



Beauty vs. brains: Early labor market outcomes of high school graduates

Jason M. Fletcher*

Yale University, School of Public Health, Division of Health Policy and Administration, 60 College Street #303, New Haven CT 06511, United States

ARTICLE INFO

Article history:

Received 21 July 2008

Received in revised form 1 September 2009

Accepted 5 September 2009

Available online 12 September 2009

Keywords:

Beauty

Wages

JEL Codes:

J10

J7

J31

ABSTRACT

This paper examines the wage returns to attractiveness for young high school graduates. Findings show that wage returns to attractiveness are large relative to ability and beauty and ability are complements at high attractiveness ratings but substitutes at low ratings.

© 2009 Elsevier B.V. All rights reserved.

1. Introduction

Recently many researchers have focused on estimating the relationships between non-cognitive skills, individual attributes, and market wages. In particular, researchers have found associations between wages and attractiveness (Hamermesh and Biddle, 1994), obesity (Cawley, 2004), height (Persico et al., 2004), and leadership skills during high school (Kuhn and Weinberger, 2005) among other measures.

More specific to the wage returns to attractiveness, Hamermesh and Biddle (1994) show consistent evidence of a beauty premium across occupations. Hamermesh and Parker (2005) find that college instructors' attractiveness ratings increase their evaluations, and the effects are larger for male instructors. Mocan and Tekin (2006) show that unattractive individuals are more likely to be involved in criminal activities as young adults. The reasons for the beauty premium in earnings and other labor force outcomes remain largely unknown. Hamermesh and Biddle (1994) suggest three possible reasons – employer discrimination, customer discrimination, and occupational crowding. Mobius and Rosenblat (2006) experimentally examine potential reasons for a beauty premium and find evidence that attractive workers are more confident, and worker confidence can influence wages.

Unfortunately, most previous work that has empirically examined evidence of the beauty premium has had a limited set of control variables and limited ability measures available in the data. One

exception is Harper (2000), who uses English data and finds that the beauty premium disappears once ability is controlled. This weakness suggests that further work is necessary to examine whether the beauty premium represents unmeasured ability, whether beauty is complementary to ability in determining earnings, and whether the results are robust to the inclusion of a rich set of control variables.

In this paper, I estimate the importance of attractiveness and ability measures in predicting wages of young adults with a particular focus on the interactions between these measures. This paper makes several contributions to the literature; specifically the paper (1) examines whether the beauty premium represents unmeasured ability (2) examines whether beauty is complementary with ability in determining wages and (3) provides several robustness checks on the results.

The results in this paper suggest that the wage returns to attractiveness are large relative to measured ability for young high school graduates. A one-standard deviation increase in ability is associated with a 3%–6% higher wage, while attractive or very attractive individuals earn 5% to 10% more than average-looking individuals, and the results suggest a 3%–5% “plainness penalty”, which is similar to Hamermesh and Biddle (1994). The results also provide suggestive evidence that for very attractive individuals, increases in ability are associated with increases in wages, but for below-average levels of attractiveness, the returns to ability may be negative.

2. Data and empirical methodology

The data in this study come from the restricted version of the National Longitudinal Study of Adolescent Health (Add Health). Add

* Tel.: +1 203 785 5760; fax: +1 203 785 6287.

E-mail address: jason.fletcher@yale.edu.

Health is a school-based, longitudinal study of the health-related behaviors of adolescents and their outcomes in young adulthood. Beginning with an in-school questionnaire administered to a nationally representative sample of students in grades 7 through 12 in 1994–95, the study follows up with a series of in-home interviews of students approximately one year and then six years later.¹

Of the over 15,000 individuals who completed the survey, I focus on the 4,000 who completed only high school.² This restriction is made for two reasons: (1) over 40% of the individuals who report completing more than high school are still in some school setting at the last available wave of data (Wave 3) and (2) focusing on one education-group allows one to sidestep the effects of the choice of years of schooling on earnings.³

Of the 4000 individuals who have completed high school at Wave 3, 3573 have valid wage data (2008 males and 1565 females). There is also moderate non-response in the parent interviews, so I impute mother's education level and parents' income during adolescence as well as variables used in the robustness analyses, and include a dummy variable for those individuals with imputed data. Summary statistics are presented in Table 1.

