271.199, p = 0.000  
## R² = 0.454  
## Adj. R² = 0.452   
##   
## Standard errors: OLS  
## --------------------------------------------------------------------  
## Est. S.E. t val. p  
## --------------------------------- -------- ------- --------- -------  
## (Intercept) 0.049 0.033 1.490 0.136  
## age\_50\_physical\_health\_mean -0.670 0.017 -39.325 0.000  
## conscientiousness\_diff 0.021 0.017 1.257 0.209  
## conscientiousness\_mean 0.041 0.017 2.448 0.014  
## sex\_1 0.017 0.034 0.504 0.615  
## race\_1 -0.050 0.034 -1.485 0.138  
## sex\_2 -0.070 0.034 -2.087 0.037  
## --------------------------------------------------------------------  
##   
## Continuous variables are mean-centered and scaled by 1 s.d.

# Illustration 2: Does conscientiousness causally influence mental health?

## OLS: Does Conscientiousness Causally Influence Mental Health (Depression)?

| Characteristic | Beta | SE1 | t-statistic | p-value |
| --- | --- | --- | --- | --- |
| (Intercept) | 0.137 | 0.036 | 3.84 | <0.001 |
| conscientiousness | -0.146 | 0.020 | -7.26 | <0.001 |
| race | -0.123 | 0.042 | -2.93 | 0.003 |
| sex | -0.251 | 0.042 | -6.00 | <0.001 |
| 1SE = Standard Error | | | | |
| R² = 0.045; F-statistic = 32.2; DF1 = 3; DF2 = 2,046; p-value = <0.001; No. Obs. = 2,050 | | | | |

## OLS: Does Conscientiousness Causally Influence Mental Health (Depression) with Income and Highest Grade Level (At Age 50) as Covariates?

| Characteristic | Beta | SE1 | t-statistic | p-value |
| --- | --- | --- | --- | --- |
| (Intercept) | 0.411 | 0.162 | 2.53 | 0.011 |
| conscientiousness | -0.128 | 0.027 | -4.72 | <0.001 |
| race | -0.092 | 0.055 | -1.65 | 0.098 |
| highest\_grade\_at\_age\_50 | -0.022 | 0.012 | -1.79 | 0.073 |
| sex | -0.173 | 0.053 | -3.24 | 0.001 |
| tnfi\_at\_age\_50 | 0.000 | 0.000 | -3.45 | <0.001 |
| 1SE = Standard Error | | | | |
| R² = 0.068; F-statistic = 16.4; DF1 = 5; DF2 = 1,117; p-value = <0.001; No. Obs. = 1,123 | | | | |

## Discordant: Does Conscientiousness Causally Influence Mental Health (Depression)?

| Characteristic | Beta | SE1 | t-statistic | p-value |
| --- | --- | --- | --- | --- |
| (Intercept) | 0.95 | 0.029 | 32.5 | <0.001 |
| depression\_mean | 0.833 | 0.021 | 40.1 | <0.001 |
| conscientiousness\_diff | -0.024 | 0.011 | -2.16 | 0.031 |
| conscientiousness\_mean | 0.042 | 0.021 | 2.05 | 0.041 |
| sex\_1 | -0.040 | 0.030 | -1.33 | 0.185 |
| race\_1 | -0.093 | 0.030 | -3.12 | 0.002 |
| sex\_2 | 0.067 | 0.030 | 2.23 | 0.026 |
| 1SE = Standard Error | | | | |
| R² = 0.460; F-statistic = 290; DF1 = 6; DF2 = 2,043; p-value = <0.001; No. Obs. = 2,050 | | | | |

## Discordant: Does Conscientiousness Causally Influence Mental Health (Depression) with Income and Highest Grade Level (At Age 50) as Covariates?

| Characteristic | Beta | SE1 | t-statistic | p-value |
| --- | --- | --- | --- | --- |
| (Intercept) | 0.922 | 0.170 | 5.43 | <0.001 |
| depression\_mean | 0.820 | 0.037 | 22.0 | <0.001 |
| conscientiousness\_diff | -0.021 | 0.020 | -1.06 | 0.289 |
| highest\_grade\_at\_age\_50\_diff | 0.004 | 0.010 | 0.432 | 0.666 |
| tnfi\_at\_age\_50\_diff | 0.000 | 0.000 | -0.179 | 0.858 |
| conscientiousness\_mean | 0.002 | 0.036 | 0.055 | 0.956 |
| highest\_grade\_at\_age\_50\_mean | 0.001 | 0.013 | 0.100 | 0.920 |
| tnfi\_at\_age\_50\_mean | 0.000 | 0.000 | 0.648 | 0.517 |
| sex\_1 | -0.101 | 0.049 | -2.06 | 0.040 |
| race\_1 | -0.061 | 0.052 | -1.19 | 0.235 |
| sex\_2 | 0.043 | 0.049 | 0.870 | 0.384 |
| 1SE = Standard Error | | | | |
| R² = 0.460; F-statistic = 56.6; DF1 = 10; DF2 = 665; p-value = <0.001; No. Obs. = 676 | | | | |

