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ARE THERE REALLY A BEAUTY PREMIUM AND AN UGLINESS PENALTY ON EARNINGS?*

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ABSTRACT

Purpose Economists have widely documented the "beauty premium" and "ugliness penalty" on earnings. Explanations based on employer and client discrimination would predict a monotonic association between physical attractiveness and earnings; explanations based on occupational self-selection would explain the beauty premium as a function of workers' occupations; and explanations based on individual differences would predict that the beauty premium would disappear once appropriate individual differences are controlled. In this paper, we empirically tested the three competing hypotheses about the "beauty premium."

Design/Methodology/Approach We analyzed a nationally representative and prospectively longitudinal sample from the National Longitudinal Survey of Adolescent Health (Add Health).

Findings The results contradicted the discrimination and self-selection explanations and strongly supported the individual differences explanation. Very unattractive respondents always earned significantly more than unattractive respondents, sometimes more than average-looking or attractive respondents. Multiple regression analyses showed that there was very weak evidence for the beauty premium, and it disappeared completely once individual differences, such as health, intelligence, and Big Five personality factors, were statistically controlled.

Implications Past findings of beauty premium and ugliness penalty may possibly be due to the fact that: 1) "very unattractive" and "unattractive" categories are usually collapsed into "below average" category; and 2) health, intelligence (as opposed to education) and Big Five personality factors are not controlled. It appears that more beautiful workers earn more, not because they are beautiful, but because they are healthier, more intelligent, and have better (more Conscientious and Extraverted, and less Neurotic) personality.

Originality/Value This is the first study to show that: 1) very unattractive workers have extremely high earnings and earn more than physically more attractive workers, suggesting evidence for the potential *ugliness premium*; and 2) the apparent beauty premium and ugliness penalty may be a function of unmeasured traits correlated with physical attractiveness, such as health, intelligence, and personality.

Keywords: Physical attractiveness; earnings; discrimination; occupational self-selection; individual differences; productivity

ARE THERE REALLY A BEAUTY PREMIUM AND AN UGLINESS PENALTY ON EARNINGS?

Introduction

Economists have widely documented the "beauty premium" – or, conversely, the "ugliness penalty" – on wages. Population-based surveys show that individuals who are above average in physical attractiveness earn more money, and those who are below average in physical attractiveness earn less money, than average-looking individuals in the United States and Canada (Fletcher, 2009; Judge, Hurst, & Simon, 2009; Hamermesh & Biddle, 1994) and in the United Kingdom (Harper, 2000). Within specific professions, graduates of law schools who are physically more attractive make more money as lawyers after five years of practice than their classmates who are physically less attractive (Biddle & Hamermesh, 1998), and physically more attractive MBA graduates make more money in their careers in management than physically less attractive MBAs (Frieze, Olson, & Russell, 1991). The operation of the beauty premium has also been documented in a large number of laboratory experiments (Hosoda, Stone-Romero, & Coats, 2003; Mobius & Rosenblat, 2006). A pioneer in the field of the economics of beauty succinctly summarizes the current state of knowledge in a recent book aptly titled *Beauty Pays: Why Attractive People Are More Successful* (Hamermesh, 2011).

Although the existence of the "beauty premium" and "ugliness penalty" appears beyond dispute, it is not clear *why* they exist. *Why* do physically more attractive workers earn more money than physically less attractive workers do? *Why* does beauty pay?

In this paper, we tested three leading explanations of the beauty premium and ugliness penalty: discrimination, self-selection, and individual differences. We used a nationally representative sample from a data set that had very precise and repeated measures of physical

attractiveness – the National Longitudinal Survey of Adolescent Health (Add Health), which measured physical attractiveness of all respondents on a five-point scale at four different points in life over 13 years. The analyses disconfirmed the discrimination and self-selection hypotheses and strongly supported the individual differences hypothesis.

Explanations for the Beauty Premium and Ugliness Penalty

There are roughly three explanations for the effect of physical attractiveness on earnings – discrimination, self-selection, and individual differences (Hamermesh, 2011).

Discrimination

One explanation for the beauty premium is that physically less attractive workers are discriminated against and paid less accordingly (or, equivalently, physically more attractive workers are favored and paid more accordingly) (Hamermesh, 2011). Discrimination based on physical attractiveness may come from the employers, coworkers, or customers. Employers may preferentially hire and promote physically attractive employees over otherwise comparable but physically less attractive applicants/employees. Alternatively, coworkers may prefer to work with physically more attractive individuals, and customers and clients may prefer to deal and do business with physically more attractive employees. In the latter case, employers may choose to hire and promote physically more attractive applicants/employees even in the absence of beauty bias on their own part simply to respond to the demands from existing employees or customers.

If the beauty premium exists because of discrimination on the part of the employers, coworkers, and clients, then there should be a *monotonically positive association* between physical attractiveness and earnings. Very attractive workers are expected to earn more than attractive workers, who are in turn expected to earn more than the average-looking

workers. Very unattractive workers are expected to earn less than unattractive workers, who are in turn expected to earn less than average-looking workers. It would not make logical sense for the discrimination hypothesis to posit a non-monotonic association between physical attractiveness and earnings, where, for example, very unattractive workers earn more than unattractive workers. It would be very difficult for the discrimination hypothesis to explain why employers, coworkers, or clients would discriminate against unattractive workers more than they do against very unattractive workers.

Hypothesis 1 (discrimination): There will be a monotonically positive association between physical attractiveness and earnings.

Occupational self-selection

Beauty premium and ugliness penalty on earnings can emerge in the absence of employer or client discrimination if individuals with various levels of physical attractiveness sort themselves into different occupations and industries with different levels of average earnings (Deryugina & Shurchkov, 2015; Hamermesh & Biddle, 1994). For example, if physically more attractive individuals are more likely to choose to enter occupations that have higher mean earnings, and/or if physically less attractive individuals are more likely to choose to enter occupations that have lower mean earnings, then there will be a positive association between physical attractiveness and mean earnings *across* occupations, even though, *within each occupation,* physically more attractive workers may not necessarily earn more than physically less attractive workers. Occupational self-selection can potentially explain apparent beauty premium and ugliness penalty in the absence of differential treatment by employers and clients. If the beauty premium on earnings exist primarily for reasons of

occupational self-selection, however, it should disappear once workers' occupations are statistically controlled.

Hypothesis 2 (occupational self-selection): The association between physical attractiveness and earnings will disappear once respondents' occupations are statistically controlled.

Individual differences

An entirely different category of explanations suggests that physically more attractive workers may be genuinely different from physically less attractive workers in ways that affect their productivity. Evolutionary biologists concur that physical attractiveness – reflected in facial symmetry, averageness, and secondary sexual characteristics – is an indicator of genetic and developmental health (Bailit, Workman, Niswander, & Maclean, 1970; Gangestad, Thornhill, & Yeo, 1994; Parsons, 1990, 1992). Bilateral facial symmetry measures physical attractiveness so accurately that there is now a computer program which can calculate someone's level of facial symmetry from a scanned photograph of a face by measuring the sizes of and distances between various facial parts and assign a single score for physical attractiveness (Grammer & Thornhill, 1994), much like a stadiometer assigns a single number for height and a scale assigns a single number for weight.

