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Abstract

We consider the effect of physical attractiveness, as assessed based on publicly available pictures of top scientists, on their probability of winning the Nobel Prize. We find that attractiveness is negatively correlated with the probability of being awarded the Nobel, with the magnitude of this effect being not negligible.

Keywords:. Contests; prizes; productivity; discrimination.

JEL Codes: I20; J24; J70; O30

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1 Introduction

Physical attractiveness has an important effect on one's well-being: attractive people tend to be happier and more content than their less fortunate peers. Attractiveness and beauty is also an important factor of success in the marriage market. Not surprisingly, both men and women the world over spend vast resources on cosmetics, beauty products and cosmetic surgery (see Lee, 2015).

What is less obvious is the effect physical attractiveness has on economic outcomes. Such effects are non-negligible, and there is plenty of evidence to back this up. The seminal contribution by Hammermesh and Biddle (1994) finds that plain looking people suffer a wage penalty, while attractive people earn more than those with average looks (height also has a positive effect on earnings, see Persico, Postlewaite, and Silverman, 2004). Johnston (2010) complements this finding by showing that blonde women earn substantially higher wages than women whose hair is another color. According to Price (2008), the preference for blondes extends beyond the labor market: he finds that blonde fund raisers receive more generous donations for charitable causes than brunettes. Patacchini, Ragusa, and Zenou (2012) show that attractive women are at an advantage when applying for jobs. Sala et al. (2013) argue that facial beauty has a significant return with respect to labor market outcomes and for one's occupational prestige.

The benefits of beauty are not limited to the labor market. Hammermesh (2006) finds that attractive-looking economist are more likely to be elected as officers of the American Economic Association. Berggren, Jordahl, and Poutvaara (2010), in turn, find that attractive local politicians do better in elections. According to Belot, Bhaskar and van de Ven (2012), attractive contestants are less likely to be voted out of the game by other contestants (in the Weakest Link TV show), even when keeping them in the game is costly to the other contestants. Deryugina and Shurchkov (2015) consider female undergraduate students and find only evidence that the attractive ones do better in college. This last result is confirmed by the findings of Hernández-Julián and Peters (2015) who also find that pretty female students do better. Important, this result only applies to students to attend classes in person. Students who participate in online courses do not benefit from being attractive. This suggests that the gain from attractiveness is driven by the behavior of teachers who either favor attractive students or give them more help and attention.

The aforementioned literature, nevertheless, largely fails to shed light on the mechanism behind these effects, which could be either due to discriminatory behavior, or due to the fact that attractive people are intrinsically more productive. The latter could be the case if, for instance, healthy people are generally considered to be more beautiful.

In this paper, we add additional evidence to the literature on the effect of physical attractiveness. The subjects of our analysis are top scientists. Specifically, we consider scientists who were tipped to win the Nobel Prize in physics, chemistry, medicine and economics between 2002 and 2014. The predictions are based on the reports by the

Thompson Reuters ScienceWatch Hall of Citation Laureates[5], and reflect how often the scientists' work gets cited. Many but not all of the scientists highlighted by the Hall of Citation Laureates do go on to win the Nobel Prize. Likewise, some of the actual Nobel Prize winners are scientists overlooked by the Hall of Citation Laureates.

We consider the complete pool of predicted and actual Nobel Prize winners between 2002 and 2014. We collected some basic information on these scientists, as well as their pictures, and had them evaluated by a large group of undergraduate students in economics in the UK. In our analysis, we seek to establish whether those scientists who go on to claim the Nobel Prize are any more different with respect to their attractiveness than the rest of the sample. Note that we only consider scientists who are arguably at the very top of their disciplines, so that the winners and non-winners should be a-priori very similar. Nevertheless, given the magnitude of the potential benefits that accrue to Nobel Prize winners (besides receiving a substantial monetary award, Rablen and Oswald, 2008, find that winning the Nobel Prize extends the life of the winner by 1-2 years), even a marginal impact of physical attractiveness can have considerable implications.

