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Exploring the impact of male and female facial attractiveness on occupational prestige

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Abstract

Traditionally, social scientists have studied socio-economic inequalities mainly by looking at the impact of individuals' economic, cultural and social capital. Some scholars have recently argued that other types of resources, such as genetic and erotic capital, may also play a role in the processes that lead to the formation of social inequalities. Using a unique longitudinal dataset, the Wisconsin Longitudinal Study, this paper explores the impact of facial attractiveness on people's socio-economic standing over the life course. Methodologically, we employ a set of multilevel Growth Curve Models. Two findings clearly stand out from our analysis. Firstly, facial attractiveness does matter, both for men and women, and secondly, its impact is constant over the employment history.

Keywords: Occupational mobility; Careers; Physical appearance; Erotic capital; Beauty; SEI

1. Studying social inequalities. New challenges to the dominant paradigm

The idea that social and economic outcomes in later life are influenced by the level of resources individuals start off with lies at the heart of sociological research into social inequalities. Sociologists have long acknowledged the role played by three different types of resources, commonly referred to as economic, cultural and social capital (Bourdieu & Wacquant, 1992; Bourdieu, 1986). This paradigm has informed the theoretic and methodological framework of a plethora of empirical studies of social inequalities in occupational outcomes (see, for example, Blau & Duncan, 1967; Breen, 2004; Erikson & Goldthorpe, 1992; Shavit & Blossfeld, 1993; Shavit & Müller, 1998).

The dominant paradigm has recently been challenged by two groups of scholars who, drawing on different schools of thought, postulate that individuals' social outcomes are also influenced by what they refer to as genetic capital (amongst the others, Bearman, 2008; Guo, 2006, 2008; Lucchini et al., 2011; Pisati, 2008) and erotic capital (Hakim, 2010, 2011). The two groups of scholars argue that ignoring such resources altogether may lead to inaccurate conclusions regarding the processes that underlie the reproduction of social inequalities and call for the dominant paradigm to take into account (and integrate) the theoretic and methodological challenges posed by the new approaches; some authors even go further and call for a unification of the social and the

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natural sciences, see for example Daly and Wilson (1999), Kanazawa (2004), Tooby and Cosmides (1992), and Van den Berghe (1990).

The aim of the paper is to investigate the impact that non-traditional individual resources may have on socio-economic outcomes. More specifically, the paper explores the impact of facial attractiveness on people's socio-economic standing over the life course. It draws on Hakim's theory of erotic capital and a series of empirical papers (mainly carried out in economics) on how physical attractiveness influences people's labor market outcomes. Methodologically, we employ a set of multilevel models. We use, in particular, growth curve models (GCM) which are appropriate statistical techniques to model social change in a dynamic framework. Two findings clearly stand out from our analysis (i) facial attractiveness does matter, both for men and women, and (ii) its impact is stable over their employment history.

2. Beauty as one of the drivers of social inequalities

Erotic capital – like economic, cultural and social capital – is a resource that may play a role in granting individuals success in different domains of their life, both at any point in time and over the life course. As put by Hakim (2010), erotic capital (or erotic power) "is a somewhat different forth asset, previously overlooked, but just as important" (p. 500). It is a multi-faceted construct, "a combination of esthetic, visual, physical, social and sexual attractiveness to other members of your society, and especially to members of the opposite sex, in all social contexts" (p. 501). It is constituted by six key elements: beauty, sexual attractiveness, charm and charisma, liveliness, social presentation, and sexuality. In some cultures, reproductive capital may also be considered as a separate seventh asset.

Erotic capital has three peculiar features. First, erotic capital can be augmented through training, as it includes skills that can be learnt and developed (together with advantages that are fixed at birth). Second, although the role of erotic capital (or of some of its components) may vary across time and space, it is a scarce resource and is usually highly valued by all societies. In modern societies, Hakim argues, because of the increasing importance that people place on esthetic values, erotic capital has become as valuable as economic, social and cultural capital. Third, erotic capital is highly gendered as it is mainly possessed by women. Hakim (2010, p. 504) explains that "women have more erotic capital than men in most societies because they work harder at personal presentation and the performance of gender and sexuality". Women's advantage may not be fixed; however, sex differentials in modern societies may shrink as men devote more time to improving their physical appearance.

The theoretical claim that erotic capital is a fourth type of capital that influences people's life chances finds its empirical support in the research on the effects of physical attractiveness on social outcomes. Beauty may in fact be understood as the key stratifying component of erotic capital, as it is not amenable (or only at great cost). Research in this field has shown that attractiveness is associated with a wide range of socio-economic outcomes including happiness (Hamermesh & Abrevaya, 2011), mating (Fisman, Iyengar, Kamenica, & Simonson, 2006), group and family formation/dissolution (Castillo, Petrie, & Torero, 2010; Jones, 1995; Lundborg, Nystedt, & Lindgren, 2006; Mulford, Orbell, Shatto, & Stockard, 1998), electoral success (Belot, Bhaskar, & van de Ven, 2007; Berggren, Jordahl, & Poutvaara, 2007) and access to credit (Ravina, 2008).