These physical attractiveness scores correlate very highly with scores assigned by human judges like those used in the current study. Because they are rooted in genetic and developmental health, standards of beauty are universal, both across individuals in a single culture and across all cultures (Bernstein, Lin, & McClellan, 1982; Cross & Cross, 1971; Cunningham, Roberts, Barbee, Druen, & Wu, 1995; Jones, 1996; Jones & Hill, 1993; Maret & Harling, 1985; Morse & Gruzen, 1976; Thakerar & Iwawaki, 1979; Wagatsuma & Kleinke

1979). The current consensus is that, far from being in the eye of the beholder or only skin-deep, physical attractiveness is an objective and quantifiable trait of individuals like height or weight (Langlois, Kalakanis, Rubenstein, Larson, Hallam, & Smoot, 2000).

Physical attractiveness as an indicator of genetic and developmental health is significantly positively correlated with adult health (Thornhill & Gangestad, 1993; Thornhill & Møller, 1997) and general intelligence (Kanazawa, 2011a; Kanazawa & Kovar, 2004), and general intelligence is in turn correlated with such factors relevant to productivity as personality (Big Five personality factors) (Ackerman & Heggestad, 1997; Chamorro-Premuzic & Furnham, 2006). A condition-dependent model of personality (Kanazawa, 2011b; Lewis, 2015) proposes that adaptive individual differences in personality may emerge from universal human nature in response to stable phenotypic features of the individual, such as physical attractiveness and formidability. Because physically attractive children are more likely to experience positive feedback from interpersonal interactions, for example, they are more likely to develop Extraverted personality than physically less attractive children do (Lukaszewski & Roney, 2011).

If healthier and more intelligent workers, and workers with certain personalities, are genuinely more productive and earn more money, then it would *appear* that physical attractiveness is positively associated with earnings. If physically more attractive workers earn more primarily because they are healthier, more intelligent, and/or have personalities that increase their productivity, then the "beauty premium" and "ugliness penalty" widely reported in previous studies should disappear once health, intelligence, and personality, along with other measures of productivity, are statistically controlled. From this perspective, "beauty premium" and "ugliness penalty" are illusory; physically more attractive workers earn more money, not because they are more attractive, but because they are healthier, more intelligent, and have personality traits that are more conducive to higher earnings.

Individual differences hypothesis suggests that physical attractiveness is a confound, and its effect on earnings disappears once health, intelligence, and personality traits are statistically controlled.

Hypothesis 3 (individual differences): Physical attractiveness will no longer be significantly positively associated with earnings, once health, intelligence and personality are statistically controlled.

Empirical Analyses

Data

Add Health is a large, nationally representative and prospectively longitudinal study of young Americans. A sample of 80 high schools and 52 middle schools from the US was selected with an unequal probability of selection. Incorporating systematic sampling methods and implicit stratification into the Add Health study design ensured this sample was representative of US schools with respect to region of country, urbanicity, school size, school type, and ethnicity. A sample of 20,745 adolescents were personally interviewed in their homes in 1994–1995 (Wave I) when they were on average 16 years old. They were again interviewed in 1996 (Wave II; n = 14,738; mean age = 17), in 2001–2002 (Wave III; n = 15,197; mean age = 22) and in 2007–2008 (Wave IV; n = 15,701; mean age = 29).

Dependent variable: Earnings

At Age 29, Add Health asked its respondents to indicate their gross personal earnings from all sources in the previous calendar year. For the bivariate analyses below (testing the discrimination hypothesis), we used the gross annual earnings at 29 as the dependent variable. For the multiple regression analyses (testing the self-selection and individual

differences hypotheses), we took the natural log of the gross earnings in $1K at 29 in order to normalize its distribution. In all analyses below, we excluded respondents who were unemployed or out of the labor force. However, if we included them and assigned them an earnings of $0 (or $.01 for natural log transformation), all of our substantive conclusions below remained identical. Note that, throughout our empirical analyses, we used the single dependent variable of earnings at 29, while the independent variable (physical attractiveness) was measured at four different ages of 16, 17, 22, and 29.

Independent variables: Physical attractiveness

At the conclusion of the in-home interview at each wave, the Add Health interviewer rated the respondent's physical attractiveness on a five-point ordinal scale (1 = very unattractive, 2 = unattractive, 3 = about average, 4 = attractive, 5 = very attractive). We used the measures of physical attractiveness from all four waves, by four different interviewers over 13 years, as the independent variables. As noted above, ratings of physical attractiveness by human judges are known to be highly correlated with measures of bilateral facial symmetry by a computer program and are intersubjectively stable. However, we tested this assumption directly by computing Rwg as a measure of interrater agreement (James, Demaree, & Wolf, 1984; LeBreton & Senter, 2008).

Table 1 presents the mean Rwg for each category of physical attractiveness for all four waves, for the full sample and separately by sex. Each respondent is represented four times in the table, categorized by how their physical attractiveness was coded in each wave. The table shows that the interrater agreement measured by Rwg was extremely high for all physical attractiveness categories *except for* "very unattractive." It appeared as though Add Health interviewers might have been somewhat reluctant to rate respondents' physical appearance as "very unattractive." This was evident from the fact that exactly the same

pattern of very high mean Rwg for all categories except for "very unattractive" was also observed for another interviewer-rated trait of "attractiveness of personality," where the interviewer rated the attractiveness of the respondent's personality on the same five-point ordinal scale. Add Health interviewers appeared to be reluctant to label their respondents "very unattractive" on any dimension.

– Table 1 about here –

Mean interrater agreement for all categories of physical attractiveness was .7861 (*SD* = .2371); it was significantly higher for men (.8090) than for women (.7671) ($t(10038) = -8.844$, $p < .001$). Rwg ranged from -1.0 to 1.0; 2.5% of the respondents ($n = 255$) had a negative Rwg, which happens when the observed variance in their four attractiveness ratings is greater than the theoretically maximum variance under a complete lack of agreement (derived from a uniform distribution) and indicates an extremely low level of interrater agreement. ICC(1) was .475 and ICC(2) was .478.

Control variable: Occupation

In order specifically to test Hypothesis 2 about occupational self-selection, we controlled for the respondent's occupation. Add Health measured the occupation of its respondents by the Bureau of Labor 2000 Standard Occupational Classification (SOC). We used the first two digits of SOC to measure the respondent's current occupation at Age 29 in 23 "major groups" designated by SOC: management (reference category); business and financial; computer and mathematical; architecture and engineering; life, physical and social science; community and social services; legal; education, training, library; arts, design, entertainment, sports, and media; healthcare practitioners and technical; healthcare support; protective service; food preparation and service related; building and grounds cleaning and maintenance; personal care and service; sales and related; office and administrative support;

farming, fishing, and forestry; construction and extraction; installation, maintenance, and repair; production; transportation and material moving; and military specific.