## standardized

## MODEL INFO:  
## Observations: 2050  
## Dependent Variable: depression\_diff  
## Type: OLS linear regression   
##   
## MODEL FIT:  
## F(6,2043) = 290.455, p = 0.000  
## R² = 0.460  
## Adj. R² = 0.459   
##   
## Standard errors: OLS  
## --------------------------------------------------------------  
## Est. S.E. t val. p  
## ---------------------------- -------- ------- -------- -------  
## (Intercept) 0.029 0.032 0.907 0.365  
## depression\_mean 0.675 0.017 40.116 0.000  
## conscientiousness\_diff -0.035 0.016 -2.156 0.031  
## conscientiousness\_mean 0.034 0.017 2.049 0.041  
## sex\_1 -0.044 0.033 -1.327 0.185  
## race\_1 -0.102 0.033 -3.120 0.002  
## sex\_2 0.073 0.033 2.230 0.026  
## --------------------------------------------------------------  
##   
## Continuous variables are mean-centered and scaled by 1 s.d.

## MODEL INFO:  
## Observations: 676 (1374 missing obs. deleted)  
## Dependent Variable: depression\_diff  
## Type: OLS linear regression   
##   
## MODEL FIT:  
## F(10,665) = 56.632, p = 0.000  
## R² = 0.460  
## Adj. R² = 0.452   
##   
## Standard errors: OLS  
## --------------------------------------------------------------------  
## Est. S.E. t val. p  
## ---------------------------------- -------- ------- -------- -------  
## (Intercept) 0.070 0.059 1.191 0.234  
## depression\_mean 0.671 0.031 21.988 0.000  
## conscientiousness\_diff -0.031 0.029 -1.061 0.289  
## highest\_grade\_at\_age\_50\_diff 0.013 0.030 0.432 0.666  
## tnfi\_at\_age\_50\_diff -0.005 0.030 -0.179 0.858  
## conscientiousness\_mean 0.002 0.030 0.055 0.956  
## highest\_grade\_at\_age\_50\_mean 0.003 0.034 0.100 0.920  
## tnfi\_at\_age\_50\_mean 0.023 0.035 0.648 0.517  
## sex\_1 -0.121 0.059 -2.062 0.040  
## race\_1 -0.074 0.062 -1.189 0.235  
## sex\_2 0.051 0.059 0.870 0.384  
## --------------------------------------------------------------------  
##   
## Continuous variables are mean-centered and scaled by 1 s.d.

## MODEL INFO:  
## Observations: 2050  
## Dependent Variable: depression  
## Type: OLS linear regression   
##   
## MODEL FIT:  
## F(3,2046) = 32.193, p = 0.000  
## R² = 0.045  
## Adj. R² = 0.044   
##   
## Standard errors: OLS  
## ---------------------------------------------------------  
## Est. S.E. t val. p  
## ----------------------- -------- ------- -------- -------  
## (Intercept) 0.188 0.037 5.120 0.000  
## conscientiousness -0.157 0.022 -7.259 0.000  
## race -0.127 0.043 -2.928 0.003  
## sex -0.259 0.043 -5.996 0.000  
## ---------------------------------------------------------  
##   
## Continuous variables are mean-centered and scaled by 1 s.d.

## MODEL INFO:  
## Observations: 1123 (927 missing obs. deleted)  
## Dependent Variable: depression  
## Type: OLS linear regression   
##   
## MODEL FIT:  
## F(5,1117) = 16.364, p = 0.000  
## R² = 0.068  
## Adj. R² = 0.064   
##   
## Standard errors: OLS  
## ---------------------------------------------------------------  
## Est. S.E. t val. p  
## ----------------------------- -------- ------- -------- -------  
## (Intercept) 0.149 0.051 2.942 0.003  
## conscientiousness -0.138 0.029 -4.723 0.000  
## race -0.101 0.061 -1.655 0.098  
## highest\_grade\_at\_age\_50 -0.059 0.033 -1.793 0.073  
## sex -0.191 0.059 -3.238 0.001  
## tnfi\_at\_age\_50 -0.116 0.034 -3.453 0.001  
## ---------------------------------------------------------------  
##   
## Continuous variables are mean-centered and scaled by 1 s.d.

