

# The Relationship Between Academic Achievement and Optimism



Veronica Goss, Quantitative Analysis Center, Wesleyan University

## Introduction

- There is a positive correlation between optimism and academic achievement which is strongest for medium levels of optimism and reaches a plateau for high levels of optimism and a minimum for lower levels of optimism. (Tetzner & Becker, 2018)
- Childhood academic achievement can be used as a predictor of adulthood optimism, but optimism is more broadly correlated with success in meeting the demands of social situations including within the family, at school, and in the labor market. (Ek, Remes & Sovio, 2004)
- Student academic optimism and SES explained most variance in student achievement - with student academic optimism making the largest contribution. (Tschannen-Moran, Bankole, Mitchell & Moore, 2013).
- There are limited longitudinal studies on achievement factors predicting adult dispositional optimism. This analysis would contribute to this gap by examining the relationship between adolescent academic achievement and adult optimism.

## Methods

### Sample

- Young adults (grades 7 to 12) who were surveyed again in their 30s to 40s and answered questions about their academic achievement, adult optimism, and adolescent optimism (n=3055) were drawn from Wave I, and subsequently Wave V, of the National Longitudinal Survey of Adolescent Health.

### Measures

- Adolescent Academic Achievement: Reported English, science, math, and social studies grades were assigned to a scale where A = 4, B = 3, C = 2, and D or lower = 1. These were then averaged to create a GPA for each participant.
- Adolescent Optimism: Categorical scale based on how often participants had felt hopeful about the future in the past week where 3 is very optimistic and 0 is not optimistic.
- Adult Optimism: Quantitative scale combining different measures of optimism such that 15 is very optimistic and 3 is not optimistic.

## Research Questions

- Is there a relationship between academic achievement and adolescent optimism? Does this relationship change when considering adult optimism?
- Do these relationships change when considering variables such as biological sex, income, social ability or school attendance?

## Results

### Univariate

- 75% of respondents had GPAs ranging from 2.5 to 4, with each 0.25 point interval having a frequency of about 10% of participants.
- 67% of participants as adolescents reported being often or always optimistic.
- 66% of participants reported Adult Optimism scores from 10 to 13, meaning they were somewhat to very optimistic.

### Bivariate

- An Analysis of Variance test revealed that **participants with lower reported levels of adolescent optimism had significantly lower GPAs**,  $F = 49.39$ ,  $p = 2e-16 < 0.05$ . Post hoc tests supported that all comparisons of optimism levels were statically significant.
- Based on a Pearson Correlation test, **there was a significant, but weak correlation between adolescent academic achievement and adult optimism** ( $r = 0.139$ ,  $p = 1.14e^{-14}$ ).

### Multivariate

- GPA (Beta = 0.202,  $p = 5.24e^{-5}$ ) was positively and statistically significantly associated with adult optimism after controlling for biological sex, income, and depression. In general, for every point that one's GPA increased, equivalent to an increase of one letter grade, adult optimism increased by about 0.2 points when holding all other variables fixed.
- Adolescent optimism was significantly and positively correlated with adolescent academic achievement after controlling for biological sex, attendance, and social ability. In general, high optimism participants had GPAs that were 0.448 points higher than low optimism participants when holding all other variables fixed.