In the next section, we describe the data used in our analysis in more detail. This is followed by discussion of the results. The last section concludes.

2 Data

Our data set includes top scientists in four scientific disciplines: physics, chemistry, medicine and economics. We include those who were reported on the Thompson Reuters Science Watch Hall of Citation Laureates web site[6] as being most likely to receive the Nobel Prize, and the scientists who actually received this award, in both cases between 2002 and 2014. Thomson Reuters has been analyzing citations data to predict the most likely Nobel Prize winners since 2002. Therefore, only top and most cited scientists, as well as actual laureates (not all winners were predicted by Thompson Reuters), are included in our data. All scientists included in our study are listed in the Appendix. Summary statistics are reported in Table 1.

The four disciplines are approximately equally represented: medicine accounts for 27% of the sample, the highest share, while the lowest share is that of economics, with 22%. These small differences may reflect the different attitudes to collaborative research in the four disciplines: scientists who collaborated on an important achievement often receive the Nobel Prize together. The top scientists are predominantly males: women account only for 3.6% of the sample. Women are slightly more represented among the actual winners, nevertheless, accounting for 5.8% of that subsample. By disciplines, women appear most often in medicine, accounting for 5.7%, with all other disciplines having less than 3% (physics being worst, with 2.4%).

Age refers to the scientist's age when first listed as a likely candidate for the Prize, or when awarded the Prize, whichever comes first. The typical scientists given, or predicted to receive, the Nobel Prize, is in his 60s.

[5] See http://sciencewatch.com/nobel/hall-citation-laureates.
[6] See http://sciencewatch.com/nobel/hall-citation-laureates.

Besides basic information on the scientists, we also obtained their pictures, either from their professional websites, or from Wikipedia. We showed the pictures to undergraduate students in Economics at Brunel University and asked them to rank the attractiveness of the scientists, from 0 to 10 (highest). The students were asked to take account of the age and gender of the scientists when making their assessment, and to evaluate their general attractiveness rather than their own personal preferences about the person in question. Overall, 105 students participated in this exercise, with the average picture evaluated by 21 students (ranging from 15 to 23). Students were shown the pictures on the screen, with 2-3 seconds per picture, and were asked to write down the score that occurred to them spontaneously, without consulting with others.

Undergraduate students do not find top scientists particularly attractive, with the average attractiveness score being only 3.5 out of 10. Figure 1 shows the pictures, average score and discipline of the three top scientists, who excel not only by their scientific contribution but were also considered most handsome by our sample of students. Since no economist made it into the top three, we also report the top three top economists in Figure 2.

Some student assessors' scores may be unreasonably low or high, including one student who ranked all pictures as 0. Therefore, as a robustness check, we excluded all assessments with the average score lower than 1 (there were 14 such cases) or higher than 8 (1 case). The basic statistics on the assessors are reported in panels B (full set of assessors) and C (restricted set) of Table 1. The average age of the assessors is 21.5 and 60% of them are male. Female assessors are somewhat kinder to our set of scientists than male assessors, with their average score being 3.4 compared to 3.3 among male assessors. Once we drop very low and very high assessors, the situation reverses, with average female assessor score of 3.5 and 3.6 for male assessors.

We report also some basic information on the pictures: whether it was black and white (16.7%), headshot (head and shoulders only, 91.7%), whether the scientist is wearing a suit in the picture (68.5%), and what is the resolution of the picture. The nature and style of the picture can potentially affect how the assessors perceive the person depicted in it.

3 Do Attractive Scientists Get the Prize?

To analyze whether attractiveness has any bearing on whether a top scientist gets the Nobel Prize, we run probit regressions on our sample, with the dependent variable taking the value of 1 if the scientist has been awarded the Nobel Prize by 2014, and 0 otherwise. Note that it is entirely possible that some of the scientists that do not have the Nobel Prize by 2014 will receive it in the future (or will have died before receiving it); this will serve to bias our results downwards, against finding any significant effects.