People's physical attractiveness is also highly correlated with labor market outcomes, which are the focus of this study. Studies in this field have evaluated the impact of a number of markers of beauty (i) in the work place, (ii) in specific occupations (e.g., lawyers, escorts, academics, politicians, criminals, military cadets, executives), and (iii) on company productivity (an exhaustive review of the studies in this field can be found in Hamermesh, 2011, chaps. 3–5). The studies consistently found a positive association between beauty and the outcome variable of interest (except for being a criminal where being ugly pays off, ceteris paribus). The impact of markers of global physical attractiveness – most importantly, height, weight and body mass index – on labor market outcomes (mainly earnings) has been studied extensively. For example, Harper (2000) and Persico, Postlewaite, & Silverman (2004) found evidence for a height premium; Morris (2007) showed that obesity has a statistically significant and negative effect on employment in both males and females; Cawley (2004), Harper (2000) and Rooth (2009) qualified that the obesity penalty applies to women only. More recently, Glass, Haas, & Reither (2010) found that body mass does not have a strong *direct* effect on the careers of men and women. However, there is evidence for an *indirect* effect which would affect women's careers only (i.e., overweight women tend to invest less in education than normal weight women).

Studies that evaluate the impact of other markers of people's physical attractiveness, such as beauty, are

rarer. Most of the studies, which are carried out mainly in psychology and economics, have provided strong and consistent evidence that "beauty pays".[4] In particular, research has provided evidence consistent with the hypothesis that there is both a "plainness penalty" and a "beauty premium". As Hamermesh and Biddle (1994, p. 1192) put it: "other things being equal, wages of people with below-average looks are lower than those of average-looking workers [plainness penalty]; and there is a premium in wages for good-looking people that is slightly smaller than this penalty [beauty premium]". Overall, there is also consensus on the size of the beauty effect: the plainness penalty is estimated to be around 5–10% whereas the beauty premium is slightly smaller (Hamermesh & Biddle, 1994). Some study results lend support to just one of the effects, however, Harper (2000), e.g., found evidence for a beauty penalty only whereas Robins, Homer, & French (2011) for a beauty premium only.

The evidence on the association between beauty and labor market outcomes is also confirmed by studies across the world, as documented in studies on Britain (Harper, 2000), China (Hamermesh, Meng, & Zhang, 2002), Sweden (Rooth, 2009) and Argentina (Mobius & Rosenblat, 2006), in addition to Canada and America, as widely documented by Fletcher (2009), Hamermesh's work, and Roszell, Kennedy, & Grabb (1989).[5] Moreover, the association between beauty and earnings seems to be quite robust: it holds when controlling for important confounders such as the type of occupation (Fletcher, 2009; Hamermesh & Biddle, 1994) and unobservable characteristics such as markers of ability (Fletcher, 2009). However, findings regarding the impact of beauty on male and female labor market outcomes are mixed. A number of studies found no evidence for gender variation in the effects of beauty on earnings (for example, Fletcher, 2009; Hamermesh & Biddle, 1994; Harper, 2000; Robins et al., 2011) whereas a minority of studies found gender specific effects. For example, French (2002) found a significant beauty premium for only women whereas Rooth (2009) and Roszell et al. (2001) found that attractiveness impacts only men.

Research on beauty in the labor market for the general population has two main limitations. Firstly, the vast majority of studies in the field have explored the impact of attractiveness on earnings differentials but neglected other labor market outcomes such as entry in the labor market (especially for women), career progression and dismissals. In addition, the majority of studies in this field have adopted a cross-sectional approach (i.e., looking at earnings differentials at a specific point in time). Hence, very little is known about the impact of beauty over the course of people's careers. A relevant exception is a recent study by Jaeger (2011). That study employs standard ordinary least squares (OLS) regression analysis to look at the effects of a set of markers of beauty, including facial attractiveness, on respondents' socio-economic status (SES) at ages 35 and 54. With regard to facial attractiveness, the study found that, for men, facial attractiveness is unrelated to socio-economic status whereas, for women, it is positively associated with socio-economic status at age 54 only.

We believe our paper offers a fresh perspective to the study of social inequalities and makes some important contributions that improve the current understanding of whether physical attractiveness affects people's employment careers. The overall aim of the paper is to explore the impact of beauty over people's life course. In particular, we investigate the impact of beauty on entry in the labor market and over the life course by analyzing respondents' whole job history. The paper also aims to provide further evidence on the impact of attractiveness on gender differentials. Our paper may be understood as an extension of Jaeger's work. By using multilevel analysis techniques, we hope to provide more accurate estimates of the impact of beauty on labor market outcomes than previously has been the case; ignoring clustering (of repeated observations within individuals) provides underestimated standard errors and may therefore have led to inaccurate results in Jaeger's work.