For individual and family-level variables, the empirical specifications include age, race, mother's education, and parents' income (during adolescence), physical health status indicators, an ability measure (the Peabody Picture Vocabulary Test)⁴, and the attractiveness ratings are categorized as 1 (very unattractive) to 5 (very attractive).⁵ Robustness checks also control for weight status, personality ratings, self-confidence ratings⁶, respondent attractiveness ratings, and additional measures of socioeconomic status and family background.

The empirical model follows most of the literature on wage determinants, particularly research examining the beauty premium, and estimates the following model:

$$\log(\text{wage}) = \beta X + \delta \text{Looks} + \theta \text{Ability} + \varepsilon \quad (1)$$

where *wage* is the yearly reported earnings from wages divided by average weekly hours worked for 50 weeks⁷, *X* is a vector of individual and family observables, *Looks* is the individual's level of attractiveness, *Ability* is the PVT test score, and ε is an idiosyncratic error term clustered at the high-school-of-origin level.

3. Results

I follow Hamermesh and Biddle (1994) and other researchers and examine the empirical models of wage determination (shown in Eq. (1)) separately by gender. Table 2 presents baseline results. Conforming to prior research results, older individuals have higher earnings and black individuals report lower earnings. Men with better physical health also receive higher wages but there is no relationship for women. As expected, the test score measure (Peabody Picture Vocabulary Test) and attractiveness ratings are positively related to

Table 1
Summary statistics national longitudinal study of adolescent health (add health) high school graduates.

Variable	Males		Females	
	N = 2008	Std Dev	N = 1565	Std Dev
Log wage	2.30	0.37	2.15	0.34
PVT score	97.51	13.88	95.34	13.07
Very unattractive	0.01	0.11	0.02	0.13
Unattractive	0.05	0.23	0.06	0.23
Average attractiveness	0.54	0.50	0.46	0.50
Attractive	0.32	0.47	0.35	0.48
Very attractive	0.07	0.26	0.11	0.32
Age	22.18	1.77	21.98	1.75
Black	0.18	0.39	0.20	0.40
Hispanic	0.19	0.39	0.18	0.38
Other race	0.06	0.23	0.05	0.23
Poor health status	0.00	0.06	0.01	0.08
Fair health status	0.07	0.26	0.11	0.32
Good health status	0.27	0.45	0.35	0.48
Very good health status	0.39	0.49	0.33	0.47
Maternal education	12.61	2.08	12.36	1.95
Family income as adolescent	3.76	2.47	3.86	3.73
Missing family information indicator	0.35	0.48	0.34	0.47
Welfare receipt during adolescence	0.11	0.30	0.14	0.32
Number of siblings	1.73	1.59	1.66	1.56
Household smoking status during adolescence	0.55	0.47	0.57	0.46
Parental health	2.56	0.98	2.59	0.97
Food stamps receipt during adolescence	0.15	0.33	0.19	0.37
Overweight (not obese)	0.31	0.46	0.23	0.42
Obese	0.24	0.43	0.33	0.47
Personality rating (5 = very attractive)	3.49	0.78	3.63	0.84
Confidence rating	1.59	0.75	1.78	0.79
Self attractiveness rating	4.07	0.75	4.01	0.77

earnings. In particular, a one standard deviation increase in test scores is associated with 3.5–4.5% higher wage. Receiving a rating of attractive or very attractive (vs. average) is associated with a 5–10% higher wage.⁸ In order to control for interviewer perceptions in beauty ratings, interviewer fixed effects are controlled in columns 2 and 4 as well as the remaining analyses; results are quite robust.

Results reported in columns 3 and 5 show interactions between the ability measure and the attractiveness dummy variables. The results show some suggestive evidence that very attractive individuals reap additional rewards from having higher ability, and there is suggestive (though not statistically significant) evidence that very unattractive individuals who have high measured ability receive lower wages than unattractive individuals who have lower measured ability.

In results reported in the Appendix, I estimate several specification checks to assess the robustness of the results. First, I control for occupation fixed effects in order to control for sorting across occupations based on level of attractiveness (Biddle and Hamermesh 1998). Results are remarkably robust.⁹ Further checks control for high-school fixed effects, additional socioeconomic status variables, and a 'kitchen sink' specification that controls for other characteristics that are potentially related to attractiveness ratings, including overweight/obesity status, an interviewer-rating of personality, and two measure reported by the respondents: self-confidence and attractiveness. Overall, the inclusion of these variables does not greatly affect the basic results of the relationship between attractiveness and earnings.¹⁰ Additional results

¹ See Udry (2003) for full description of the Add Health data set.