It is also important to note that as we consider only top scientists, the differences in productivity among them should be relatively small. Whether one is awarded the Nobel Prize then could be considered almost arbitrary (random). Alternatively, it is indeed possible that the final choice is affected by factors not related to the scientists' productivity: physical attractiveness could well be such a factor.

We report our regression results (marginal effects evaluated at means of variables) based on the full set of assessors in Table 2. We control for the scientists gender, age when their name first appears in our data (first mention by Thomson Reuters or actual award, whichever comes first), average attractiveness score, discipline dummies, and picture characteristics. When we only control for scientists' characteristics (columns 1 and 2), physical attractiveness appears to have a negative effect on the probability of receiving the Nobel Prize. This effect is marginally significant (at the 10% level), when age is included as a quadratic polynomial; given the relatively small sample size, it is not surprising that not many coefficients are significant. This would imply that being attractive presents a distinct disadvantage, with each point on the 0-10 scale reducing the probability of receiving the prize by 6.7% (each one-standard-deviation reduces the probability by 4.7%), which is not negligible.

Adding a squared term of the attractiveness score (column 3) changes the relationship into a hump-shaped one. The peak effect is attained at a score of 3.21, which is just below the sample average: average looking top scientists have a better chance of getting the Nobel Prize than either the plain looking ones, or the good looking.

Finally, in the last two columns, we add we add discipline dummies and picture characteristics. Given that all four disciplines are almost equally represented in our data, membership in a particular discipline should not make much difference: indeed, the dummies are mostly insignificant. Picture characteristics on their own should also not matter, unless those deciding on awarding the prize used the same pictures. They could, however, affect how our sample of students perceived the attractiveness of the scientists, which could, in principle, skew our results. To account for this possibility, we add interaction terms between picture characteristics and the attractiveness score. When we do so, we find that the average attractiveness now appears to have a significant and positive effect on the probability of receiving the Nobel Prize. As for picture characteristics, the picture being of head and shoulders and the scientist in it wearing a suit both significantly reduce the probability of being awarded the prize. Most of our pictures have these two characteristics. Therefore, given the size of the interaction terms, the results in the last column effectively confirm the previous result, that being more attractive is associated with a lower probability of receiving the Nobel Prize.

In Table 3, we report the results based on the restricted set of assessors. The results are very much in line with those reported in Table 2, the only difference being that they are slightly less significant.

Of the scientists' own characteristics, only gender is significant, with being a male having a negative effect on the probability of being a Nobel Prize laureate. This is not to say that women in general are more likely to succeed in this particular contest. Rather, in our sample, there are more women among the winners than in the sample overall, as discussed above. As for age, it is not significant. When considering a quadratic polynomial of age, the effect (though still not significant) appears U-shaped, with the lowest probability of winning the Nobel Prize at the age of 50.

5 Conclusions

We consider the effect of physical attractiveness on the probability of receiving the Nobel Prize. We collect pictures of and details on 324 top scientists in physics, chemistry, medicine and economics, who were either predicted to get the Nobel Prize, or have actually received it. We had these pictures rated for their attractiveness by a broad sample of UK undergraduate students, with each picture on average being evaluated by 21 assessors. We find that, overall, being more attractive reduces the probability of receiving the Nobel Prize. When we allow for the relationship being non-linear, it appears hump-shaped, with average-looking scientist having the best odds of being awarded the Nobel. The magnitude of the effect is potentially large: assuming the relationship is linear, each one-standard-deviation change in attractiveness is associated with approximately 4.7% reduction in the probability of winning the Nobel Prize. Given that getting the Prize is a very unlikely outcome indeed, a probability difference of this magnitude is not negligible.

Our results reveal correlation rather than causality. In particular, we cannot tell what mechanism drives our findings. One possible explanation is discrimination, whereby the selection committee would (subconsciously) consider attractive scientists as less serious or less devoted. Another possibility is that attractive scientists have more and better alternative options besides hard work, whether in the labor market (as the previous literature clearly demonstrates), in their social life, or indeed in their love and family life. As a result, they would have less time left for pure science. Future research will hopefully shed more light on these issues.