3. Data

We use data from the Wisconsin Longitudinal Study (WLS). The WLS is a longitudinal study of a random sample of 10,317 men and women, who were born between 1938 and 1940 and graduated from public, private or parochial high schools in Wisconsin in 1957. Interviews with the respondents or their parents were conducted in 1957, 1964, 1975, 1992/1993 and 2004 (Wollmering, 2007). Although the WLS is not nationally representative, its participants resemble over two-thirds of Americans, now entering retirement age, in terms of educational attainment and ethnic background (Hauser, 2005). In the initial wave the study collected a wide range of information covering, for instance, respondents'

[4] To the aims of this paper we focus mainly on research carried out in economics rather than psychology; studies that belong to the latter research field are often carried out in experimental settings whereas we are interested in studies based on survey data of a general population.

[5] To the best of our knowledge, these are the only countries for which survey data on respondents' beauty are available.

academic ability, their socio-economic background, their educational and occupational aspirations as well as a number of contextual factors. In later waves (1964, 1975, 1992/1993 and 2004), the WLS collected data on respondents' educational and occupational histories together with indicators of socio-economic status and data on military service, marital status, family characteristics, social participation, psychological well-being and health (Hauser, 2005; Sewell, Hauser, Springer, & Hauser, 2003). Measures of physical appearance and, for a random sub-sample of respondents, an indicator of facial attractiveness based on others' ratings of respondents' high school yearbook photos taken at about age 18 are also available in the study, making it a unique source for analyzing the impact of beauty on labor market careers.

Our analysis is concerned with exploring to what extent differences in beauty contribute to social inequalities in terms of occupational prestige, both at the start of the career and as it proceeds. Information on WLS respondents' job histories was collected retrospectively in 1975. Respondents were asked to provide information on their first job, and on the job they held in 1970, 1974 and 1975. In the subsequent wave of data collection, in 1992, respondents were asked information on their current employment. We can (and will), therefore, focus on respondents' employment histories at four points in time: first occupation, respondents' occupation in 1970, 1974 and 1992.[6] Information collected on these jobs includes an accurate and detailed description of their occupation which is used to derive a number of occupational classifications.

The dependent variable is the so-called Socio-Economic Index (SEI). This is an index which has been developed by Featherman, Sobel, & Dickens (1975) based on previous work by Duncan (1961). Details on the SEI scale can be found in the WLS Users' documentation (Appendix E – COR713 and MEMO133). We use this score as a marker of respondents' occupational social standing. Occupational social standing, as mentioned before, is observed at the time of the first job and subsequently in 1970, 1974 and 1992. In our sample, the SEI score varies from 20 to 960 where 20 is the score of the least prestigious occupations and 960 the one of the most prestigious ones.

We restrict our analysis to WLS respondents for whom a beauty score was available and who had at least three spells of employment history (in any order), valid cases on the variables included in the analysis and entered the labor market after obtaining (at least) their high school degree. In total, there are 15,460 employment spells available for analysis (9148 for men and 6312 for women) corresponding to 4258 individuals (2436 men and 1822 women).

4. Choice of predictor variables

Our key independent variable is a marker of respondent's facial attractiveness at age 18. The retrospective measure is based on 12 ratings of WLS participants' 1957 high-school graduation photographs, which were obtained in 2004 and 2008. A random sample of different sets of pictures from the respondents' high-school's 1957 annual yearbooks was rated by a panel of raters using a photo-labeled 11-point scale, with end points labeled as "not at all attractive" (=1) and "extremely attractive" (=11). In total 8434 photographs were rated (2833 in 2004 and 5601 in 2008). Each photograph was rated by six men and six women, nearly all of whom were recruited from roughly the same cohort as the original WLS participants, and who thus had a feel for what was considered as good or bad looks in the late 1950s (Hamermesh & Abrevaya, 2011, p. 4). The reliability (Cronbach's Alpha) of the attractiveness ratings is 0.87 (Hauser, 2009). Further details on the procedures adopted to rate the pictures can be found in Reither, Hauser, & Swallen (2009, p. 30). Ratings are averaged across raters, standardized and bottom and top coded at −4 and +4. As explicitly stated in the Users' documentation, standardization reduces interviewer variability in evaluating respondents' physical attractiveness: "norming effectively removes coder fixed effects".[7]

We believe facial attractiveness can be considered as a time constant variable as research has shown that individuals tend to maintain their relative position in the distribution of attractiveness throughout life (Adams, 1977; Hatfield & Sprecher, 1986; Jaeger, 2011; Tatarunaite, Playle, Hood, Shaw, & Richmond, 2005; Zebrowitz, Olson, & Hoffman, 1993). Although measuring respondents' physical attractiveness poses some challenges to researchers, there seems to be agreement on the standard of beauty in a given society. As Hamermesh and Biddle (1994, p. 1177) put it "within the modern industrial world standards of beauty are both commonly agreed upon and stable over one's working life".

[6] We ignore information collected on respondents' occupation in 1975 as it does not refer to a specific point in time but to the "current/last" job.

[7] http://www.ssc.wisc.edu/wlsresearch/documentation/waves/codebooks/attr.pdf, p.1.