Correlates of physical attractiveness: Health

Evolutionary biologists have long known that physical attractiveness is an indicator of genetic and developmental health (Thornhill & Gangestad, 1993); beauty is a "health certification" (Thornhill & Møller, 1997, pp. 528-533). As a result, physically more attractive individuals are on average healthier than physically less attractive individuals (Al-Eisa, Egan, & Wassersub, 2004; Hönekopp, Bartholomé, & Jansen, 2004; Henderson & Anglin, 2003; Shackelford & Larsen, 1999). At the same time, more intelligent individuals are also healthier than less intelligent individuals (Batty, Deary, & Gottfredson, 2007; Gottfredson & Deary, 2004).

Add Health asked its respondents to assess their health on a five-point Likert scale (1 = poor; 2 = fair; 3 = good; 4 = very good; 5 = excellent) at each age. We performed a principal component analysis with the four measures of self-assessed health in order to construct a latent measure of life-long health. The analysis extracted only one principal component, and all four measures loaded on it with reasonably high loadings (Age 16 = .754; Age 17 = .773; Age 22 = .710; Age 29 = .655). We used the extracted principal component, with a mean of 0 and a standard deviation of 1, as the measure of life-long health.

Correlates of physical attractiveness: General intelligence

By general intelligence, we mean "the ability to reason deductively or inductively, think abstractly, use analogies, synthesize information, and apply it to new domains" (Kanazawa, 2010, p. 281). General intelligence is known to be positively correlated with physical attractiveness (Kanazawa, 2011a; Kanazawa & Kovar, 2004). Add Health

measured respondents' intelligence with the Peabody Picture Vocabulary Test (PPVT) at Ages 16 and 22, and with working memory tests (word recall and backward digit span) at Age 29. PPVT measures verbal intelligence by asking respondents to select one picture out of four that matches a given word. Word recall test gives respondents a list of 15 words and asks them to recall as many of them as possible within 90 seconds. Backward digit span gives respondents a sequence of two to eight digits and asks them to recite the numbers backwards. Test scores at each age were converted into the standard IQ scores, with a mean of 100 and a standard deviation of 15. We then performed a principal component analysis with the three IQ scores at three different ages in order to compute an overall IQ score. The analysis extracted only one principal component, and all three scores have reasonably high loadings (Age 16 = .854; Age 22 = .834; Age 29 = .628). The extracted latent factor was once again converted into the standard IQ score.

Correlates of physical attractiveness: Big Five personality factors

Personality factors are known to be correlated with general intelligence (Ackerman & Heggestad, 1997; Chamorro-Premuzic & Furnham, 2006; Moutafi, Furnham, & Paltiel, 2004), and the condition-dependent model of personality explains why physical attractiveness may be correlated with personality traits (Kanazawa, 2011b; Lewis, 2015; Lukaszewski & Roney, 2011). Add Health measured each of the Big Five personality factors (Openness, Conscientiousness, Extraversion, Agreeableness, Neuroticism) with a 20-item short-form version of the International Personality Item Pool-Five-Factor Model (the Mini-IPIP) (Donnellan, Oswald, Baird, & Lucas, 2006). The respondents at 29 could indicate agreement with each of the 20 statements (four each for a personality factor) on a five-point Likert scale, from "strongly agree" to "strongly disagree." The respondent's score on each personality factor therefore ranged from 4 to 20.

Correlates of general intelligence: Height

Height is known to be positively correlated with general intelligence (Jensen & Sinha, 1993; Kanazawa & Reyniers, 2009) as well as earnings (Case & Paxson, 2008; Gao & Smyth, 2010; Persico, Postlewaite, & Silverman, 2004). At 29, the Add Health interviewer measured each respondent's height with a carpenter's steel tape measure to the nearest .5 cm. We used the interviewer-measured (rather than self-reported) height in cm as a measure of height.

Demographic and socioeconomic control variables

In our multiple regression analyses, we further controlled for the respondent's sex (0 = female, 1 = male), age, race (with three dummies for Asian, black, and Native American, with white as the reference category), education (on a 13-point Likert scale from 1 = eighth grade or less to 13 = completed post-baccalaureate professional education), childhood gross family income (in $1K) at 16; mother's education, and father's education (both measured at 16 on a nine-point Likert scale from 0 = no education to 8 = postgraduate).

Results

Physical Attractiveness as an Aggregate, Continuous Variable

Before we tested our hypotheses, we attempted to replicate past findings of "beauty premium" and "ugliness penalty" by regressing earnings on an aggregate, continuous measure of physical attractiveness. In order to aggregate the four measures of physical attractiveness over 13 years, we performed a principal component analysis to extract a latent factor. All four measures of physical attractiveness loaded only on one latent factor, with reasonably high factor loadings (Age 16 = .680; Age 17 = .705; Age 22 = .588; Age 29 =

.514). We used the latent factor, with a mean of 0 and standard deviation of 1, as the aggregate, continuous measure of physical attractiveness. All of our substantive conclusions remained virtually identical if we used a mean of the four measures of physical attractiveness rather than the latent factor. Table 2 presents th

e descriptive statistics for the variables included in the analyses in this section.

– Table 2 about here –

Table 3, top panel, shows the results of the regression analysis with the full sample. Column (1) shows that, when entered alone, physical attractiveness is significantly positively associated with earnings (b = .135, p < .001, standardized regression coefficient = .131), replicating the earlier findings of "beauty premium" and "ugliness penalty." Column (2) shows that a quadratic term for physical attractiveness, when added to the equation alone with the main term, is statistically significantly negative (b = -.019, p = .019), indicating that there may be diminishing returns to physical attractiveness on earnings. Column (3) shows that the quadratic term was no longer significant once sex, age, and education – all of which were significantly associated with earnings – were controlled, while the main term for physical attractiveness remained significant. This suggests that the diminishing returns to physical attractiveness might have been artifactual and resulted from the fact that women on average were physically more attractive but earned less than men (See Table 2). Column (4) shows that the association between physical attractiveness and earnings was marginally significantly moderated by sex (b = -.042, p = .053, standardized regression coefficient = -.026), but not at all by age (b = -.001, p = .861; standardized regression coefficient = -.031) or education (b = -.006, p = .226, standardized regression coefficient = -.035). Contrary to earlier findings (Hamermesh, 2011, p. 55–58), our results suggested that the "beauty premium" was greater for women than for men.