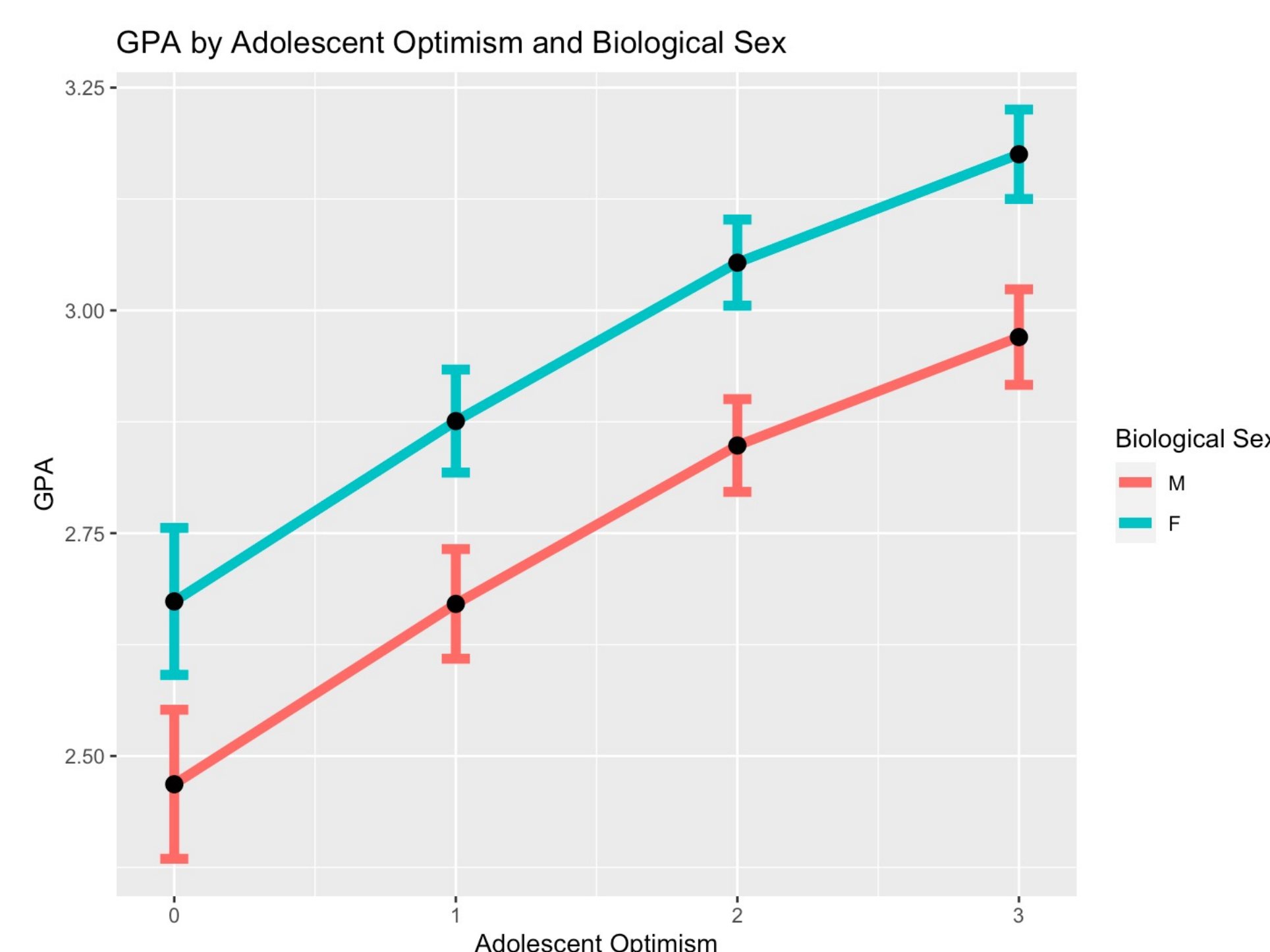


Figure 1. Multiple Linear Regression Model of Adult Optimism and GPA by Biological Sex

### Multivariate (cont.)

- For adolescent optimism, biological sex was found to be negatively and significantly associated with GPA when other variables were held fixed. If participants were male, then their GPA was expected to be 0.214 points lower. (Figure 1)