Control variables include three sets of variables. We control for respondent characteristics, family background and a proxy for labor market conditions. Respondent characteristics include respondent's age at each occupational spell (centered on 18), number of regular years in education and intelligent quotient (measured as respondents's score on the Henmon–Nelson Test at about 18). The latter two variables are markers for educational attainment, intelligence and cognitive ability. We also control for year of birth which can be interpreted as a proxy for regularity in the duration of educational trajectories. Ethnicity is not included as nearly all respondents are White Americans. Family background variables include parents' years of schooling, father's socio-economic index, and number of siblings. As a marker of structural conditions of the labor market, we include age of entry in the labor market, calculated as the difference between the year of the first job and graduation from high-school in 1957.[8]

Descriptive statistics by sex and for the whole sample are shown in Table 1. Distributions of the beauty score for the variables used in the analysis are shown in Appendix B.

5. Modeling strategy

To describe the pattern of change over time in the index of socio-economic status and evaluate the role that facial attractiveness plays in this process we use multilevel modeling techniques. More specifically, we use growth curve models (GCM) which are appropriate statistical techniques to model social change in a dynamic framework (Singer & Willet, 2003). Formally, GCM are described as two level "repeated measures" multilevel models with occasions of measurement at level 1 nested within individuals at level 2.

Estimation requires a preliminary analysis of the pattern of change over time in the outcome variable. Inspection of the graphs plotting the SEI score against age (not presented here) suggests that the relationship between the two variables is approximately linear, i.e., the rate of increase in the outcome variable is constant over time.

[8] Note that respondents' work experience may be an additional important factor that is positively related to occupational prestige. The WLS does, unfortunately, not include reliable markers of work experience and – like Jaeger (2011) – we could, therefore, not consider this source of individual heterogeneity. For further information see the WLS documentation at http://www.ssc.wisc.edu/wlsresearch/documentation/waves/?wave=wls75&module=cjobh.

Our analytical strategy proceeds in three stages. We first estimate an Unconditional Means Model (i.e., a model without independent variables) to establish the proportion of the variance in occupational prestige explained by heterogeneity between and within individuals. The assumptions of this model are twofold: (i) individual trajectories of change are completely flat and (ii) they may only vary in elevation around the grand mean. The variance in occupational prestige can be decomposed into the levels of the multilevel model, namely individuals (level-2 or constant variance) and occasions (level-1 or residual variance). Level-2 variance provides an estimate of the quantity of variation *between* individuals, regardless of time whereas the level-1 variance is an estimate of the amount of variation in prestige scores *within* individuals over time.

Next, we estimate a Unconditional Growth Model with age as the only level-1 predictor and no covariates at level 2. This allows us to evaluate the impact of time on occupational prestige. The comparison between these two models enables us to estimate the share of within-person variance (level-1 variance) explained by the linear temporal predictor. Finally, we estimate a Conditional Growth Model, where we add our independent variables, including our key variable of interest, i.e., facial attractiveness. In this model, individual growth parameters – intercepts and slopes – become level-2 outcomes, each of which can be related to the beauty score (our predictor of interest), controlling for the other independent variables in the model.

The three models may be formalized as follows:

Unconditional Means Model

First level: $Y_{ij} = \pi_{0i} + \varepsilon_{ij}$ where $\varepsilon_{ij} \sim N(0, \sigma_\varepsilon^2)$

Second level: $\pi_{0i} = \gamma_{00} + \zeta_{0i}$ where $\zeta_{0i} \sim N(0, \sigma_0^2)$

where $Y_{ij}$is the occupational prestige score referred to individual i at occasion j, π_{0i} represents the mean occupational prestige score of individual i across occasions, ε_{ij} represents the within-person deviations, γ_{00} is the grand mean across individuals and occasions, and ζ_{0i} the deviation of a person-specific mean from the grand mean.

Unconditional Growth Model

First level: $Y_{ij} = \pi_{0i} + \pi_{1i} AGE_{ij} + \varepsilon_{ij}$ where $\varepsilon_{ij} \sim N(0, \sigma_\varepsilon^2)$

Second level: $\begin{matrix} \pi_{0i} = \gamma_{00} + \zeta_{0i} \\ \pi_{1i} = \gamma_{10} + \zeta_{1i} \end{matrix}$ where

$$\begin{bmatrix} \zeta_{0i} \\ \zeta_{1i} \end{bmatrix} \sim N\left(\begin{bmatrix} 0 \\ 0 \end{bmatrix}, \begin{bmatrix} \sigma_0^2 & \sigma_{01} \\ \sigma_{10} & \sigma_1^2 \end{bmatrix} \right)$$

where γ_{00} is the average initial status (i.e., SEI score) at AGE 18, γ_{10} represents the average rate of change,

Table 1
Descriptive statistics of the estimation sample as a whole, and differentiated by sex.