– Table 3 about here –

In Table 3, bottom panel, we present the results of the same analyses with a limited sample of respondents with Rwg of at least .70. It shows that, apart from the fact that the interaction between physical attractiveness and sex was now significantly negative (b = -.057, p = .020, standardized regression coefficient = -.036), the substantive conclusions were identical with the full sample. The associations between physical attractiveness and earnings were slightly stronger in the limited sample than in the full sample; this was because those with extremely low Rwgs (and were thus excluded from the limited sample) were simultaneously more likely to be very unattractive (as Table 1 shows) and to earn more (see Table 4 below). The excluded respondents therefore weakened the positive association between physical attractiveness and earnings in the full sample.

Test of the Discrimination Hypothesis

Table 4 presents the mean gross earnings at 29 by physical attractiveness measured at four different ages. It shows that very unattractive Add Health respondents at every age except 17 earned significantly more than unattractive respondents (16: $t(903) = 3.466$; 22: $t(797) = 5.172$; 29: $t(978) = 5.167$; $p < .001$ for all). At 17, very unattractive respondents, while they did not earn statistically significantly more than unattractive respondents ($t(518) = 1.612$, $p = .108$), nonetheless earned marginally significantly more than *average-looking* respondents ($t(4914) = 1.726$, $p = .084$). Further, very unattractive respondents at 29 earned significantly more than average-looking *and attractive* respondents (average: $t(7044) = 3.628$, $p < .001$; attractive: $t(5654) = 2.415$, $p = .016$)! However, for Age 29, because physical attractiveness was measured at the same time as the earnings, the direction of causality is not clear. Very unattractive respondents might have earned more for some reason, or respondents who earned more might have chosen to present themselves less attractively. However, the same associations when physical attractiveness was measured

earlier in life suggested that the direction of causality might go from physical attractiveness (or lack thereof) to earnings.

– Table 4 about here –

At any rate, it is clear that the association between physical attractiveness and earnings was not at all monotonic, as predicted by the discrimination hypothesis. In fact, while there is some evidence of the beauty premium in Table 4, where attractive and very attractive Add Health respondents earn slightly more than the average-looking respondents, there is no clear evidence for the ugliness penalty, as very unattractive respondents at every age earn more than either unattractive or average-looking respondents.

Even though the distribution of earnings at 29 had a positive skew like most earnings distributions, outliers were not the reason for the pattern observed above. Table 4 also presents the *median* earnings by physical attractiveness in boldface. While the differences in median earnings by physical attractiveness were less extreme than those in mean earnings, very unattractive respondents nevertheless had higher median earnings than unattractive respondents in all cases, and in many cases higher median earnings than average-looking or even attractive respondents. The comparison of mean and median earnings by physical attractiveness suggested that the observed pattern where very unattractive respondents earned more than unattractive or average-looking respondents was not an artifact of outliers or skewed earnings distribution. In addition, visual inspection of the distribution of earnings in each physical attractiveness category for all four waves did not indicate the existence of outliers in any of the distributions, and the comparison of the variance, range, skewness, and kurtosis showed that these statistics for the "very unattractive" category were at most comparable to, and often smaller than, the statistics for other physical attractiveness categories.

The results presented in Table 4 disconfirmed the discrimination hypothesis for the beauty premium, which predicts a monotonically positive association between physical attractiveness and earnings. In separate results (not shown), we also examined the association between physical attractiveness and earnings separately by sex and by race (in four categories of whites, blacks, Asians, and Native Americans). *In none of the 28 distributions of earnings by physical attractiveness was the association monotonically positive.* In each comparison, very unattractive respondents significantly earned more than the unattractive respondents, sometimes more than average-looking or attractive respondents. These results provided strong evidence against the discrimination hypothesis.

Now what accounts for this peculiar pattern, where very unattractive Americans earned more than their unattractive or even average-looking counterparts? For the most part, the nonmonotonic association between physical attractiveness and earnings appeared to reflect the underlying productivity of workers measured by their intelligence and education. As Table 5 shows, very unattractive Add Health respondents at 16 ($t(772) = 2.079$, $p = .038$) and 29 ($t(857) = 5.092$, $p < .001$) were significantly more intelligent than their unattractive counterparts. At 29, they were also significantly more intelligent than average-looking workers ($t(6015) = 3.604$, $p < .001$).

– Table 5 about here –

Similarly, very unattractive Add Health respondents attained significantly higher levels of education than their unattractive and average-looking counterparts at 16 (unattractive: $t(1013) = 5.283$, $p < .001$; average: $t(7125) = 2.463$, $p = .014$), 22 (unattractive: $t(882) = 7.629$, $p < .001$; average: $t(6209) = 4.676$, $p < .001$), and 29 (unattractive: $t(1133) = 11.269$, $p <.001$; average: $t(7820) = 8.236$, $p < .001$). In addition, very unattractive Add Health respondents at 29 attained significantly more education than their attractive counterparts ($t(6133) = 3.541$, $p < .001$). The nonmonotonic

associations between physical attractiveness and earnings at 29 therefore appeared to reflect at least partly the underlying differences in productivity measured by intelligence and education.

Test of the self-selection hypothesis

Table 6 presents the results of the multiple regression analyses, with physical attractiveness (measured by four different dummies for "unattractive," "above average," "attractive," and "very attractive," with "very unattractive" as the reference category), controlling only for sex, age, and education. The results show that there is already very little evidence for the beauty premium and ugliness penalty even before we controlled for a host of individual differences (to test the individual differences hypothesis in Table 8 below), *when "very unattractive" is the reference category.* Very attractive respondents earned marginally significantly more than the very unattractive respondents when physical attractiveness was measured at 16 (b = .116, p = .072, standardized coefficient = .040) and 29 (b = .096, p = .097, standardized coefficient = .027), but not when measured at 17 or 22. This is the only evidence for the beauty premium, and there is absolutely no evidence for the ugliness penalty. No other categories of respondents at any other time earned significantly more than the very unattractive respondents. More importantly, very unattractive respondents earned significantly *more* than unattractive respondents when physical attractiveness was measured at 16 (b = -.171, p = .018, standardized coefficient = -.034), 22 (b = -.304, p < .001, standardized coefficient = -.062), and 29 (b = -.308, p < .001, standardized coefficient = -.060). Further, very unattractive respondents earned significantly more than average-looking respondents when physical attractiveness was measured at 29 (b = -.118, p = .024, standardized coefficient = -.057). In other words, there

was some marginal evidence for the beauty premium, but even stronger evidence for the *ugliness premium*, in Table 6.

– Table 6 about here –

Table 7 presents the results of the multiple regression analyses with the same models as those presented in Table 6, except for the inclusion of 22 dummies to control for the respondent's current occupation. The results presented in Table 7 were virtually identical to those presented in Table 6; a comparison of Tables 6 and 7 revealed that controlling for the respondent's occupation made virtually no substantive difference to the effect of physical attractiveness on earnings. The results presented in Tables 6 and 7 jointly refuted the self-selection hypothesis; what little evidence there was in the Add Health data for the beauty premium was *not* the result of workers sorting themselves into different occupations due to their level of physical attractiveness. There didn't appear to be any evidence of occupational self-selection by physical attractiveness, at least measured by earnings at 29.