² I include students who attained a GED or high school equivalency degree (7%).

³ In auxiliary analyses available upon request, I show that the main results are qualitatively similar if the full sample of individuals is used.

⁴ This measure has been used extensively in the economics literature and is commonly described as a measure of aptitude or verbal intelligence (Blau, 1999). Information on reliability and validity of the PPVT and bibliography can be found at <http://ags.pearsonassessments.com>.

⁵ Attractiveness as rated by a single evaluator may be a noisy measure of actual attractiveness. Mocan and Erdal (2006) query use the Add Health data and show that attractiveness ratings are the same over time in 85% of the cases. Hamermesh and Biddle (1994) present similar results. Results using the Wave 1 attractiveness ratings are similar and available upon request.

⁶ This paper is able to use self-reported measures of confidence rather than researcher-created proxies (e.g. Mobius and Rosenblat 2006 use worker estimates of future productivity in comparison with actual productivity).

⁷ Only wages between \$4 and \$100 are used in the analysis, although the results are similar using all wages.

⁸ Since these results use only the sample of high school graduates, I test whether the coefficients on ability and attractiveness are different than those estimated on the full sample using the specifications in columns 1 and 3. I fail to reject that the sets of coefficients are different (*P*-values of the test reported in Table 2).

⁹ Hamermesh and Biddle (1994) find the impact of looks is independent across occupations.

¹⁰ Other specifications not reported include the use of a prior rating of attractiveness (from Wave 1). These results did not substantially change the baseline results presented in Table 2.

Table 2
Wage determinants: ability and attractiveness high school graduates.

Sample	Males			Females		
	None	Interviewer	Interviewer	None	Interviewer	Interviewer
Standardized PVT score	0.033*** (0.010)	0.023** (0.012)	0.021 (0.013)	0.044*** (0.011)	0.054*** (0.014)	0.059*** (0.018)
Very unattractive	–0.007 (0.065)	–0.053 (0.074)	–0.065 (0.074)	0.124 (0.099)	0.140 (0.107)	0.136 (0.108)
Unattractive	–0.062* (0.037)	–0.048 (0.042)	–0.050 (0.044)	–0.041* (0.025)	–0.028 (0.035)	–0.025 (0.042)
Attractive	0.049*** (0.018)	0.028 (0.020)	0.028 (0.019)	0.084*** (0.018)	0.072*** (0.023)	0.066** (0.026)
Very attractive	0.106*** (0.032)	0.084* (0.046)	0.091* (0.047)	0.065** (0.027)	0.025 (0.035)	0.029 (0.036)
Very unattractive X PVT			–0.126 (0.091)			–0.010 (0.071)
Unattractive X PVT			–0.008 (0.034)			0.007 (0.036)
Attractive X PVT			0.003 (0.026)			–0.022 (0.026)
Very attractive X PVT			0.049 (0.049)			0.015 (0.038)
Age	0.353*** (0.094)	0.322*** (0.112)	0.317*** (0.114)	0.233* (0.126)	0.218* (0.128)	0.213* (0.128)
Age squared	–0.007*** (0.002)	–0.006** (0.003)	–0.006** (0.003)	–0.005 (0.003)	–0.004 (0.003)	–0.004 (0.003)
Black	–0.099*** (0.030)	–0.090** (0.043)	–0.090** (0.043)	–0.012 (0.031)	–0.057 (0.054)	–0.056 (0.054)
Hispanic	0.014 (0.031)	–0.056 (0.035)	–0.056 (0.035)	0.134*** (0.026)	0.014 (0.041)	0.014 (0.041)
Other race	–0.035 (0.047)	–0.094* (0.052)	–0.096* (0.051)	0.063 (0.066)	0.014 (0.080)	0.014 (0.080)
Poor health dummy	–0.248 (0.174)	–0.198 (0.210)	–0.196 (0.208)	0.089 (0.094)	0.065 (0.138)	0.065 (0.137)
Fair health dummy	–0.082** (0.034)	–0.109*** (0.036)	–0.107*** (0.036)	–0.011 (0.024)	–0.012 (0.029)	–0.011 (0.029)
Good health dummy	–0.060*** (0.023)	–0.056** (0.027)	–0.056** (0.027)	0.006 (0.020)	–0.019 (0.021)	–0.017 (0.021)
Very good health dummy	–0.052*** (0.020)	–0.050** (0.024)	–0.048** (0.024)	0.012 (0.023)	0.006 (0.032)	0.007 (0.032)
Maternal education	0.004 (0.005)	0.005 (0.005)	0.005 (0.006)	0.010** (0.005)	0.004 (0.006)	0.004 (0.006)
Family income	0.004 (0.003)	–0.002 (0.004)	–0.002 (0.004)	0.003 (0.003)	0.001 (0.003)	0.001 (0.003)
Observations	2006	1970	1970	1565	1540	1540
R-squared	0.081	0.341	0.342	0.094	0.386	0.387
P-value core	0.718			0.215		