Study characteristics	Whole sample ($N=4258$)				Males ($N=2436$)				Females ($N=1822$)			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Respondent characteristics												
Socio-economic index	451.38	240.17	20	960	433.31	271.19	20	960	475.53	188.36	49	923
Age at each occupational spell	3.67	4.29	0	18	4.31	4.24	0	18	2.80	4.20	0	18
Beauty score	0.02	1.22	−4.09	4.00	0.09	1.19	−3.38	3.54	−0.074	1.27	−4.09	4.00
Year of birth	38.83	0.48	37	40	38.78	0.51	37	40	38.88	0.42	37	40
Age of entry in the labor market	3.67	4.29	0	18	4.31	4.24	0	18	2.80	4.20	0	18
Number of years of regular schooling	13.63	2.29	12	20	14.01	2.488	12	20	13.14	1.88	12	20
Intelligence quotient	101.85	14.93	61	145	101.94	15.249	61	145	101.74	14.51	61	145
Family background characteristics												
Father's years of schooling	10.30	3.12	7	18	10.48	3.16	7	18	10.07	3.04	7	18
Fathers' SEI	31.06	22.37	1	96	31.58	22.67	2	96	30.36	21.95	1	96
Mothers' years of schooling	10.70	2.92	7	18	10.81	2.87	7	18	10.56	2.97	7	18
Number of siblings	2.86	2.20	0	10	2.76	2.14	0	10	2.99	2.28	0	10

Source: Wisconsin Longitudinal Study (WLS).
Note: The descriptive statistics refer to the first occupational spell.

ζ_{0i} and ζ_{1i} the deviations of the individual change trajectories around the population average trajectory.

Conditional Growth Model

First level: $Y_{ij} = \pi_{0i} + \pi_{1i} AGE_{ij} + \varepsilon_{ij}$ where $\varepsilon_{ij} \sim N(0, \sigma_\varepsilon^2)$

Second level:

$$\pi_{0i} = \gamma_{00} + \gamma_{01} BEAUTY_i + \sum_{p=2}^{k} \gamma_{0p} Z_i + \zeta_{0i}$$

$$\pi_{1i} = \gamma_{10} + \gamma_{11} BEAUTY_i + \sum_{p=2}^{k} \gamma_{1p} Z_i + \zeta_{1i}$$

where

$$\begin{bmatrix} \zeta_{0i} \\ \zeta_{1i} \end{bmatrix} \sim N\left(\begin{bmatrix} 0 \\ 0 \end{bmatrix}, \begin{bmatrix} \sigma_0^2 & \sigma_{01} \\ \sigma_{10} & \sigma_1^2 \end{bmatrix} \right)$$

where 'BEAUTY' is the main predictor of interest and Z_i are a set of individual characteristics which have been suggested to affect labor market outcomes as per the dominant theoretical paradigm.

We estimate all models separately for men and women. The statistical analysis is carried out using Stata Version 11 (StataCorp, 2009).

6. Results

Results of the Unconditional Means Model (Model 1), Unconditional Growth Model (Model 2) and Conditional Growth Models (Model 3) are reported in Tables 2 and 3 for males and females.

The results of the Unconditional Means Model suggest that females, on average, have occupations with a lower socio-economic prestige than males, the grand mean of the SEI score amounting to 502.06 for men and 474.04 for women, respectively. However, there is more variation in occupational prestige between men (level-2 variance: 42,472.02) than between women (level-2 variance: 22,111.77). Whilst almost 2/3 of the total variation in men's occupational prestige is due to differences between men (intra-class correlation[9]: 65.8%), about half of the total variation in women's occupational prestige (intra-class correlation: 52.9%) is due to differences between women. In both cases, the remainder variance may be interpreted as being due to differences in individuals' occupational careers over time. The likelihood statistic is −61,295.48 for men and −41,598.21 for women.

The results of our Unconditional Growth Model that includes age as the only level-1 predictor suggests that the average value of the socio-economic index when respondents enter the labor market at age 18 (i.e., after they graduate) is 447.48 for men (Model 2, Table 2) and 458.2 for women (Model 2, Table 3). Occupational prestige is positively associated with age for both men

[9] The intra-class correlation is computed dividing the level-2 variance over the total variance.

Table 2
Results for multilevel models: men (standard errors in parenthesis).

Variables	Model 1	Model 2	Model 3
Constant	502.06 (4.46)	447.48 (5.30)	430.39 (5.84)
Age at each occupational spell		3.36 (0.16)	3.21 (0.16)
Beauty score			6.07 (3.06)
Interaction age at each occupational spell and beauty			0.11 (0.13)
Year of birth			19.70 (6.15)
Age of entry in the labor market			4.29 (1.12)
Number of years of regular schooling			49.97 (2.04)
Father's years of schooling			1.97 (1.23)
Fathers' SEI			0.59 (0.16)
Intelligence quotient			1.818 (0.23)
Number of siblings			−5.15 (1.43)
Mother's years of schooling			1.37 (1.23)
Random-effects parameters			
Age variance		21.37 (1.85)	20.99 (1.84)
Covariance (age and intercept)		−472.68 (49.38)	−132.63 (34.75)
Level 1 variance (residual variance)	22,107.27 (381.60)	16,836.02 (356.73)	16,867.14 (358.00)
Level 2 variance (constant variance)	42,472.02 (1392.38)	52,702.09 (2003.57)	16,386.63 (973.13)
Number of person-year observations	9148	9148	9148
Log restricted-likelihood	−61,295.48	−60,884.30	−59,927.75

Source: Wisconsin Longitudinal Study (WLS).

and women. However, the annual rate of change differs by gender. A unit increase in age corresponds to an increase in the SEI score of 3.36 points for men and 0.92 for women. This suggests that men are more likely to experience quicker career progression than women. Moreover, for men, the negative (and statistically significant) covariance suggests that individuals with higher prestige scores display a slower career progression. Note that the introduction of age as level-1 predictor has a strong impact on the variance, as it has significantly reduced the level-1 variance component, especially for men. For men, 23.8% of the within-person variation in

Table 3
Results for multilevel models: women (standard errors in parenthesis).