– Table 7 about here –

Test of the individual differences hypothesis

Table 8 presents the results of the multiple regression analyses, with further controls for respondent's health, intelligence, Big Five personality factors, measured height, race, childhood family income, mother's education, and father's education. With these further controls for individual differences, there was now absolutely no evidence for either the beauty premium or the ugliness penalty. No category of physical attractiveness measured at any time earned significantly more than very unattractive respondents. Further, very unattractive respondents earned significantly *more* than unattractive respondents when physical attractiveness was measured at 29 (b = -.210, p = .041, standardized coefficient = -.044) and marginally significantly *more* when it was measured at 22 (b = -.198, p = .073,

standardized coefficient = -.040). In other words, there continued to be no evidence for the beauty premium but some evidence for the *ugliness premium*.

– Table 8 about here –

In sharp contrast, results presented in Table 8 showed that there was a consistently positive effect of health (ps < .001) and intelligence (ps < .05) on earnings at 29. Further, of the Big Five personality factors, Openness and Neuroticism were consistently negatively (ps < .001), and Extraversion was consistently positively (ps < .001) associated with earnings at 29. Health, intelligence, and Big Five personality factors are typically not controlled for in the analyses of the beauty premium on earnings in the economics of beauty, yet they are all significantly correlated with physical attractiveness. In the Add Health data, health and intelligence were significantly positively correlated with physical attractiveness at all ages. Similarly, consistent with the condition-dependent model of personality (Kanazawa, 2011b; Lewis, 2015), all Big Five personality factors were significantly correlated with physical attractiveness for all ages; physically more attractive Add Health respondents were consistently more Open, more Conscientious, more Extraverted, more Agreeable, and less Neurotic.

Careful comparisons of Tables 2, 6, 7, and 8 strongly suggested that past findings of the beauty premium and ugliness penalty might potentially have been attributable to two factors. First, in most studies, very unattractive and unattractive workers are collapsed into the "below average" category, because of the usually very small number of workers who are very unattractive. This might have masked the positive effect of being very unattractive on earnings and had it be drowned by the negative effect of being unattractive because there are always more unattractive than very unattractive respondents. Indeed, if we collapsed the very unattractive and unattractive categories and used it as a reference category in our regression analyses presented in Table 6, the coefficients for about average, attractive, and

very attractive for all ages were statistically significantly positive (except for average at 16 for which the coefficient was only marginally significantly positive), suggesting that not distinguishing very unattractive and unattractive did mask the unique nature of high-earning very unattractive individuals and made it appear that there was evidence for the "beauty premium." Second, no wage equations in the economics of beauty to our knowledge control for health, intelligence (as opposed to education) and the Big Five personality factors. Physical attractiveness may appear to have an effect on earnings, because more attractive workers are simultaneously healthier, more intelligent, and have better (in particular, more Conscientious, more Extraverted, and less Neurotic) personality more conducive to earning more.

Just like earlier surveys of physical attractiveness, very few Add Health respondents were in the very unattractive category (ranging from .9% at 17 to 2.7% at 29). As a result, the standard error of earnings among the very unattractive workers tended to be very large, which prompted earlier researchers in this field to collapse very unattractive and unattractive categories into a below-average category. However, the very small number of very unattractive respondents and their large standard errors actually *strengthened*, rather than weakened, our conclusion because standard errors figured into all the significant tests in the pairwise comparisons. Very unattractive workers earned statistically significantly more than unattractive and average-looking workers *despite* the large standard errors.

Discussion

The analyses of the Add Health data did not provide any support for the discrimination and occupational self-selection hypotheses for the "beauty premium" and "ugliness penalty." The association between physical attractiveness and earnings was not monotonic, as predicted by the discrimination hypothesis, and controlling for respondents'

occupation did not eliminate or attenuate the association between physical attractiveness and earnings. In sharp contrast, the analyses provided strong support for the individual difference hypothesis; the association between physical attractiveness and earnings largely disappeared once individual differences in health, intelligence, and personality were statistically controlled.

One potential concern is that physically attractive women may be more likely to marry, marry early, or stay married, and consequently less likely to remain in the labor force at 29. This concern was alleviated by the observation that the lack of beauty premium and ugliness penalty was equally evident both among men and women (results not shown). Since men were very unlikely to leave the labor force upon marriage, selection bias did not appear to be a concern. Indeed, among women in the Add Health data, physical attractiveness at 16 was significantly positively associated with the probability that they were currently married at 29 ($r = 0.76$, $p < .001$, $n = 8{,}334$) and very attractive women at 16 were significantly more likely to be currently married at 29 ($t(8332) = -4.423$, $p < .001$). However, physical attractiveness at 16 was not at all associated with the probability that they were currently employed at 29 ($r = .005$, $p = .621$, $n = 8{,}334$) and very attractive women at 16 were no less likely to be currently employed at 29 ($t(8332) = .614$, $p = .539$).

One potential limitation of the analyses above is that the earnings was measured at a relatively young age of 29 (in the latest available wave of Add Health), although earlier studies of the beauty premium suggested that its effect began to appear very early in professional careers (Biddle & Hamermesh, 1998; Frieze et al., 1991). If the beauty premium and ugliness penalty are cumulative throughout working careers, then they may show up in earnings of older workers. Only future waves of Add Health data can shed light on this possibility. Physical attractiveness is a very neglected variable in social science

data, and no other longitudinal data sets on a representative sample measures it as precisely as Add Health does.

While our analyses suggested that physical attractiveness was not at all associated with earnings (at least not in the predicted direction) once intelligence, health, and Big Five personality factors were controlled, one should be cautious about making causal inferences. For example, the results presented in Table 8 showed that Neuroticism was consistently negatively associated with earnings while physical attractiveness was not. However, studies show that early life experiences explain about half the variance in Neuroticism, and negative early life experiences significantly increase later Neuroticism (Jeronimus, Ormel, Aleman, Penninx, & Riese; Jeronimus, Riese, Sanderman, & Ormel, 2014). To the extent that physically less attractive individuals are more likely to have negative life experiences, physical attractiveness may still be an ultimate cause of earnings via Neuroticism.

Our findings – if robust – have important implications for labor economics and organizational behavior. Discrimination – whether intentional or accidental – on the basis of arbitrary criteria that are not statistically associated with worker productivity decreases the efficiency and productivity of organizations in the long run. In contrast, discrimination on the basis of individual traits that are statistically associated with worker productivity, while it may be illegal, does not lower organizational efficiency and productivity and may even increase them. The results from Add Health presented above tentatively suggested that the repeated findings in the economics of beauty that physically more attractive workers earn more than physically less attractive workers, if indeed true, may not be an example of the former and may exemplify the latter type of "discrimination." This suggests that the "beauty premium" and "ugliness penalty" may not ultimately decrease the efficiency and productivity of organizations, because they may reflect the fact that healthier, more

intelligent workers who are more Conscientious and Extraverted and less Neurotic on average earn more.

