Bald is Beautiful? Life Course Outcomes for Individuals at High Genetic Risk for Male Pattern Baldness

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ABSTRACT

An extensive amount of literature shows that a higher level of attractiveness is associated with socioeconomic success in the United States and many other countries; however, most of the evidence is based on the early- and mid-career outcomes of the younger cohort in cross-sectional studies. In this paper, we combine this question with a novel use of genetic data to investigate one dimension of attractiveness—male-pattern baldness—to explore if the earning premium for physical attractiveness is enduring and consistent across the life spans of males and females by employing longitudinal data from the Health and Retirement Study. We find the genetic effect of baldness on income differs substantially by gender and education in later life. Even though males with lower levels of education and high genetic risk for baldness would expect to suffer greater wage penalties than males with low genetic risk for baldness, this wage gap is not the same for every level of education. Males with higher education and at high risk for baldness tend to earn more than their counterparts at lower risk for baldness do. Conversely, no difference in the effect of education on income is present among females with high or low genetic risk for baldness. However, on average, females with an increased genetic risk for baldness are more likely to suffer wage penalties than their low-genetic-risk counterparts. Our findings illustrate that earning potential based on physical attractiveness may vary across the life span and ability.

BEAUTY VS. ABILITY

Previous research has demonstrated that individuals who are physically attractive received beauty premiums across various socioeconomic domains, including marriage, the labor market, and the criminal justice system. More specific to the relationship between wage and beauty, many researchers found less-attractive individuals earn less than people who are good-looking (Hamermesh & Biddle, 1994; Judge, Hurst, & Simon, 2009). However, Harper (2000) found no evidence of a beauty premium when the measured ability is controlled. Fletcher (2008) did further analyses among young high school graduates and found some suggestive, but not statistically significant, evidence of the interaction effect between ability and attractiveness. In addition, empirical research is less conclusive about the relationship between wage and attractiveness across the life course.

This paper follows Fletcher (2008) and employs genetic data to investigate one dimension of attractiveness—male-pattern baldness—to explore if the earning premium for physical attractiveness is enduring and consistent across the life span. Specifically, we would like to explore the following. **1.** Do individuals with high genetic risk for baldness have lower incomes than their counterparts who are at low genetic risk for baldness across the life course? **2.** Does the effect of ability (measured by education) on income differ by the genetic risk level for baldness? **3.** As male-pattern baldness is a male-limited trait, is this genetic measure still predictive when employed in the female sample? Are there any gender differences in the genetic effect of baldness on income?

METHODS & DATA

Data: Health and Retirement Study 1992–2016

Eligibility criteria: In the main analysis, 2,337 men and 2,434 women were included: age 50–64, white individuals.

Outcome of interest: Mean income across the waves. Respondent's income is used to compute the mean income only if (1) the respondent is employed in that year, and (2) the respondent has positive earnings in that year. All income measures are adjusted to 2016 dollars and log transformed.

Predictors: Education (measured in years); demographic controls—maximum self-reported health across the waves; household background controls—maternal education and log-transformed average spouse earnings across the waves; personality traits—maximum summary score for the big-five personality traits (extraversion, agreeableness, openness, conscientiousness, and neuroticism) across the waves; and occupation controls—constructed using the most frequent occupation category respondent self-reported across the waves. The self-reported occupation categories are then reclassified as managers, professional, sales and admin, services, and manual and construction by following the discussion in Vable et al. (2017). Other attractiveness measures include ever being a smoker and ever being obese. The first 20 principal components and the respondent's birth year are also included.

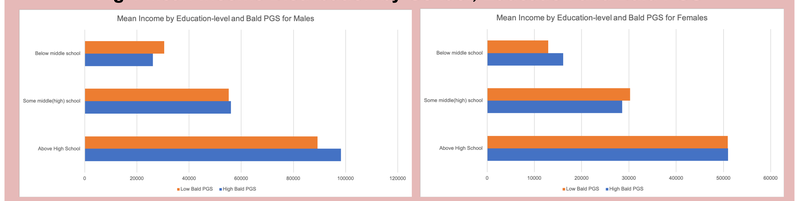
PGS for baldness (Yap et al., 2018): An adjusted MPB score was used as the phenotype in GWAS. The GWAS sample size is 205,327. Even though MPB is a sex-specific phenotype, the PGS is constructed for all genders. High PGS is defined as standardized PGS for baldness equal or higher than the sample average, and low PGS is defined as standardized PGS for baldness below the sample average.

Empirical Model (OLS):

$$\log(income) = \beta X + \delta Bald_{PGS} + \theta Ability + \varepsilon$$

RESULTS

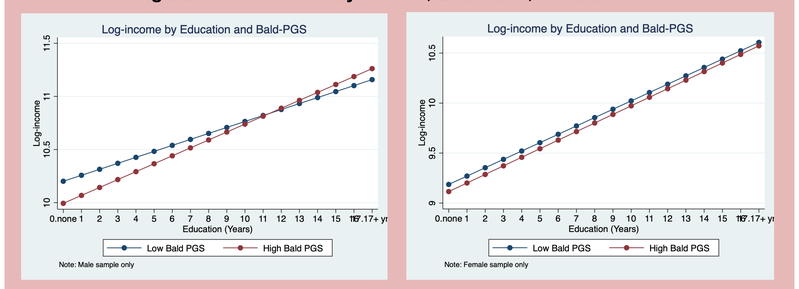
Fig 1 Mean Income Distribution by Gender, Education and Bald PGS



Male **Female**

Effect of ability differs by beauty?