Variables	Model 1	Model 2	Model 3
Constant	474.04 (3.91)	458.20 (4.40)	477.31 (4.46)
Age at each occupational spell		0.92 (0.16)	0.78 (0.16)
Beauty score			6.95 (2.92)
Interaction age at each occupational spell and beauty			0.16 (0.13)
Year of birth			31.76 (7.43)
Age of entry in the labor market			−5.70 (0.99)
Number of years of regular schooling			48.52 (2.32)
Father's years of schooling			0.55 (1.20)
Fathers' SEI			0.19 (0.16)
Intelligence quotient			2.17 (0.23)
Number of siblings			−3.53 (1.36)
Mother's years of schooling			2.90 (1.14)
Random-effects parameters			
Age variance		10.29 (1.70)	10.21 (1.68)
Covariance (age and intercept)		−11.21 (36.47)	−22.90 (31.61)
Level 1 variance (residual variance)	19,655.22 (414.65)	17,483.96 (465.84)	17,421.69 (461.14)
Level 2 variance (constant variance)	22,111.77 (930.49)	20,065.64 (1254.59)	9458.89 (881.95)
Number of person-year observations	6312	6312	6312
Log restricted-likelihood	−41,598.21	−41,504.82	−41,061.04

Source: Wisconsin Longitudinal Study (WLS).

occupational prestige is associated with the time predictor. The respective figure for women is 11.0%.[10] The importance of age is also confirmed when looking at the reduction in the likelihood statistic between Models 1 and 2. This is sizeable and statistically significant (comparing to a chi-squared distribution with 2 degrees of freedom) for both sexes.

To investigate the impact of facial attractiveness on changes of the SEI score over time we look at results from the Conditional Growth Model, which are shown in Model 3 of Table 2 for men and Table 3 for women, respectively. For the reference group, i.e., when the control variables are set at their means and the other variables at their initial values, the estimated initial values of the prestige score (i.e., the value of the SEI at the first occupation) are 430.39 for men and 477.31 for women and the annual rate of change is 3.21 for men and 0.78 for women ($p < 0.001$). The parameters of the beauty score are significant, both for men and for women. This suggests that beauty matters.[11] Controlling for a set of socio-demographic variables, a unit-increase in facial attractiveness increases female and male SEI of the first occupation by 6.95 and 6.07 points, respectively. Finally, the interaction term between the beauty score and age is 0.11 for men and 0.16 for women. As these parameters are small and not statistically significant ($p = 0.425$ for men and $p = 0.197$ for women), the impact of facial attractiveness on SEI seems to have a constant effect throughout men and women's employment history. In other words, facial attractiveness is as important in determining people's occupational prestige at the beginning of the career as it is in the middle or at the end of the career. Therefore, there are no cumulative effects of beauty over people's working careers.

Note that the variables introduced in this model reduce significantly the variance between individuals (level 2 variance) of Model 2. For men, the reduction amounts to 68.9% whereas for women it amounts to 52.9%. This specification has considerably improved the fit of the model, both for men and women (compare the reduction in the likelihood statistics of the two models).

[10] Here we refer to the proportional reduction in the level-1 variance component which is the ratio between the difference of the level-1 variance of the Unconditional Means Model and the Unconditional Growth Model and the level-1 variance of the Unconditional Means Model.

[11] In a different model, following Jaeger's model specification, we also included parental income and a variable indicating whether respondents have grown up in a single parent family. These variables were not significant. Results of this model are available from the authors upon request.

7. Conclusions and discussion

In sociology, economic, cultural and social resources have been identified as major drivers of social inequalities. However, as outlined at the beginning of this paper, there are other types of resources which may also play an important role in shaping people's outcomes over the life course. Erotic capital or genes are examples of such non-conventional resources. In this paper, we mainly draw on Hakim's theory of erotic capital. Erotic capital is a complex concept and it is also difficult to measure. Here, we focus on one dimension of erotic capital; beauty. Although the impact of people's physical attractiveness is very much understudied, there is enough evidence to show that it may play an important part in determining a wide range of social and economic outcomes.

The paper focuses on the relationship between facial attractiveness and occupational prestige. The aim is to assess the impact of people's facial attractiveness on occupational standing (measured by a revised version of Duncan's socio-economic index) over a period of up to 35 years of employment histories. We use multilevel growth models to analyze a unique longitudinal dataset, the Wisconsin Longitudinal Study. Our work contributes to extend the current knowledge in the field by providing new evidence on the impact of facial attractiveness on men and women's occupational standing over the life course. A number of interesting findings emerge from our study. First, variation in male and female SEI score is mainly due to differences between individuals (rather than within individuals), both for men and women. The introduction of age, which is positively associated with the outcome variable, significantly reduces the level 1 variance, in particular for men. Second, controlling for a range of variables including IQ, level of education, parents' education, etc., we find strong evidence that beauty plays a role in enhancing people's labor market outcomes (the coefficient for men is 6.07 and 6.95 for women). Our analysis also suggests that the so-called beauty premium is stable throughout people's employment history. Taken together, our findings are in contrast to Jaeger's results (Jaeger, 2011).