References

Belot, Michèle, V. Bhaskar and Jeroen van de Ven (2012). "Beauty and the Sources of Discrimination." *Journal of Human Resources* 47(3), 851–872.

Berggren, Niclas, Henrik Jordahl, Panu Poutvaara (2010). "The looks of a winner: Beauty and electoral success." *Journal of Public Economics* 94(1–2), 8–15.

Deryugina, Tatyana, and Olga Shurchkov (2015). "Does Beauty Matter in Undergraduate Education?" *Economic Inquiry* 53(2), 940–961.

Hamermesh, Daniel S., and Jeff E. Biddle (1994). "Beauty and the Labor Market." *American Economic Review* 84(5), 1174-1194.

Hamermesh, Daniel S. (2006). "Changing looks and changing "discrimination": The beauty of economists." *Economics Letters* 93, 405–412.

Hernández-Julián, Rey, and Christina Peters (2015). "Student Appearaance and Academic Performance." Metropolitan State University of Denver, mimeo.

Johnston, David W. (2010). "Physical appearance and wages: Do blondes have more fun?" *Economics Letters* 108, 10–12

Lee, Soohyung (2015). "Beauty pays but does investment in beauty?" IZA World of Labor 198.

Patacchini, Eleonora, Giuseppe Ragusa, and Yves Zenou (2012). "Unexplored Dimensions of Discrimination in Europe: Homosexuality and Physical Appearance. CEPR Discussion Paper No. 9179

Persico, N., A. Postlewaite, and D. Silverman (2004). "The effect of adolescent experience on labor market outcomes: The case of height." *Journal of Political Economy* 112(5), 1019–1053.

Price, Michael K. (2008). "Fund-raising success and a solicitor's beauty capital: Do blondes raise more funds?" *Economics Letters* 100, 351–354.

Rablen, Matthew D., and Andrew J. Oswald (2008). "Mortality and immortality: The Nobel Prize as an experiment into the effect of status upon longevity." *Journal of Health Economics* 27(6), 1462–1471.

Sala, Emanuela, Marco Terraneo, Mario Lucchini, and Gundi Knies (2013). "Exploring the impact of male and female facial attractiveness on occupational prestige." Research in Social Stratification and Mobility 31, 69–81

Table 1 Summary Statistics

A. Scientists	**N**	**Mean**	**Std. Dev.**	**Min**	**Max**
Nobel Prize Winner	324	0.373	0.484	0	1
Male	324	0.966	0.181	0	1
Age	318	63.745	10.831	34	94
Attractiveness Score	324	3.464	0.693	2.04	6.55
Attractiveness (restricted set)	324	3.867	0.732	2.19	6.65
Physics	324	0.259	0.439	0	1
Chemistry	324	0.241	0.428	0	1
Medicine	324	0.272	0.445	0	1
Economics	324	0.228	0.420	0	1
Black& white	324	0.167	0.373	0	1
Headshot	324	0.917	0.277	0	1
Suit	324	0.685	0.465	0	1
Resolution	324	701425	2117773	5184	2E+07
B. Assessors (full set)	**N**	**Mean**	**Std. Dev.**	**Min**	**Max**
Male	101	0.604	0.492	0.000	1.000
Age	99	21.5	1.4	19.0	27.0
Av. Score Male Assessors	61	3.299	1.639	0.000	8.929
Av. Score Female Assessors	40	3.4	1.4	0.3	5.8
C. Assessors (restricted set)	**N**	**Mean**	**Std. Dev.**	**Min**	**Max**
Male	90	0.578	0.497	0.000	1.000
Age	89	21.4	1.4	19.0	27.0
Av. Score Male Assessors	52	3.595	1.165	1.212	6.833
Av. Score Female Assessors	38	3.5	1.2	1.3	5.8

Notes: The restricted set of assessors omits the attractiveness scores by assessors with average scores below 1 (14 assessors) or above 8 (1 assessor).