Robust standard errors in parentheses. * Significant at 10%, ** 5%, *** 1%. P-value Core: reflects the P-value of the test of statistical differences between the analysis sample and the full sample for the coefficients on beauty and PVT scores, using the same specification. Controls not shown: Constant, missing family information dummy.

include finding a wage penalty for obesity for women and a wage bonus for overweight for men, which is similar to results by [Cawley \(2004\)](#).

4. Conclusion

This paper makes several contributions to the literature; specifically the paper (1) examines whether the beauty premium represents unmeasured ability (2) examines whether beauty is complementary to ability in determining earnings and (3) employs several robustness checks unable to be performed in previous work. Overall, the findings suggest that attractiveness is positively associated with earnings for high school graduates while they are young adults (average age 22), even controlling for ability measures not available in previous research. A one-standard deviation increase in ability is associated with a 3%–5% higher wage, while above average or very attractive individuals earn 5% to 10% more than average-looking individuals and the results suggest a 3%–5% “plainness penalty”, which is similar to [Hamermesh and Biddle \(1994\)](#). The results also provide suggestive evidence that for very attractive individuals, increases

in ability are associated with increases in wages, but for below-average levels of attractiveness, the returns to ability may be negative. These results are robust to controlling for a variety of usually unmeasured variables, including a personality rating, self-reports of attractiveness and self-confidence as well as several additional robustness checks.

Acknowledgement

This research uses data from Add Health, a program project designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris, and funded by a grant P01-HD31921 from the National Institute of Child Health and Human Development, with cooperative funding from 17 other agencies. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Persons interested in obtaining data files from Add Health should contact Add Health, Carolina Population Center, 123 W. Franklin Street, Chapel Hill, NC 27516-2524 (addhealth@unc.edu). I thank Orgul Ozturk, Joseph Price, and an anonymous reviewer for helpful comments. All errors are my own.

Appendix A. Beauty vs. brains: Early labor market outcomes of high school graduates

Table A1

Robustness checks.

Sample	Male				Female			
	Occupation/interviewer	School	Interviewer	Interviewer	Occupation/interviewer	School	Interviewer	Interviewer
Standardized PVT score	0.022* (0.012)	0.018 (0.012)	0.019 (0.013)	0.016 (0.014)	0.041*** (0.015)	0.040** (0.016)	0.064*** (0.017)	0.057*** (0.019)
Very unattractive	-0.072 (0.075)	0.012 (0.074)	-0.072 (0.071)	-0.080 (0.090)	0.150 (0.102)	0.050 (0.091)	0.129 (0.107)	0.149 (0.112)
Unattractive	-0.050 (0.043)	-0.054 (0.038)	-0.055 (0.045)	-0.048 (0.054)	0.017 (0.041)	-0.024 (0.033)	-0.023 (0.044)	-0.017 (0.049)
Attractive	0.024 (0.019)	0.044** (0.018)	0.026 (0.020)	0.022 (0.022)	0.063*** (0.023)	0.073*** (0.020)	0.061** (0.026)	0.059** (0.026)
Very attractive	0.070 (0.045)	0.102*** (0.036)	0.086* (0.046)	0.080 (0.052)	0.036 (0.033)	0.068** (0.028)	0.024 (0.036)	-0.002 (0.042)
Very unattractive X PVT	-0.047 (0.098)	-0.017 (0.111)	-0.116 (0.089)	-0.119 (0.109)	-0.023 (0.064)	-0.057 (0.050)	-0.010 (0.071)	-0.021 (0.074)
Unattractive X PVT	-0.012 (0.032)	0.027 (0.029)	-0.006 (0.035)	-0.007 (0.044)	0.024 (0.035)	0.018 (0.028)	0.007 (0.036)	0.023 (0.041)
Attractive X PVT	-0.002 (0.026)	0.012 (0.025)	0.005 (0.027)	0.013 (0.028)	-0.011 (0.021)	0.013 (0.018)	-0.028 (0.026)	-0.019 (0.028)
Very attractive X PVT	0.041 (0.047)	0.053 (0.039)	0.052 (0.048)	0.046 (0.051)	0.025 (0.037)	0.051 (0.031)	0.015 (0.038)	0.009 (0.040)
Welfare receipt			-0.015 (0.054)	-0.010 (0.059)			-0.052 (0.049)	-0.047 (0.053)
Number of siblings			0.004 (0.006)	0.002 (0.006)			0.013* (0.007)	0.012* (0.007)
Household smoking			-0.010 (0.020)	-0.014 (0.022)			-0.021 (0.020)	-0.024 (0.021)
Parental health status			0.009 (0.009)	0.006 (0.010)			-0.013 (0.011)	-0.015 (0.012)
Food stamps receipt			-0.051 (0.044)	-0.042 (0.047)			-0.016 (0.045)	-0.021 (0.050)
Overweight				0.044* (0.023)				-0.018 (0.036)
Obese				0.026 (0.023)				-0.039 (0.030)
Personality rating				-0.014 (0.016)				0.006 (0.016)
Confidence				-0.019 (0.014)				-0.001 (0.016)
Attractiveness (self-rated)				0.016 (0.014)				-0.015 (0.015)
Observations	1937	2006	1970	1820	1518	1565	1540	1410
R-squared	0.427	0.200	0.347	0.363	0.470	0.242	0.399	0.407