These preliminary findings have important implications, both from a scientific and a political perspective. Current knowledge on the impact of non-conventional individual resources on major social outcomes is quite limited. However, the field of research is very promising as documented by this study and other similar studies. We, therefore, believe that research on this topic should be encouraged and survey agencies should start collecting more systematically information on different aspects of respondents' physical attractiveness.

A first strand of research could address issues that concern the conceptualization and measurement of physical attractiveness. For example, studies may compare and contrast the distribution of respondents' physical attractiveness obtained using different methods, i.e., respondents' self-assessment of their physical appearance versus interviewers' assessment of respondents' physical appearance. Such studies may also include the development of survey instruments aimed at measuring respondents' physical attractiveness over the life course. A second area of research is the investigation of the psychological and social mechanisms that govern the relationship between beauty and socio-economic outcomes. For example, our work raises some important questions which remain unanswered: do beautiful men and women have higher occupational prestige because employers discriminate against plain people? Or is it because beautiful men and women enjoy a higher self-esteem and are more self-confident? Or is it because, as some authors suggest (Kanazawa and Kovar, 2004), beautiful people are more intelligent?

At a more theoretical level, future research may establish the extent to which newly developed theories may improve and expand the current knowledge and understanding of social phenomena. Methodologically, Hakim's theory of erotic capital could be tested, for example, by employing a model of social and economic outcomes adopting the standard paradigm, i.e., allowing for heterogeneity in economic, cultural and social capital, and then including markers of erotic capital to explore whether and how results change when we adopt a more comprehensive framework. As mentioned previously, such a research program could hardly be pursued as (to our best knowledge) no datasets that collect information on the four types of capital are available.

Currently, only a handful of large-scale representative surveys collect information on physical attractiveness (see Appendix A). Most studies rely on a single rating of respondent's attractiveness either by the interviewer, the respondent himself or, in the case of younger respondents, a teacher. Only one study uses more objective ratings of respondent's attractiveness, using photographs and having them rated by unrelated others. This shortage of datasets is a strong limitation to the huge potential of this research field (i.e., performing comparative analysis at the European level). Together with Hakim (2010, p. 500) we acknowledge that there are difficulties in measuring beauty (together with the concept of erotic capital); but this should not be an excuse for failing to recognize its social and economic importance. Experts in research methods may also invest in this promising research field. There exist some examples where survey design teams organize calls to include new modules or questions in their surveys (it is the case, for example, for the European Social Survey). Survey methodologists may take advantage of this possibility and start suggesting the collection of information on respondents' physical appearance. From a political point of view, recognizing that people's physical appearance, as well as their sex, race, religion, disability status etc., may lead to discrimination, may require a political intervention to prevent plain people from being discriminated against.

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Appendix A.

Overview of surveys that collect information on respondents' physical appearance.[12]

Survey characteristics	Measurement process
National Longitudinal Study of Adolescent Health (ADD) US 1994–1995, 1996, 2001–2002, 2007–2008 Longitudinal survey	At the end of the interview, interviewers assessed the interviewee's looks on a five-point ordinal scale running from 5 "very attractive" to 1 "very unattractive".
British National Child Development Study (NCDS58) Britain 1958–1965, 1969, 1974, 1981, 1991, 1999–2000, 2004, 2008–2009 Longitudinal survey	Teachers rated children's appearance at age 7 and 11 using a five-point ordinal scale with the following categories: attractive, unattractive, looks underfed, has some abnormal features, scruffy and dirty.
Quality of American Life (QAL) surveys US 1971, 1978 Cross-sectional survey	At the end of the interview, interviewers assessed the interviewee's looks on a five-point ordinal scale running from 5 "strikingly handsome or beautiful" to 1 "homely".
Quality of Life Surveys (QOL) survey Canada 1977, 1979, 1981 Longitudinal survey	At the end of the interview, interviewers assessed the interviewee's looks on a five-point ordinal scale running from 5 "strikingly handsome or beautiful" to 1 "homely". Independent measures of beauty as interviewers differed across the waves.
German contribution to the General Social Survey Programme, ALLBUS Germany 2008 Cross-sectional	At the beginning and at the end of the interview, interviewers assessed the interviewee's looks on a one-to-eleven scale running from 1 "very unattractive" to 11 "very attractive". During the interview, respondents self- assessed their looks on the same one-to-eleven scale running from 1 "very unattractive" to 11 "very attractive".
National Social Science Survey Australia 1984	Interviewers assessed the interviewee's looks on a one-to-six scale with 6 being attractive. Respondents self-assessed their looks on a one-to-five scale with 5 being attractive.

Appendix B.