# Illustration 3 Does neuroticism causally influence mental health?

## OLS: Does Neuroticism Causally Influence Mental Health (Depression)?

| Characteristic | Beta | SE1 | t-statistic | p-value |
| --- | --- | --- | --- | --- |
| (Intercept) | 0.137 | 0.036 | 3.86 | <0.001 |
| neuroticism | 0.185 | 0.021 | 8.86 | <0.001 |
| race | -0.136 | 0.042 | -3.24 | 0.001 |
| sex | -0.226 | 0.042 | -5.41 | <0.001 |
| 1SE = Standard Error | | | | |
| R² = 0.056; F-statistic = 40.7; DF1 = 3; DF2 = 2,042; p-value = <0.001; No. Obs. = 2,046 | | | | |

## OLS: Does Neuroticism Causally Influence Mental Health (Depression) with Income and Highest Grade Level (At Age 50) as Covariates?

| Characteristic | Beta | SE1 | t-statistic | p-value |
| --- | --- | --- | --- | --- |
| (Intercept) | 0.398 | 0.163 | 2.43 | 0.015 |
| neuroticism | 0.154 | 0.027 | 5.63 | <0.001 |
| race | -0.114 | 0.055 | -2.05 | 0.041 |
| highest\_grade\_at\_age\_50 | -0.019 | 0.012 | -1.57 | 0.116 |
| sex | -0.151 | 0.053 | -2.83 | 0.005 |
| tnfi\_at\_age\_50 | 0.000 | 0.000 | -3.88 | <0.001 |
| 1SE = Standard Error | | | | |
| R² = 0.078; F-statistic = 18.8; DF1 = 5; DF2 = 1,119; p-value = <0.001; No. Obs. = 1,125 | | | | |

## Discordant: Does Neuroticism Causally Influence Mental Health (Depression)?

| Characteristic | Beta | SE1 | t-statistic | p-value |
| --- | --- | --- | --- | --- |
| (Intercept) | 0.942 | 0.030 | 31.9 | <0.001 |
| depression\_mean | 0.827 | 0.021 | 39.1 | <0.001 |
| neuroticism\_diff | 0.050 | 0.011 | 4.45 | <0.001 |
| neuroticism\_mean | -0.029 | 0.021 | -1.41 | 0.160 |
| sex\_1 | -0.028 | 0.030 | -0.941 | 0.347 |
| race\_1 | -0.092 | 0.030 | -3.08 | 0.002 |
| sex\_2 | 0.056 | 0.030 | 1.88 | 0.060 |
| 1SE = Standard Error | | | | |
| R² = 0.463; F-statistic = 293; DF1 = 6; DF2 = 2,039; p-value = <0.001; No. Obs. = 2,046 | | | | |

## Discordant: Does Neuroticism Causally Influence Mental Health (Depression) with Income and Highest Grade Level (At Age 50) as Covariates?

| Characteristic | Beta | SE1 | t-statistic | p-value |
| --- | --- | --- | --- | --- |
| (Intercept) | 0.880 | 0.170 | 5.18 | <0.001 |
| depression\_mean | 0.809 | 0.037 | 21.9 | <0.001 |
| neuroticism\_diff | 0.065 | 0.019 | 3.40 | <0.001 |
| highest\_grade\_at\_age\_50\_diff | -0.004 | 0.010 | -0.361 | 0.718 |
| tnfi\_at\_age\_50\_diff | 0.000 | 0.000 | -0.698 | 0.485 |
| neuroticism\_mean | -0.008 | 0.035 | -0.230 | 0.818 |
| highest\_grade\_at\_age\_50\_mean | 0.003 | 0.013 | 0.265 | 0.791 |
| tnfi\_at\_age\_50\_mean | 0.000 | 0.000 | 0.706 | 0.481 |
| sex\_1 | -0.122 | 0.048 | -2.53 | 0.012 |
| race\_1 | -0.064 | 0.051 | -1.25 | 0.212 |
| sex\_2 | 0.065 | 0.049 | 1.35 | 0.178 |
| 1SE = Standard Error | | | | |
| R² = 0.472; F-statistic = 59.5; DF1 = 10; DF2 = 666; p-value = <0.001; No. Obs. = 677 | | | | |