Table 2 Beauty of Nobel Prize Winners (full set of assessors)

	(1)	(2)	(3)	(4)	(5)
Male	-0.3033	-0.3019*	-0.3601**	-0.3116	-0.4159**
	(0.1598)	(0.1604)	(0.1800)	(0.1811)	(0.1869)
Age	0.0037	-0.0263	-0.0299	0.0051	0.0030
	(0.0027)	(0.0248)	(0.0252)	(0.0277)	(0.0272)
Age squared		0.0002	0.0003	0.0000	0.0000
		(0.0002)	(0.0002)	(0.0002)	(0.0002)
Score	-0.0680	-0.0677*	0.6109*	-0.0646	0.5567***
	(0.0413)	(0.0413)	(0.3538)	(0.0472)	(0.1509)
Score squared			-0.0951**		
			(0.0492)		
Chemistry				-0.1453	-0.1354
				(0.0874)	(0.0887)
Medicine				-0.0485	-0.0395
				(0.0847)	(0.0857)
Economics				-0.1741	-0.2179**
				(0.0869)	(0.0896)
Black& white				0.7197	1.1291*
				(0.1083)	(0.6719)
Headshot				0.1634	1.8090***
				(0.1097)	(0.4887)
Resolution				0.0000	0.0002***
				(0.0000)	(0.0001)
Suit				0.1894	0.7463**
				(0.0670)	(0.3245)
Black& white * Score					-0.1212
					(0.1901)
Headshot * Score					-0.4862***
					(0.1431)
Resolution * Score					-0.0001***
					(0.0000)
Suit * Score					-0.1560*
					(0.0895)
N	318	318	318	318	318

Notes: Marginal effects evaluated at means, with robust standard errors in parentheses. Significance levels denoted as: *** 1%, ** 5%, and * 10%.

Table 2 Beauty of Nobel Prize Winners (restricted set of assessors)

	(1)	(2)	(3)	(4)	(5)
Male	-0.2887*	-0.2868*	-0.3109	-0.2976*	-0.4058**
	(0.1567)	(0.1572)	(0.1628)	(0.1769)	(0.1819)
Age	0.0037	-0.0253	-0.0305	0.0057	0.0018
	(0.0028)	(0.0249)	(0.0255)	(0.0279)	(0.0275)
Age squared		0.0002	0.0003	0.0000	0.0000
		(0.0002)	(0.0002)	(0.0002)	(0.0002)
Score	-0.0594	-0.0576	0.5334	-0.0637	0.4331***
	(0.0392)	(0.0392)	(0.3558)	(0.0442)	(0.1280)
Score squared			-0.0750*		
			(0.0445)		
Chemistry				-0.1448*	-0.1328
				(0.0872)	(0.0872)
Medicine				-0.0494	-0.0448
				(0.0843)	(0.0852)
Economics				-0.1696**	-0.2113
				(0.0873)	(0.0891)
Black& white				0.7228***	0.7785
				(0.1087)	(0.6417)
Headshot				0.1620	1.6780***
				(0.1090)	(0.4593)
Suit				0.1881***	0.5955*
				(0.0668)	(0.3518)
Resolution				0.0000	0.0002**
				(0.0000)	(0.0001)
Black& white * Score					-0.0171
					(0.1645)
Headshot * Score					-0.4006***
					(0.1231)
Suit * Score					-102.1994
					(88.4106)
Resolution * Score					-0.0001**
					(0.0000)
N	318	318	318	318	318

Notes: Marginal effects evaluated at means, with robust standard errors in parentheses. Significance levels denoted as: *** 1%, ** 5%, and * 10%.

Figure 1 Three Most Attractive Top Scientists across All Disciplines

		
1. Nicholas B. Lydon (6.55, Medicine)	**2. Jacqueline K. Barton (5.82, Chemistry)**	**3. Juan Ignacio Cirac (5.22, Physics)**

Figure 2 Three Most Attractive Top Economists

		
1. David E. Card (4.73)	**2. Edmund S. Phelps (4.65)**	**3. Philippe M. Aghion (4.61)**