Average beauty scores by study characteristics for whole sample and separately for males and females. Respondent characteristics, family background characteristics and structural indicator.

Variable	Females ($N = 1822$)				Males ($N = 2436$)				Total ($N = 4258$)			
	Mean	Std. Dev.	F	Prob > F	Mean	Std. Dev.	F	Prob > F	Mean	Std. Dev.	F	Prob > F
Socio-economic index												
1st quartile	−0.27	1.26			0.06	1.19			−0.05	1.23		
2nd quartile	−0.07	1.29			0.02	1.13			−0.02	1.23		
3rd quartile	0.01	1.27			0.21	1.23			0.12	1.23		

[12] In their study of physical attractiveness and income attainment, Roszell et al. (2001) mention a further study, i.e., the *Multiwave national study of social change in Canada*. The survey was carried out by the Institute for Behavioral Research (now the Institute for Social Research). Unfortunately, we could not locate detailed information on the study. The Wisconsin Longitudinal Study is excluded from the table as it is described in detail in the text.

Variable	Females ($N = 1822$)				Males ($N = 2436$)				Total ($N = 4258$)			
	Mean	Std. Dev.	F	Prob > F	Mean	Std. Dev.	F	Prob > F	Mean	Std. Dev.	F	Prob > F
4th quartile	−0.00	1.21	4.38	0.004	0.08	1.17	2.70	0.045	0.05	1.18	4.04	0.007
Age at each occupational spell												
1st quartile	−0.08	1.33			0.01	1.17			0.00	1.22		
2nd quartile	−0.12	1.23			0.10	1.19			0.00	1.22		
3rd quartile	0.11	1.15			0.23	1.23			0.21	1.18		
4th quartile	0.33	1.08	2.04	0.106	0.12	1.13	1.58	0.192	0.17	1.29	4.66	0.001
Year of birth												
1937	−0.84	1.04			0.05	1.35			−0.12	1.34		
1938	−0.21	1.29			0.15	1.20			0.03	1.24		
1939	−0.05	1.27			0.08	1.18			0.02	1.22		
1940	−0.00	1.14	2.89	0.034	−0.13	1.02	1.06	0.364	−0.07	1.08	0.52	0.670
Years of education												
1st quartile	−0.14	1.30			0.05	1.19			−0.04	1.25		
2nd quartile	−0.14	1.30			0.05	1.19			−0.04	1.25		
3rd quartile	0.19	1.13			0.15	1.16			0.13	1.17		
4th quartile	0.01	1.20	6.50	0.002	0.09	1.20	1.55	0.213	0.05	1.19	8.52	0.002
Intelligence quotient												
1st quartile	−0.24	1.30			0.10	1.22			−0.04	1.26		
2nd quartile	−0.05	1.25			0.03	1.16			−0.00	1.20		
3rd quartile	−0.02	1.28			0.12	1.22			0.06	1.24		
4th quartile	0.01	1.23	3.70	0.011	0.09	1.14	0.58	0.626	0.06	1.18	1.66	0.173
Father's years of schooling												
1st quartile	−0.23	1.26			−0.02	1.192			−0.12	1.23		
2nd quartile	−0.02	1.30			0.17	1.184			0.09	1.24		
3rd quartile	0.09	1.23			0.17	1.188			0.14	1.21		
4th quartile	0.04	1.25	7.38	0.000	0.12	1.162	3.87	0.009	0.09	1.20	11.38	0.000
Fathers' SEI												
1st quartile	−0.27	1.24			−0.01	1.20			−0.13	1.22		
2nd quartile	0.02	1.30			0.08	1.17			0.04	1.21		
3rd quartile	−0.01	1.26			0.19	1.19			0.08	1.23		
4th quartile	0.16	1.24	10.89	0.000	0.13	1.16	3.65	0.012	0.15	1.20	11.48	0.000
Mothers' years of schooling												
1st quartile	−0.29	1.26			−0.02	1.18			−0.15	1.22		
2nd quartile	−0.15	1.25			0.01	1.18			0.06	1.21		
3rd quartile	0.11	1.26			0.01	1.18			0.06	1.21		
4th quartile	0.01	1.24	12.19	0.000	0.22	1.21	5.97	0.003	0.16	1.22	19.30	0.000
Number of siblings												
1st quartile	−0.02	1.28			0.05	1.17			0.02	1.22		
2nd quartile	0.01	1.28			0.16	1.22			0.10	1.25		
3rd quartile	−0.12	1.24			0.08	1.19			−0.01	1.22		
4th quartile	−0.17	1.26	1.74	0.158	0.04	1.14	1.22	0.299	−0.06	1.21	2.63	0.049
Age of entry in the labor market												
1st quartile	−0.08	1.33			0.02	1.17			−0.04	1.27		
2nd quartile	−0.20	1.22			0.09	1.19			−0.05	1.20		
3rd quartile	−0.08	1.18			0.15	1.20			0.03	1.21		
4th quartile	0.05	1.24	2.07	0.103	0.12	1.19	1.64	0.178	0.12	1.20	5.29	0.001

Source: Wisconsin Longitudinal Study (WLS).

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