## Standardized

## MODEL INFO:  
## Observations: 2046  
## Dependent Variable: depression  
## Type: OLS linear regression   
##   
## MODEL FIT:  
## F(3,2042) = 40.690, p = 0.000  
## R² = 0.056  
## Adj. R² = 0.055   
##   
## Standard errors: OLS  
## ---------------------------------------------------  
## Est. S.E. t val. p  
## ----------------- -------- ------- -------- -------  
## (Intercept) 0.181 0.037 4.955 0.000  
## neuroticism 0.191 0.022 8.860 0.000  
## race -0.140 0.043 -3.243 0.001  
## sex -0.233 0.043 -5.405 0.000  
## ---------------------------------------------------  
##   
## Continuous variables are mean-centered and scaled by 1 s.d.

## MODEL INFO:  
## Observations: 1125 (921 missing obs. deleted)  
## Dependent Variable: depression  
## Type: OLS linear regression   
##   
## MODEL FIT:  
## F(5,1119) = 18.832, p = 0.000  
## R² = 0.078  
## Adj. R² = 0.073   
##   
## Standard errors: OLS  
## ---------------------------------------------------------------  
## Est. S.E. t val. p  
## ----------------------------- -------- ------- -------- -------  
## (Intercept) 0.149 0.050 2.945 0.003  
## neuroticism 0.163 0.029 5.632 0.000  
## race -0.125 0.061 -2.050 0.041  
## highest\_grade\_at\_age\_50 -0.052 0.033 -1.575 0.116  
## sex -0.166 0.059 -2.832 0.005  
## tnfi\_at\_age\_50 -0.129 0.033 -3.876 0.000  
## ---------------------------------------------------------------  
##   
## Continuous variables are mean-centered and scaled by 1 s.d.

## MODEL INFO:  
## Observations: 2046  
## Dependent Variable: depression\_diff  
## Type: OLS linear regression   
##   
## MODEL FIT:  
## F(6,2039) = 293.182, p = 0.000  
## R² = 0.463  
## Adj. R² = 0.462   
##   
## Standard errors: OLS  
## --------------------------------------------------------  
## Est. S.E. t val. p  
## ---------------------- -------- ------- -------- -------  
## (Intercept) 0.029 0.032 0.889 0.374  
## depression\_mean 0.670 0.017 39.056 0.000  
## neuroticism\_diff 0.073 0.016 4.450 0.000  
## neuroticism\_mean -0.024 0.017 -1.406 0.160  
## sex\_1 -0.031 0.033 -0.941 0.347  
## race\_1 -0.100 0.033 -3.075 0.002  
## sex\_2 0.061 0.033 1.878 0.060  
## --------------------------------------------------------  
##   
## Continuous variables are mean-centered and scaled by 1 s.d.

## MODEL INFO:  
## Observations: 677 (1369 missing obs. deleted)  
## Dependent Variable: depression\_diff  
## Type: OLS linear regression   
##   
## MODEL FIT:  
## F(10,666) = 59.542, p = 0.000  
## R² = 0.472  
## Adj. R² = 0.464   
##   
## Standard errors: OLS  
## --------------------------------------------------------------------  
## Est. S.E. t val. p  
## ---------------------------------- -------- ------- -------- -------  
## (Intercept) 0.073 0.058 1.252 0.211  
## depression\_mean 0.663 0.030 21.900 0.000  
## neuroticism\_diff 0.096 0.028 3.400 0.001  
## highest\_grade\_at\_age\_50\_diff -0.011 0.029 -0.361 0.718  
## tnfi\_at\_age\_50\_diff -0.020 0.029 -0.698 0.485  
## neuroticism\_mean -0.007 0.029 -0.230 0.818  
## highest\_grade\_at\_age\_50\_mean 0.009 0.033 0.265 0.791  
## tnfi\_at\_age\_50\_mean 0.025 0.035 0.706 0.481  
## sex\_1 -0.147 0.058 -2.534 0.012  
## race\_1 -0.076 0.061 -1.249 0.212  
## sex\_2 0.078 0.058 1.347 0.178  
## --------------------------------------------------------------------  
##   
## Continuous variables are mean-centered and scaled by 1 s.d.