At the same time, our analyses highlighted the unique nature of very unattractive individuals. The results presented in Tables 4 and 5 suggested that very unattractive individuals earned more than others who were physically more attractive because they were more intelligent and attained greater education. However, it is not clear why very unattractive individuals are more intelligent and attain greater education, especially since this result contradicted earlier findings that intelligence and physical attractiveness were positively correlated (Kanazawa 2011a; Kanazawa & Kovar, 2004). More research is clearly necessary to explore the unique nature of very unattractive individuals. It is also important for future studies to replicate the findings above, adjudicate between the discrimination, self-selection and individual differences theories of the beauty premium, and advance and test other potential explanations. We encourage labor economists and organizational psychologists to take physical attractiveness seriously as an individual trait, by routinely measuring it in their studies. We further encourage researchers in the field of economics of beauty to control for health, intelligence, and personality traits (along with other factors that are relevant to productivity) in their multiple regression models.

Conclusion

Data from Add Health cast doubt on the very existence of the beauty premium and ugliness penalty, and disconfirmed the discrimination and self-selection hypotheses for them. Far from a monotonic positive association between physical attractiveness and earnings predicted by the discrimination hypothesis, the data showed that the association was nonmonotonic. Very unattractive Add Health respondents always earned more than their unattractive counterparts, and sometimes more than their average-looking or even attractive

counterparts. There was therefore some evidence for the ugliness premium. Further, Add Health data provided no support for the self-selection hypothesis; controlling for the respondent's occupation did not change the effect of physical attractiveness (or lack thereof) on earnings.

In sharp contrast, the Add Health data provided strong support for the individual differences hypothesis. Once health, intelligence, and Big Five personality factors (along with other correlates of physical attractiveness) were controlled in a multiple regression model, what little evidence existed for the beauty premium disappeared entirely. Healthier and more intelligent respondents, and those with less Open, more Extraverted, and less Neurotic personality traits earned significantly more than others.

Careful examination of the bivariate analyses, and comparison of multiple regression equations with and without controls for correlates of physical attractiveness suggested that past studies in the economics of beauty might have found evidence for the beauty premium and ugliness penalty for two reasons. First, these studies invariably collapsed the "very unattractive" and "unattractive" categories to form "below-average" category, thereby failing to document the ugliness premium enjoyed by the very unattractive workers. Second, few studies in the field controlled for health, intelligence (as opposed to education), and personality factors. Physically more attractive workers may earn more, not necessarily because they are more beautiful, but because they are healthier, more intelligent, and have better (more Conscientious, more Extraverted, and less Neurotic) personality conducive to higher earnings.

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Table 1.
Interrater Agreement (mean Rwg) on Physical Attractiveness Ratings

Full Sample

	Physical attractiveness measured at			
	Age 16	Age 17	Age 22	Age 29
Very unattractive	.1963	.1838	.1276	.1027
	(.3451)	(.4001)	(.3730)	(.3549)
	n = 181	*n* = 85	*n* = 204	*n* = 280
Unattractive	.7585	.7530	.7366	.7358
	(.1768)	(.1895)	(.2021)	(.2076)
	n = 443	*n* = 418	*n* = 493	*n* = 455
About average	.8409	.8344	.8320	.8279
	(.1610)	(.1761)	(.1705)	(.1720)
	n = 4,413	*n* = 4,482	*n* = 4,576	*n* = 4,760
Attractive	.8139	.8002	.8088	.8185
	(.2066)	(.2226)	(.2098)	(.1955)
	n = 3,456	*n* = 3,704	*n* = 3,635	*n* = 3,601
Very attractive	.6443	.6349	.6674	.6782
	(.3187)	(.3225)	(.3062)	(.2847)
	n = 1,547	*n* = 1,351	*n* = 1,132	*n* = 944

Women

	Physical attractiveness measured at			
	Age 16	Age 17	Age 22	Age 29
Very unattractive	.1398	.0180	.0796	.0374
	(.3735)	(.3750)	(.3697)	(.3645)
	n = 110	*n* = 47	*n* = 146	*n* = 179
Unattractive	.7600	.7413	.7149	.7231
	(.1749)	(.1946)	(.2140)	(.2120)
	n = 194	*n* = 175	*n* = 257	*n* = 243
About average	.8280	.8180	.8201	.8076
	(.1717)	(.1878)	(.1746)	(.1877)
	n = 2,106	*n* = 2,223	*n* = 2,221	*n* = 2,430
Attractive	.8043	.7894	.8029	.8149
	(.2258)	(.2453)	(.2262)	(.2089)
	n = 2,024	*n* = 2,131	*n* = 2,094	*n* = 2,049
Very attractive	.6415	.6352	.6653	.6744
	(.3424)	(.3497)	(.3372)	(.3238)
	n = 1,060	*n* = 918	*n* = 776	*n* = 593

Men

	Physical attractiveness measured at			
	Age 16	Age 17	Age 22	Age 29
Very unattractive	.2839	.3890	.2484	.2184
	(.2760)	(.3322)	(.3566)	(.3062)
	n = 71	*n* = 38	*n* = 58	*n* = 101
Unattractive	.7574	.7614	.7603	.7503
	(.1787)	(.1857)	(.1859)	(.2020)
	n = 249	*n* = 243	*n* = 236	*n* = 212

About average	.8527	.8505	.8432	.8492
	(.1497)	(.1621)	(.1659)	(.1510)
	n = 2,307	*n* = 2,259	*n* = 2,355	*n* = 2,330
Attractive	.8274	.8149	.8169	.8232
	(.1752)	(.1864)	(.1850)	(.1763)
	n = 1,432	*n* = 1,573	*n* = 1,541	*n* = 1,552
Very attractive	.6506	.6341	.6720	.6847
	(.2601)	(.2556)	(.2244)	(.2023)
	n = 487	*n* = 433	*n* = 356	*n* = 351

Note: (Standard deviations are in parentheses)

Table 2.
Descriptive statistics

	(1)	(2)	(3)	(4)	(5)
	ln(earnings)	Physical attractiveness	Sex	Age	Education
(1)		.131***	.152***	.84***	.245***
(2)			-.164***	-.029**	.201***
(3)				.053***	-.118***
(4)					-.018*
Mean	3.24	.00	.47	29.10	5.67
SD	1.04	1.00	.50	1.75	2.20

Note: † $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed)

Table 3.
Multiple regression of ln(earnings) with a continuous measure of physical attractiveness