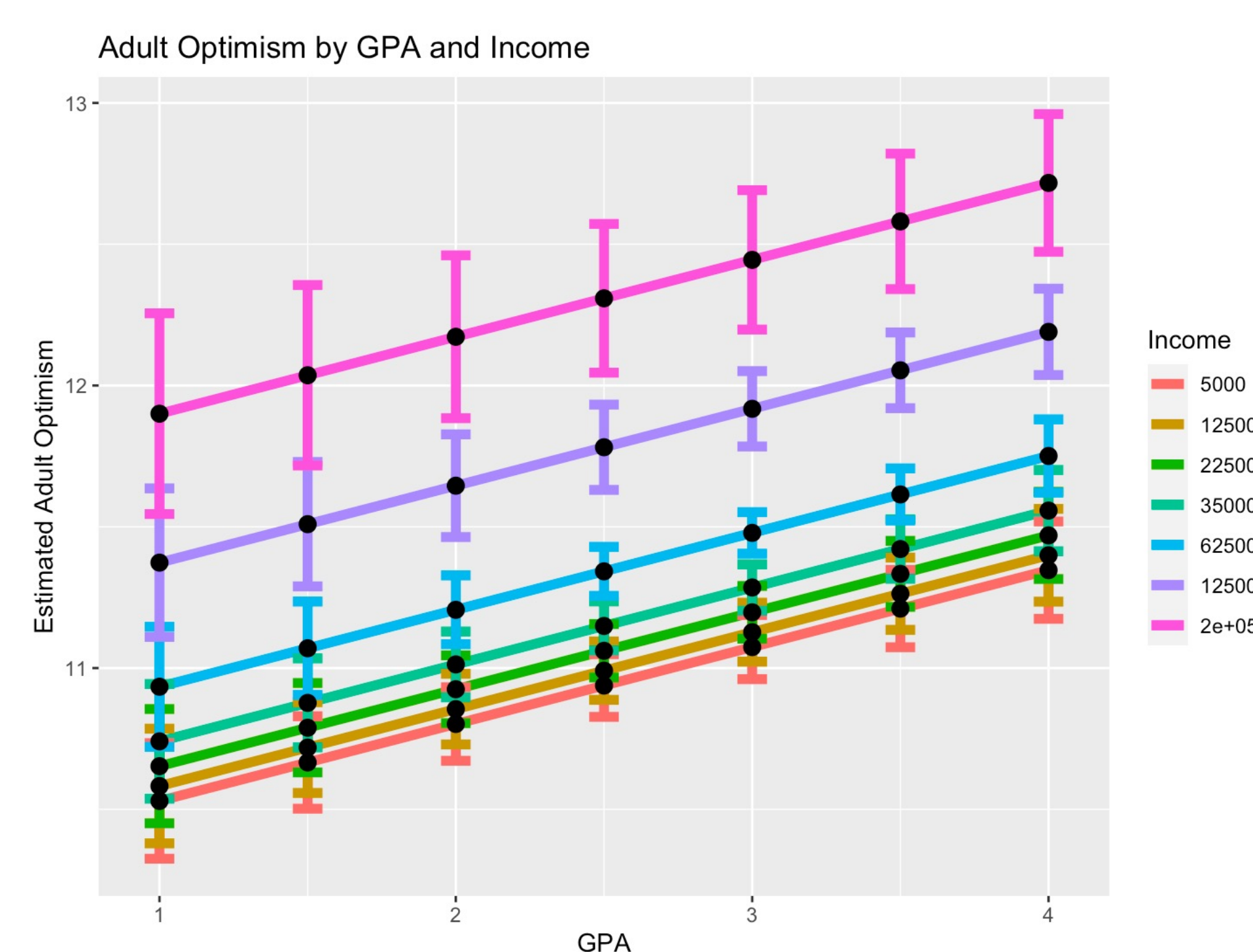


Figure 2: Multiple Linear Regression Model of Adult Optimism by GPA and Income

- Income (Beta =  $5.11e^{-6}$ ,  $p = 4.19e^{-10}$ ) was found to be statistically significant and positively correlated with adult optimism but given the very low beta value was practically insignificant when holding other variables fixed. (Figure 2)

## Discussion

- There was a significant, but weak association between adolescent academic achievement and adolescent optimism as well as between adult optimism and adolescent academic achievement.
- Thus, adolescent optimism can be used as a predictor for adolescent academic achievement. Similarly, adolescent academic achievement can be used as a predictor for adult optimism.
- The relationships between adolescent academic achievement and adolescent optimism as well as adult optimism and adolescent academic achievement continued to be significantly associated when considering biological sex, social ability, and school attendance or biological sex, income, and depression, respectively.
- Attributional Retraining is effective at increasing GPA among students with high optimism (Ruthig, Perry, Hall & Hladkyj, 2004). Given that increased adolescent optimism has been shown to be correlated to increased GPA, further research is needed to determine strategies to promote adolescent optimism.

Ek, E., Remes, J., & Sovio, U. (2004). Social and Developmental Predictors of Optimism from Infancy to Early Adulthood. *Social indicators research*, 69(2), 219-242. <https://doi.org/10.1023/B:SOCI.0000033591.80716.07>

Ruthig, J. C., Perry, R. P., Hall, N. C., & Hladkyj, S. (2004). Optimism and Attributional Retraining: Longitudinal Effects on Academic Achievement, Test Anxiety, and Voluntary Course Withdrawal in College Students. *Journal of applied social psychology*, 34(4), 709-730. <https://doi.org/10.1111/j.1559-1816.2004.tb02566.x>

Tetzner, J., & Becker, M. (2018). Think Positive? Examining the Impact of Optimism on Academic Achievement in Early Adolescents. *Journal of personality*, 86(2), 283-295. <https://doi.org/10.1111/jopy.12312>

Tschannen-Moran, M., Bankole, R. A., Mitchell, R. M., & Moore, D. M. (2013). Student Academic Optimism: a confirmatory factor analysis. *Journal of educational administration*, 51(2), 150-175. <https://doi.org/10.1108/09578231311304689>