Robust standard errors in parentheses.

*Significant at 10%.

**Significant at 5%.

***Significant at 1%.

Additional controls: variables in Table 2.

Variables Appendix

Occupational categories

Management occupation
 Business and financial operations occupation
 Computer and mathematical occupation
 Architecture and engineering occupation
 Life, physical and social science occupation
 Community and social services occupation
 Legal occupation
 Education, training, and library occupation
 Arts, design, entertainment, sports, and media occupation
 Healthcare practitioners and technical occupation
 Healthcare support occupation
 Protective service occupation
 Food preparation and serving related occupation
 Building and grounds cleaning and maintenance occupation
 Personal care and service occupation

Sales and related occupation

Office and administrative support occupation
 Farming, fishing, and forestry occupation
 Construction and extraction occupation
 Installation, maintenance, and repair occupation
 Production occupation
 Transportation and material moving occupation
 Military specific occupation

References

- Biddle, Jeff, Hamermesh, Daniel, 1998. Beauty, productivity, and discrimination: lawyers' looks and lucre. *Journal of Labor Economics* 16 (1), 172–201.
 Blau, David, 1999. The effect of income on child development. *Review of Economics and Statistics* 81 (2), 261–276.
 Cawley, John, 2004. The impact of obesity on wage. *Journal of Human Resources* 39 (2), 451–474.
 Hamermesh, Daniel, Biddle, Jeff, 1994. Beauty and the labor market. *American Economic Review* 84 (5), 1174–1194.
 Hamermesh, Daniel, Parker, Amy, 2005. Beauty in the classroom: instructors' pulchritude and putative pedagogical productivity. *Economics of Education Review* 24, 369–376.

- Harper, Barry, 2000. Beauty, stature and the labour market: a British cohort study. *Oxford Bulletin of Economics and Statistics* 62 (s1), 771–800.
- Kuhn, Peter, Weinberger, Catherine, 2005. Leadership skills and wages. *Journal of LaborEconomics* 23 (3), 395–436.
- Mobius, Markus, Rosenblat, Tanya, 2006. Why beauty matters. *American Economic Review* 96 (1), 222–235.
- Mocan, Naci, Erdal, Tekin, 2006. Ugly criminals. NBER Working Paper 12019.
- Persico, Nicola, Postlewaite, Andrew, Silverman, Dan, 2004. The effect of adolescent experience on labor market outcomes: the case of height. *Journal of Political Economy*. 112 (5), 1019–1053.
- Udry, J.R., 2003. The national longitudinal study of adolescent health (add health), waves I & II, 1994–1996; wave III, 2001–2002 [machine-readable data file and documentation]. Carolina Population Center, University of North Carolina at Chapel Hill, Chapel Hill, NC.