

Supplement to:

Yavorsky, Jill E., and Claudia Buchmann. 2019. "Gender Typicality and Academic Achievement among American High School Students." *Sociological Science* 6: 661-683.

## APPENDIX

A1. We conducted two key robustness checks to affirm the similarity of our scale to prior studies' scales. First, the average and distribution of gender typicality scores produced by the 12-item scale are very similar to those produced by the 16-item scale used by prior studies (Cleveland, Udry, and Chantala 2001; Udry and Chantala 2004). Second, the 12-item scale produces a similar Receiver Operating Characteristic (ROC) score to the scales used in previous studies. An ROC curve measures the accuracy of a scale, or variable, to correctly predict an outcome, in this case a respondent's gender. To compute an ROC curve, we estimated the probability of a true positive (when the predicted gender of the respondent is accurate) and compared it to the probability of a false positive. The area below the curve measures how accurately the scale predicts respondents' gender (Cleveland et al. 2001). Our scale accurately predicts the gender of respondents 80.8% of the time, while Cleveland and colleagues' (2001) scale accurately predict it 81.7% of the time. This provides further evidence that the 12-item and 16-item scales provide similar internal reliability.

A2. The lower portion of Appendix Table 2 labeled "Random-effects Parameters" shows two additional parameter estimates. Each estimate quantifies the average variance of the random intercepts, along with a standard error, at each level of the hierarchy. The school-level variance of the random effect is .06 for boys' for overall GPA and math models and .07 for the English model. In order to understand the variability between schools (Level-2), we calculated the intra-class correlation (ICC). The ICC is 12% ( $=.06/ (.06+.43)$ ) for overall GPA, 11% for English ( $=.07/ (.07+.59)$ ), and 8% for math GPA ( $=.06/ (.06+.65)$ ). This means 12% of the proportion of boys' overall GPA variance (and 11% and 8% of student English and math GPA variance) occurs at the school level. The lower ICC values, while high enough to justify multilevel modeling, suggest that much of the GPA variation occurs across students (i.e., Level-1) rather than across schools. For girls, the school-level variance of the random effect ranges between .05

and .06 in Girls' overall, English, and math GPA models. The ICC values are 10% for overall GPA ( $=.05/ (.05+.39)$ ) and English GPA ( $=.06/ (.06+.54)$ ) and 8% for math GPA ( $=.06/ (.06+.65)$ ), indicating that, similar to boys, much of the GPA variation among girls occurs at the individual level.

## APPENDIX TABLES

Appendix Table 1: Regression Results that Show Relationship Between Respondent Characteristics and Gender-Typicality Among Boys and Girls

	Boys (1)	Girls (2)
<i>Race</i>		
White	----- -----	----- -----
Black	0.03* (0.02)	-0.08** (0.02)
Asian	-0.03 (0.02)	0.01 (0.02)
Hispanic	0.00 (0.03)	0.01 (0.02)
<i>Parent's Highest Education Level</i>		
Less than high school degree	----- -----	----- -----
High school degree	0.02 (0.02)	0.02 (0.03)
Some college credit	0.02 (0.02)	0.00 (0.03)
College or advanced degree	0.02 (0.02)	-0.02 (0.03)
<i>Family Structure</i>		
Father Present	0.01 (0.02)	-0.02 (0.02)
<i>Picture Vocabulary Test</i>		
Lower quartile	0.05* (0.02)	-0.02 (0.01)
Lower-mid quartile	0.03 (0.02)	0.01 (0.01)
Upper-mid quartile	0.01 (0.02)	0.01 (0.01)
Upper quartile	----- -----	----- -----
Constant	0.54** (0.03)	0.70** (0.04)
Observations	3,455	3,769

Note. Robust standard errors in parentheses.

\*  $p < 0.05$ ; \*\*  $p < 0.01$

Appendix Table 2. Multi-level Regression Results Showing Relationship Between Gender Typicality and Boys' Transcript GPAs

	Overall GPA (1)	English GPA (2)	Math GPA (3)
Gender Typicality	0.88** (0.32)	0.72 (0.47)	-0.52** (0.10)
Gender Typicality Squared	-1.20** (0.29)	-1.14** (0.40)	----- -----
<i>Race</i>			
White	----- -----	----- -----	----- -----
Black	-0.01 (0.09)	0.03 (0.09)	-0.05 (0.09)
Asian	0.25* (0.12)	0.32* (0.13)	0.33* (0.13)
Hispanic	0.09 (0.10)	0.11 (0.11)	0.04 (0.11)
<i>Parent's Highest Education</i>			
Less than high school degree	----- -----	----- -----	----- -----
High school degree	0.07 (0.06)	0.07 (0.07)	-0.05 (0.09)
Some college credit	0.10 (0.07)	0.07 (0.08)	-0.07 (0.07)
College degree or higher	0.39** (0.08)	0.40** (0.09)	0.25** (0.08)
<i>Family Structure</i>			
Father Present	0.19** (0.05)	0.22** (0.05)	0.23** (0.05)
<i>Picture Vocabulary Test</i>			
Lower Quartile	-0.62** (0.05)	-0.68** (0.06)	-0.56** (0.07)
Lower-mid Quartile	-0.49** (0.06)	-0.54** (0.06)	-0.47** (0.07)
Upper-mid Quartile	-0.18** (0.05)	-0.23** (0.07)	-0.13+ (0.07)
Upper Quartile	----- -----	----- -----	----- -----
Constant	2.39** (0.13)	2.22** (0.17)	2.45** (0.10)
Observations	3,455	3,455	3,455
<i>Level 2 - School (Random Effects Parameters)</i>			
Variance at School Level	0.06 (0.02)	0.07 (0.03)	0.06 (0.02)
Variance at Individual Level	0.43 (0.02)	0.59 (0.03)	0.65 (0.02)