Fig 2 Effect of Income by Gender, Education, and Bald PGS



Male **Female**

RESULTS (Cont'd)

Table1. Effect of Bald-PGS and education among males (* p<0.10, ** p<0.05, *** p<0.01)

	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5
High Bald PGS	0.0415	0.0202	0.00591	-0.249*	-0.243*
	(0.0294)	(0.0288)	(0.0298)	(0.140)	(0.145)
Education Years		0.0858***	0.0641***	0.0767***	0.0563***
		(0.00594)	(0.00715)	(0.00754)	(0.00843)
High Bald PGS * Education				0.0198**	0.0183*
				(0.0101)	(0.0105)
Very Good Health		-0.242*	-0.225*	-0.237*	-0.221*
		(0.127)	(0.135)	(0.127)	(0.134)
Good Health		-0.248**	-0.205	-0.242*	-0.202
		(0.125)	(0.133)	(0.125)	(0.133)
Fair Health		-0.407***	-0.342**	-0.399***	-0.336**
		(0.126)	(0.135)	(0.126)	(0.135)
Poor Health		-0.474***	-0.393***	-0.469***	-0.391***
		(0.129)	(0.138)	(0.129)	(0.138)
Constant	9.736***	8.933***	9.428***	9.034***	9.524***
	(0.341)	(0.382)	(0.422)	(0.385)	(0.426)
Demographic controls	N	Y	Y	Y	Y
Household Background	N	Y	Y	Y	Y
Personality	N	N	Y	N	Y
Occupation	N	N	Y	N	Y
Other Attractiveness controls	N	N	Y	N	Y
Observations	2692	2337	2139	2337	2139
Adjusted. R^2	0.07	0.20	0.22	0.21	0.23

Table 2. Effect of Bald-PGS and education among females (* p<0.10, ** p<0.05, *** p<0.01)

	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4	(5) Model 5
High Bald PGS	-0.0310	-0.0555	-0.0670*	-0.159	-0.0961
	(0.0321)	(0.0350)	(0.0348)	(0.184)	(0.185)
Education Years		0.123***	0.0845***	0.120***	0.0835***
		(0.00818)	(0.00926)	(0.0103)	(0.0111)
High Bald PGS * Education				0.00776	0.00219
				(0.0136)	(0.0137)
Very Good Health		-0.259*	-0.223	-0.258*	-0.223
		(0.145)	(0.149)	(0.145)	(0.149)
Good Health		-0.361**	-0.288**	-0.360**	-0.289**
		(0.142)	(0.147)	(0.143)	(0.147)
Fair Health		-0.461***	-0.354**	-0.459***	-0.354**
		(0.144)	(0.150)	(0.144)	(0.150)
Poor Health		-0.403***	-0.304*	-0.401***	-0.304*
		(0.149)	(0.156)	(0.149)	(0.156)
Constant	9.548***	8.485***	9.077***	8.529***	9.091***
	(0.887)	(0.868)	(0.881)	(0.871)	(0.885)
Demographic controls	N	Y	Y	Y	Y
Household Background	N	Y	Y	Y	Y
Personality	N	N	Y	N	Y
Occupation	N	N	Y	N	Y
Other Attractiveness controls	N	N	Y	N	Y
Observations	3141	2434	2291	2434	2291
Adjusted. R^2	0.05	0.16	0.23	0.16	0.23

DISCUSSION

We found the genetic effect of baldness on income differs substantially by gender and education in later life. Men with lower levels of education and high genetic risk for baldness would expect to suffer wage penalties greater than men with lower education levels but at low genetic risk for baldness. However, this wage gap was not the same for every level of education. For women, we found no statistically significant evidence of the interaction between genetic risk for baldness and education on income. However, without the interaction, we found suggestive evidence that high genetic risk for baldness was negatively associated with income among females. The above results are robust with the inclusion of additional controls and more stringent eligibility criteria (full-time employee, minimum annual salary of $25,000).

Reference: 1. Hamermesh, D. S., & Biddle, J. E. (1994). Beauty and the Labor Market. 84 AM. *Econ. Rev. 1174*, 1186. 2. Judge, T. A., Hurst, C., & Simon, L. S. (2009). Does it pay to be smart, attractive, or confident (or all three)? Relationships among general mental ability, physical attractiveness, core self-evaluations, and income. *Journal of Applied Psychology*, *94*(3), 742. 3. Harper, B. (2000). Beauty, stature and the labour market: A British cohort study. *Oxford Bulletin of Economics and Statistics*, *62*, 771-800. 4. Fletcher, J. M. (2009). Beauty vs. brains: Early labor market outcomes of high school graduates. *Economics Letters*, *105*(3), 321-325. 5. Yap, C. X., Sidorenko, J., Wu, Y., Kemper, K. E., Yang, J., Wray, N. R., ... & Visscher, P. M. (2018). Dissection of genetic variation and evidence for pleiotropy in male pattern baldness. *Nature communications*, *9*(1), 1-12. 5. Vable, A. M., Gilsanz, P., Nguyen, T. T., Kawachi, I., & Glymour, M. M. (2017). Validation of a theoretically motivated approach to measuring childhood socioeconomic circumstances in the Health and Retirement Study. PloS one, 12(10), e0185898.