Full sample	(1)	(2)	(3)	(4)
Physical attractiveness	.135***	.137***	.120***	.203
	(.011)	(.011)	(.010)	(.182)
	.131	*.133*	*.116*	*.196*
(Physical attractiveness)^2		-.019*	-.006	-.007
		(.008)	(.008)	(.008)
		-.024	*-.008*	*-.009*
Sex			.425***	.424***
			(.021)	(.021)
			.206	*.206*
Age			.043***	.043***
			(.006)	(.006)
			.068	*.069*
Education			.122***	.122***
			(.005)	(.005)
			.257	*.257*
Physical attractiveness x Sex				-.042†
				(.021)
				-.026
Physical attractiveness x Age				-.001
				(.006)
				-.031
Physical attractiveness x Education				-.006
				(.005)
				-.035
Constant	3.221	3.239	1.085	1.075
	(.011)	(.013)	(.182)	(.182)
R^2	.017	.018	.117	.117
Number of cases	9,185	9,185	9,185	9,185

Rwg ≥ .70	(1)	(2)	(3)	(4)
Physical attractiveness	.150***	.159***	.140***	.275
	(.012)	(.012)	(.012)	(.206)
	.147	*.153*	*.137*	*.270*
(Physical attractiveness)^2		-.030***	-.014	-.016†
		(.009)	(.009)	(.009)
		-.041	*-.019*	*-.022*
Sex			.459***	.456***
			(.024)	(.024)
			.226	*.224*
Age			.045***	.046***
			(.007)	(.007)
			.073	*.073*
Education			.120***	.120***
			(.005)	(.005)

			.258	*.259*
Physical attractiveness x Sex				-.057*
				(.025)
				-.036
Physical attractiveness x Age				-.003
				(.007)
				-.074
Physical attractiveness x Education				-.006
				(.005)
				-.037
Constant	3.213	3.243	1.006	.999
	(.012)	(.015)	(.205)	(.205)
R^2	.022	.023	.131	.132
Number of cases	6,884	6,883	6,884	6,884

Note: Main entries are unstandardized regression coefficients
(Numbers in parentheses are standard errors)
Numbers in italics are standardized regression coefficients
† $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed)

Table 4.
*Mean and **median** earnings at Age 29 by physical attractiveness, full sample*

	Physical attractiveness measured at			
	Age 16	Age 17	Age 22	Age 29
Very unattractive	$38,371	$42,504	$37,636	$44,831
	($49,151)	($101,771)	($34,282)	($73,406)
	$31,000	**$30,000**	**$32,000**	**$35,000**
	n =261	*n* = 96	*n* = 230	*n* = 373
Unattractive	$30,027***	$31,278	$26,902***	$27,707***
	($23,131)	($48,191)	($22,718)	($28,067)
	$27,000	**$25,000**	**$24,000**	**$24,000**
	n = 644	*n* = 424	*n* = 569	*n* = 607
About average	$36,092	$34,697†	$35,309	$35,547***
	($48,953)	($41,940)	($41,636)	($46,284)
	$30,000	**$30,000**	**$30,000**	**$30,000**
	n = 6,212	*n* =4,820	*n* = 5,458	*n* = 6,673
Attractive	$37,748	$37,591	$39,739	$38,980*
	($38,012)	($40,757)	($49,337)	($42,546)
	$32,000	**$32,000**	**$33,000**	**$34,000**
	n =4,920	*n* = 3,990	*n* = 4,325	*n* = 5,283
Very attractive	$42,230	$38,596	$43,042	$42,854
	($52,336)	($32,643)	($57,694)	($44,548)
	$35,000	**$35,000**	**$35,000**	**$36,000**
	n = 2,188	*n* =1,437	*n* = 1,341	*n* = 1,314
Total	$37,376	$36,225	$37,430	$37,403
	($45,193)	($41,610)	($45,939)	($45,187)
	n = 14,225	*n* =10,767	*n* = 11,923	*n* = 14,250

Note: (Standard deviations are in parentheses)
† $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed), in comparison to Very unattractive

Table 5.
Mean IQ and education by physical attractiveness

IQ	Physical attractiveness measured at			
	Age 16	Age 17	Age 22	Age 29
Very unattractive	99.961	98.514	97.824	102.018
	(15.945)	(16.434)	(18.723)	(15.394)
	n = 216	*n* = 84	*n* = 224	*n* = 333
Unattractive	97.364*	97.180	96.317	96.218***
	(15.451)	(15.763)	(15.361)	(16.794)
	n = 558	*n* = 389	*n* = 592	*n* = 526
About average	98.694	98.893	98.614	98.922***
	(15.531)	(15.432)	(15.391)	(15.226)
	n = 5,144	*n* = 4,137	*n* = 5,436	*n* = 5,684
Attractive	100.971	100.944	101.632	101.137
	(14.533)	(14.525)	(14.201)	(14.436)
	n = 4,150	*n* = 3,461	*n* = 4,359	*n* = 4,313
Very attractive	102.348	102.131	102.324	102.338
	(13.731)	(14.438)	(14.146)	(14.085)
	n = 1,869	*n* = 1,258	*n* = 1,347	*n* = 1,107
Total	100.018	100.016	100.004	100.004
	(14.994)	(15.050)	(15.004)	(14.994)
	n = 11,937	*n* = 9,329	*n* = 11,958	*n* = 11.963

Education	Physical attractiveness measured at			
	Age 16	Age 17	Age 22	Age 29
Very unattractive	5.727	5.400	6.121	6.298
	(2.374)	(2.138)	(2.062)	(2.164)
	n = 293	*n* = 105	*n* = 248	*n* = 426
Unattractive	4.928***	5.043	4.909***	4.788***
	(2.101)	(2.306)	(2.145)	(2.198)
	n = 722	*n* = 488	*n* = 636	*n* = 709
About average	5.405*	5.400	5.462***	5.404***
	(2.181)	(2.212)	(2.180)	(2.181)
	n = 6,834	*n* = 5,290	*n* = 5,963	*n* = 7,396
Attractive	5.881	5.890	5.978	5.915***
	(2.168)	(2.172)	(2.195)	(2.155)
	n =5,390	*n* = 4,371	*n* = 4,708	*n* = 5,709
Very attractive	6.147	6.204	6.284	6.290
	(2.152)	(2.051)	(2.068)	(2.103)
	n = 2,406	*n* = 1,576	*n* = 1,459	*n* = 1,429
Total	5.667	5.673	5.726	5.667
	(2.197)	(2.203)	(2.197)	(2.196)
	n = 15,645	*n* = 11,830	*n* = 13,014	*n* = 15,669

Note: (Standard deviations are in parentheses)
† $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed), in comparison to Very unattractive