Notes. 1. Robust standard errors in parentheses.  
+ p<.10; \* p<0.05; \*\* p<0.01

Appendix Table 3. Multi-level Regression Results Showing Relationship Between Gender Typicality and Girls' Transcript GPAs

	Overall GPA (1)	English GPA (2)	Math GPA (3)
Gender Typicality	1.01** (0.38)	1.12* (0.45)	0.01 (0.09)
Gender Typicality Squared	-0.78* (0.31)	-0.88* (0.35)	----- -----
<i>Race</i>			
White	----- -----	----- -----	----- -----
Black	-0.10 (0.07)	-0.12+ (0.07)	-0.12 (0.07)
Asian	0.38** (0.12)	0.36** (0.13)	0.44** (0.14)
Hispanic	-0.09 (0.07)	-0.10 (0.08)	-0.15+ (0.08)
<i>Parent's Highest Education</i>			
Less than high school degree	----- -----	----- -----	----- -----
High school degree	0.17* (0.07)	0.17* (0.08)	0.18* (0.08)
Some college credit	0.24** (0.08)	0.27** (0.08)	0.23* (0.09)
College degree or higher	0.45** (0.07)	0.46** (0.07)	0.47** (0.09)
<i>Family Structure</i>			
Father Present	0.15** (0.05)	0.15** (0.05)	0.09 (0.07)
<i>Picture Vocabulary Test</i>			
Lower Quartile	-0.75** (0.07)	-0.86** (0.09)	-0.64** (0.09)
Lower-mid Quartile	-0.52** (0.05)	-0.61** (0.06)	-0.51** (0.07)
Upper-mid Quartile	-0.22** (0.04)	-0.27** (0.04)	-0.21** (0.06)
Upper Quartile	----- -----	----- -----	----- -----
Constant	2.50** (0.14)	2.43** (0.18)	2.41** (0.11)
Observations	3,769	3,769	3,769
Level 2 - School (Random Effects Parameters)			
Variance at School Level	0.05 (0.01)	0.06 (0.01)	0.06 (0.02)
Variance at Individual Level	0.39 (0.02)	0.54 (0.03)	0.65 (0.03)

Notes. Robust standard errors in parentheses.  
+ p<.10; \* p<0.05; \*\* p<0.01

Appendix Table 4: Multi-level Regression Results Showing Relationship Between Girls' GPA, Socioeconomic Status, and Gender Typicality

	Overall GPA (1)	English GPA (2)	Math GPA (3)
<i>Independent Variable</i>			
Gender Typicality	-1.24 (1.07)	-2.53* (1.09)	-2.72* (1.21)
Gender Typicality Squared	0.92 (0.84)	1.88* (0.89)	2.19* (0.94)
<i>Race</i>			
White	----- -----	----- -----	----- -----
Black	-0.10 (0.07)	-0.12+ (0.07)	-0.12 (0.08)
Asian	0.38** (0.12)	0.37** (0.14)	0.45** (0.14)
Hispanic	-0.09 (0.07)	-0.10 (0.08)	-0.16+ (0.08)
<i>Parent's High Education</i>			
Less than high school degree	----- -----	----- -----	----- -----
High school degree	-0.89 (0.55)	-1.25* (0.54)	-1.13+ (0.61)
Some college credit	-0.70+ (0.41)	-1.08** (0.41)	-1.05** (0.38)
College degree or higher	0.03 (0.33)	-0.58+ (0.34)	0.02 (0.36)
<i>Family Structure</i>			
Father Present	0.14** (0.05)	0.14** (0.05)	0.09 (0.07)
<i>Picture Vocabulary Test</i>			
Lower Quartile	----- -----	----- -----	----- -----
Lower-mid Quartile	-0.74** (0.08)	-0.86** (0.09)	-0.63** (0.09)
Upper-mid Quartile	-0.52** (0.05)	-0.61** (0.07)	-0.51** (0.07)
Upper Quartile	-0.22** (0.04)	-0.27** (0.04)	-0.21** (0.06)
<i>Parent's Education Level X Gender Typicality (GT)</i>			
Less than high school degree X GT	----- -----	----- -----	----- -----
High school degree X GT	3.31+ (0.33)	4.52* (0.34)	4.51* (0.36)

	(1.80)	(1.77)	(2.09)
Some college X GT	3.20*	4.51**	4.61**
	(1.31)	(1.36)	(1.27)
College or higher X GT	1.82+	3.99**	2.14+
	(1.06)	(1.15)	(1.23)
<i>Parent's Education Level X Squared Term of Gender Typicality (GT)</i>			
Less than high school degree X Squared GT	-----	-----	-----
	-----	-----	-----
High school degree X Squared GT	-2.30+	-3.21*	-3.43*
	(1.34)	(1.34)	(1.57)
Some college X Squared GT	-2.39*	-3.33**	-3.61**
	(1.00)	(1.05)	(0.98)
College or higher X Squared GT	-1.58+	-3.27**	-1.94+
	(0.85)	(0.92)	(1.00)
Constant	3.15**	3.49**	3.13**
	(0.34)	(0.32)	(0.38)
Observations	3,769	3,769	3,769
Level 2 - School (Random Effects Parameters)			
Variance at School Level	0.05	0.06	0.06
	(0.01)	(0.01)	(0.02)
Variance at Individual Level	0.39	0.53	0.64
	(0.02)	(0.03)	(0.03)

Notes. 1. Robust standard errors in parentheses.

+ p<0.10; \* p<0.05; \*\* p<0.01