Table 6.
Multiple regression of ln(earnings) at Age 29, full sample

	Physical attractiveness measured at			
	Age 16	Age 17	Age 22	Age 29
Physical attractiveness				
Unattractive	-.171*	-.160	-.304***	-.308***
	(.073)	(.111)	(.077)	(.065)
	-.034	*-.030*	*-.062*	*-.060*
About average	-.063	-.003	-.086	-.118*
	(.062)	(.101)	(.066)	(.053)
	-.030	*-.001*	*-.041*	*-.057*
Attractive	.033	.078	.041	.012
	(.063)	(.102)	(.066)	(.053)
	.015	*.036*	*.019*	*.006*
Very attractive	.116†	.146	.092	.096†
	(.065)	(.104)	(.070)	(.058)
	.040	*.048*	*.028*	*.027*
Sex	.406***	.404***	.408***	.395***
	(.017)	(.019)	(.018)	(.017)
	.194	*.194*	*.196*	*.189*
Age	.046***	.045***	.046***	.048***
	(.005)	(.006)	(.005)	(.005)
	.078	*.070*	*.078*	*.081*
Education	.127***	.129***	.125***	.125***
	(.004)	(.004)	(.004)	(.004)
	.263	*.270*	*.262*	*.259*
Constant	.971	.959	1.014	.982
	(.153)	(.200)	(.166)	(.148)
R^2	.106	.107	.112	.109
Number of cases	14,224	10,767	11,922	14,249

Note: Main entries are unstandardized regression coefficients
(Numbers in parentheses are standard errors)
Numbers in italics are standardized regression coefficients
† $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed)

Table 7.
Multiple regression of ln(earnings) at Age 29, full sample, with industry controls

	Physical attractiveness measured at			
	Age 16	Age 17	Age 22	Age 29
Physical attractiveness				
Unattractive	-.118†	-.092	-.271***	-.289***
	(.070)	(.107)	(.074)	(.063)
	-.024	*-.017*	*-.056*	*-.056*
About average	-.051	.027	-.077	-.104*
	(.060)	(.098)	(.064)	(.051)
	-.025	*.013*	*-.037*	*-.050*
Attractive	.031	.089	.026	-.003
	(.060)	(.098)	(.064)	(.051)
	.014	*.042*	*.012*	*-.001*
Very attractive	.113†	.150	.056	.076
	(.062)	(.100)	(.068)	(.056)
	.039	*.050*	*.017*	*.021*
Sex	.310***	.319***	.307***	.303***
	(.019)	(.022)	(.021)	(.019)
	.150	*.155*	*.149*	*.147*
Age	.042***	.041***	.041***	.044***
	(.005)	(.006)	(.005)	(.005)
	.071	*.064*	*.069*	*.074*
Education	.102***	.104***	.102***	.100***
	(.004)	(.005)	(.005)	(.004)
	.214	*.220*	*.216*	*.211*
Constant	1.608	1.530	1.660	1.626
	(.152)	(.198)	(.166)	(.147)
R^2	.163	.164	.166	.165
Number of cases	13,982	10,589	11,718	14,006

Note: In addition to sex, age, and education, the industry of the respondent's current occupation is controlled with 22 dummies (not shown).
Main entries are unstandardized regression coefficients
(Numbers in parentheses are standard errors)
Numbers in italics are standardized regression coefficients
† $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed)

Table 8.
Multiple regression of ln(earnings) at Age 29, full sample, with industry controls

	Physical attractiveness measured at			
	Age 16	Age 17	Age 22	Age 29
Physical attractiveness				
Unattractive	-.123	-.025	-.198†	-.210*
	(.119)	(.157)	(.111)	(.103)
	-.025	*-.005*	*-.040*	*-.044*
About average	-.160	.026	.024	-.059
	(.103)	(.144)	(.092)	(.085)
	-.079	*.013*	*.012*	*-.030*
Attractive	-.058	.090	.115	.032
	(.104)	(.145)	(.093)	(.085)
	-.028	*.044*	*.056*	*.015*
Very attractive	.015	.170	.130	.094
	(.106)	(.147)	(.097)	(.092)
	.005	*.059*	*.042*	*.028*
Health	.054***	.053***	.051***	.050***
	(.014)	(.014)	(.014)	(.014)
	.053	*.052*	*.050*	*.049*
IQ	.003*	.003*	.003*	.003*
	(.001)	(.001)	(.001)	(.001)
	.039	*.039*	*.038*	*.040*
Big Five personality factors				
Openness	-.021***	-.021***	-.021***	-.022***
	(.006)	(.006)	(.006)	(.006)
	-.053	*-.052*	*-.052*	*-.054*
Conscientiousness	.008†	.009†	.008	.008
	(.005)	(.005)	(.005)	(.005)
	.022	*.023*	*.021*	*.022*
Extraversion	.021***	.021***	.021***	.021***
	(.004)	(.004)	(.004)	(.004)
	.064	*.065*	*.064*	*.064*
Agreeableness	-.008	-.008	-.007	-.007
	(.006)	(.006)	(.006)	(.006)
	-.019	*-.019*	*-.018*	*-.018*
Neuroticism	-.017***	-.017***	-.017***	-.017**
	(.005)	(.005)	(.005)	(.005)
	-.047	*-.046*	*-.047*	*-.045*
Measured height	-.002	-.002	-.002	-.002
	(.002)	(.002)	(.002)	(.002)
	-.018	*-.018*	*-.021*	*-.021*
Sex	.293***	.290***	.293***	.290***
	(.040)	(.040)	(.040)	(.040)
	.146	*.145*	*.146*	*.145*
Age	.038***	.038***	.039***	.039***
	(.008)	(.008)	(.008)	(.008)
	.061	*.061*	*.063*	*.063*

Race				
Black	-.094*	-.102**	-.101**	-.105**
	(.038)	(.039)	(.038)	(.038)
	-.033	*-.036*	*-.036*	*-.037*
Asian	.070	.070	.063	.070
	(.054)	(.054)	(.054)	(.054)
	.017	*.017*	*.015*	*.017*
Native American	-.151*	-.144*	-.141*	-.140*
	(.061)	(.061)	(.061)	(.061)
	-.032	*-.030*	*-.030*	*-.030*
Education	.077***	.077***	.076***	.076***
	(.008)	(.008)	(.008)	(.008)
	.166	*.166*	*.164*	*.163*
Childhood family income	.001*	.001*	.001*	.001*
	(.000)	(.000)	(.000)	(.000)
	.034	*.035*	*.035*	*.036*
Mother's education	-.008	-.009	-.008	-.009
	(.009)	(.009)	(.009)	(.009)
	-.015	*-.017*	*-.014*	*-.016*
Father's education	.006	.007	.006	.007
	(.008)	(.008)	(.008)	(.008)
	.013	*.013*	*.012*	*.014*
Constant	2.180	2.000	2.042	2.140
	(.435)	(.446)	(.433)	(.427)
R^2	.196	.195	.197	.196
Number of cases	4,943	4,945	4,946	4,948

Note: In addition to sex, age, and education, the industry of the respondent's current occupation is controlled with 22 dummies (not shown).
Main entries are unstandardized regression coefficients
(Numbers in parentheses are standard errors)
Numbers in italics are standardized regression coefficients
† $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed)