UGLY CRIMINALS

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Abstract—Being very attractive reduces a young adult's propensity for criminal activity and being unattractive increases it. Being very attractive is also positively associated with wages and with adult vocabulary test scores, which implies that beauty may have an impact on human capital formation. The results suggest that a labor market penalty provides a direct incentive for unattractive individuals toward criminal activity. The level of beauty in high school is associated with criminal propensity seven to eight years later, which seems to be due to the impact of beauty in high school on human capital formation, although this avenue seems to be effective for females only.

I am too ugly to get a job.
—A Miami man's statement in 2003 as to why he committed robberies

I. Introduction

IT has been shown that beauty is positively related to earnings in the labor market (Hamermesh & Biddle, 1994; Biddle & Hamermesh, 1998; Harper, 2000; Hamermesh, Meng, & Zhang, 2002), and that better-looking people sort themselves into occupations, and sectors within occupations, where an earnings premium exists on beauty (Hamermesh & Biddle, 1994; Biddle & Hamermesh, 1998). Persico, Postlewaite, and Silverman (2004) demonstrate that taller workers receive a wage premium, which can be traced back to their height in high school, and that this effect is due to the impact of height on participation in high school sports and clubs. Along the same lines, Kuhn and Weinberger (2005) show that leadership skills in high school generate positive wage effects later in life. These are important and provocative findings regarding the development of a more complete understanding of wage determination, because they underline the significance of noncognitive factors in determining worker rewards. In addition, they point to nontraditional human capital components (e.g., skills acquired through socialization in high school) that are evidently valued in the labor market.

These findings give rise to an interesting hypothesis regarding workers' response to labor market incentives. If beauty commands a positive earnings premium in the legal labor market and if criminal activity is a labor market choice of rational agents where the decision to engage in crime is made by comparing the financial rewards from crime to those obtained from legal work,[1] then it is expected that less attractive people sort themselves into the criminal sector.[2]

In this paper, we provide evidence regarding the association between beauty and the extent of criminal activity of individuals. We find that unattractive individuals commit more crime in comparison to average-looking ones, and very attractive individuals commit less crime in comparison to those who are average looking. This relationship holds for a number of self-reported criminal activity measures.

Consistent with previous research (Hamermesh & Biddle, 1994; Biddle & Hamermesh, 1998), we find that beauty is positively related to wages. We also show that beauty is positively related to the scores received on an achievement test taken as a young adult, which suggests that being an unattractive student in high school may have hindered human capital development, possibly through teacher and peer interactions. We provide evidence supporting this hypothesis in models where the extent of prelabor market beauty (beauty in high school) explains adult crime, controlling for adult beauty and an extensive array of background characteristics. This result is consistent with empirical evidence reported by Figlio (2005), who shows that teachers in a Florida school district have lower expectations of children who have names that are associated with low socioeconomic status.[3] Our results are also consistent with recent experimental evidence provided by Mobius and Rosenblatt (2006), who find that physically attractive individuals have better communication skills, which translate into higher wages. Mobius and Rosenblatt (2006) cite Hatfield and Sprecher (1986) to suggest that preferential treatment of better-looking children by teachers generates confidence and social skills in these young people, which lead to better communication skills and higher wages.

Given the result that high school beauty is related to criminal involvement after high school (controlling for beauty in these years), we investigate whether this result emerges because beauty in high school is related to aspects of human capital formation in high school. Our analysis shows that high school beauty is indeed correlated with variables gauging the high school experience of students, such as grade point average, problems with teachers, and suspension from high school.

Taken together, our results suggest two mechanisms through which beauty affects crime. First, a labor market reward to beauty appears to motivate young adults (ages 18

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[1] Individuals also take into account the probabilities of apprehension and conviction, and the severity of punishment (Becker, 1968; Ehrlich, 1973; Block & Heineke, 1975; Mocan, Billups, & Overland, 2005).

[2] Research indicates that criminals who have their physical appearance surgically enhanced are less likely to return to prison (Lewison, 1974).

[3] More specifically, teachers treat children differently in terms of referrals to gifted programs and promotion to the next grade.

to 26) to sort themselves on the margin such that those who are unattractive find it more advantageous to engage in crime. Second, beauty in high school has a separate, independent effect on crime. Here, the pathway appears to be from being unattractive in high school to undesirable high school experience and diminished human capital formation in high school. This second mechanism through which beauty affects crime is more pronounced for females.

It is important to investigate whether beauty is acting as a proxy for some unobservable family or personal background characteristic. Although various analyses in the paper suggest that this is not likely to be the case, we cannot rule out the possibility that some of the observed association between beauty and crime might be due to the impact of unobserved factors. In section II, we describe the data. Section III presents the results and extensions. Section IV presents the interpretations of the results, and section V concludes.

II. Data

The data used in the analyses are drawn from the three waves of the National Longitudinal Study of Adolescent Health (Add Health).[4] The first wave of Add Health was administered between September 1994 and April 1995 to 20,745 nationally representative set of adolescents in grades 7 through 12. The adolescents were interviewed for the second time in 1996 for wave II and for the third time between August 2001 and April 2002 for wave III. We use data from wave III, where the individuals are 18 to 26 years old. In some models, we also employ data from waves I and II.

The respondents were asked whether they had committed any of the following acts in the twelve months prior to the interview date: robbery, burglary, assault, selling drugs, damaging property, and theft. Survey administrators took several steps to maintain data security and to minimize the potential for interviewer or parental influence. First, respondents were not provided printed questionnaires. Rather, all data were recorded on laptop computers. Second, the respondents listened to prerecorded questions through earphones for sensitive topics such as delinquent behavior. They then entered their answers directly on the laptops.

At the end of each interview, the interviewer filled out a short survey marking his or her opinions on several characteristics of the respondent. To gauge the level of beauty of the respondents, the interviewers were asked the following question: "How physically attractive is the respondent?" Possible answers were (1) very unattractive, (2) unattractive, (3) about average, (4) attractive, and (5) very attractive. Table 1 shows the distribution of beauty ratings among respondents in the third wave when the respondents are in the age range of 18 to 26. Among both males and females, about 7% of respondents were rated as being either very unattractive or unattractive by the interviewers. Roughly half of the full sample was rated as either attractive or very attractive. The proportion rated as attractive or very attractive was higher for females than males. This is consistent with the samples from other studies (e.g., Hamermesh & Biddle, 1994). The rating of females seemed to be more dispersed about the average category. This is also common in other studies and is consistent with the sociopsychological literature, which suggests that women's appearances generate stronger reactions (both negative and positive) than men's (Hatfield & Sprecher, 1986). The ratings in our sample are somewhat more skewed toward being more beautiful than both the Canadian and the U.S. samples that Hamermesh and Biddle (1994) used. However, when the QES sample Hamermesh and Biddle (1994) used is adjusted for age, it produces a similar beauty distribution.[5]

Table 1.—Distribution of Attractiveness Ratings among Young Adults (Ages 18–26) in Wave III

Category	Full Sample	Males	Females
1. Very unattractive	1.94%	1.37%	2.44%
2. Unattractive	5.01%	5.22%	4.81%
3. About average	45.87%	51.82%	40.55%
4. Attractive	35.96%	33.66%	38.00%
5. Very attractive	11.23%	7.92%	14.19%
N	15,179	7,159	8,020

Beauty may be in the eye of the beholder if beholders come from different cultures and from different times. As Hamermesh and Biddle (1994) described in detail, there is tremendous consistency in the standard of beauty within a culture in a given time period. Nevertheless, in the paper, we address the possibility of different evaluators having different standards of attractiveness.

For empirical analyses, we categorize individuals into the following three groups: Very Attractive, which captures the individuals who received the highest rating of 5; Unattractive, which includes those who received a rating of 1 or 2; and the middle (control group), which consists of those who received a rating of 3 (about average) or 4 (attractive). To investigate the sensitivity of our results to the manner in which beauty is measured, we also present results from a four-way classification, which divides individuals into the following groups: very attractive (category 5), attractive (category 4), average (category 3), and below average

[4] Add Health is a program project designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris and funded by grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from seventeen other agencies. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Persons interested in obtaining data files from Add Health should contact Add Health, Carolina Population Center, 123 W. Franklin Street, Chapel Hill, NC 27516-2524 (addhealth@unc.edu). No direct support was received from grant P01-HD31921 for this analysis.

[5] In the QES sample used by Hamermesh and Biddle (1994), of all individuals (ages 18 to 64), 32% were in the top two beauty categories and 14% were in the bottom two. Among 18 to 26 year olds (the age group of this paper), the rates were 45% and 10%, respectively. We thank Dan Hamermesh for providing this information.

TABLE 2.—DISTRIBUTION OF ATTRACTIVENESS IN WAVES I AND II

	Wave 1			Wave 2		
	Full Sample	Male	Female	Full Sample	Male	Female
Unattractive	6.56%	7.03%	6.11%	5.19%	6.27%	4.16%
About average	78.36%	82.45%	74.36%	81.61%	84.43%	78.94%
Very attractive	15.08%	10.51%	19.53%	13.21%	9.30%	16.91%
N	20,674	10,210	10,464	14,689	7,142	7,547

	Wave 2			
Wave 1	Unattractive	About Average	Very Attractive	Row Sum
Unattractive	208	640	40	888
About average	501	9,879	464	10,844
Very attractive	51	1,439	1,432	2,922
Column sum	760	11,958	1,936	*n = 14,654*

Note: Unattractive includes ratings 1 and 2 (very unattractive and unattractive). About Average includes ratings 3 and 4, and Attractive consists of individuals who received the highest rating, 5. The bottom panel of the table displays the number of individuals and their beauty classifications who were rated in both waves I and II by different observers.

(categories 1 and 2). The beauty question was also asked in the first two waves of the Add Health survey. Evaluations were provided by different interviewers. The top panel of table 2 displays the distribution of beauty ratings in waves I and II. Note that in table 2, consistent with empirical analyses, Unattractive includes categories 1 and 2 (very unattractive and unattractive), About Average includes categories 3 and 4, and Very Attractive includes the top category 5. The distributions are similar to the one obtained from wave III. The bottom panel of table 2 presents information about the individuals who were rated in both waves. As can be seen, there is a high degree of consistency between the ratings assigned to people in the two waves. About 79% of the 14,654 individuals who were rated in both waves were classified in the same beauty group in both waves. Only 0.6% of individuals were classified as Very Attractive in wave II when they were classified as Unattractive in wave I, or vice versa.[6]

When we did the same exercise for three waves of the survey, we found that 85% of the sample was assigned either the same rating (on a scale from 1 to 5) in at least two of the three surveys in (waves I, III, and III). Seventy-five percent of the individuals in the sample were either assigned the same rating in each of the three waves by different interviewers or were given the same rating in any of the two of the three waves and were off by 1 in the other wave. This is a high degree of agreement across evaluators and time periods, especially because six years had lapsed between the first and the third waves and also because the individuals transitioned from childhood to adulthood during this time period.

Table 3 presents the descriptive statistics of the data obtained from the third wave. The variables that measure the extent of criminal activity are listed in the top section of the table. Indicators of criminal activity are self-reported involvement in robbery, burglary, assault, selling drugs, theft, and damaging property. We also construct an aggregate nondrug crime indicator to gauge whether the individual committed theft, burglary, robbery, assault, or damaged property in the past twelve months. The rates of risky behaviors reported in Add Health, such as crime and illicit drug use, were comparable to those in other national sources (Mocan & Tekin, 2005, 2006a, 2006b).

Personal characteristics of the individual are age, race/ethnicity, nonwage income, self-reported health status, whether he or she was born in the United States, birth weight, and religious affiliation.[7] These variables attempt to control for attributes of the individuals that may influence their propensity toward criminal behavior. We also control for a rich set of socioeconomic background variables, which include family and parent attributes that are also potential determinants of the behavior of the individual and may be correlated with beauty. Specifically, we control for such characteristics as the mother's education, whether the family was on welfare, family income, whether the father was biological or a stepfather, the age of the mother at birth, whether the father was in jail, and birth weight. These variables are measured in wave I, when the individual was in high school.

III. Results

Table 4 presents the results pertaining to the relationship between attractiveness and criminal behavior for females and males separately. The estimated coefficients or crime supply equations similar to Grogger (1998), Levitt (1998), Corman and Mocan (1998), and Mocan and Rees (2005). (The details of the analytical framework

[6] This is a high degree of consistency, especially because waves I and II pertain to the adolescent years, where the change of physical appearance is likely to be fast. However, it is pertinent to note that our main models employ data from wave III.

[7] Currie and Moretti (2007) document strong intergenerational correlations in birth weight, which they show is an indicator of future income. Similarly, Black, Devereux, and Salvanes (2007) show that within-twin estimates reveal long-run effects of birth weight on outcomes such as earnings and education. Thus, we include the birth weight of the individual to account for a measure of health at birth, which may be correlated with future socioeconomic status.

TABLE 3.—DEFINITIONS AND DESCRIPTIVE STATISTICS

Variable Name	Definition	Males		Females	
		Mean	Standard Deviation	Mean	Standard Deviation
Crime variables					
Damage[a]	= 1 if deliberately damaged property that belonged to someone else in the past 12 months, = 0 otherwise	0.137	0.344	0.043	0.203
Burglary[a]	= 1 if went into a house or building to steal something in the past 12 months, = 0 otherwise	0.029	0.167	0.010	0.099
Robbery[a]	= 1 if used or threatened to use a weapon to get something from someone else in the past 12 months, = 0 otherwise	0.031	0.174	0.010	0.101
Theft[a]	= 1 if stole something worth more than $50 in the past 12 months, = 0 otherwise	0.049	0.215	0.020	0.140
Assault[a]	= 1 if pulled a knife on someone, shot someone, or badly hurt someone in the past 12 months, = 0 otherwise	0.125	0.331	0.040	0.197
Selling drugs[a]	= 1 if sold marijuana or other drugs in the past 12 months, = 0 otherwise	0.116	0.320	0.037	0.188
Nondrug crime[a]	= 1 if committed burglary, theft, robbery, assault, or damaged property into past 12 months, = 0 otherwise	0.258	0.438	0.098	0.298
Labor market and human capital outcomes					
Wage[b]	Hourly wage rate	11.148	7.001	10.159	6.980
PPVT percentile[c]	Percentile ranking from the Add Health Peabody Picture Vocabulary test score	50.682	29.270	48.415	29.977
Explanatory variables					
Age18[d]	= 1 if 18 years old, = 0 otherwise	0.009	0.093	0.011	0.102
Age19	= 1 if 19 years old, = 0 otherwise	0.086	0.281	0.102	0.303
Age20	= 1 if 20 years old, = 0 otherwise	0.123	0.328	0.140	0.347
Age21	= 1 if 21 years old, = 0 otherwise	0.154	0.361	0.167	0.373
Age22	= 1 if 22 years old, = 0 otherwise	0.194	0.396	0.186	0.389
Age23	= 1 if 23 years old, = 0 otherwise	0.195	0.396	0.187	0.390
Age24	= 1 if 24 years old, = 0 otherwise	0.169	0.375	0.155	0.362
Age25	= 1 if 25 years old, = 0 otherwise	0.058	0.234	0.046	0.209
Age26	= 1 if 26 years old, = 0 otherwise	0.011	0.106	0.006	0.078
Hispanic	= 1 if Hispanic ethnicity, = 0 otherwise	0.171	0.376	0.156	0.363
Hispanic missing	= 1 if ethnicity is missing, = 0 otherwise	0.002	0.044	0.002	0.040
White	= 1 if white, = 0 otherwise	0.654	0.476	0.642	0.479
Black	= 1 if Black, = 0 otherwise	0.208	0.406	0.241	0.428
Other race[d]	= 1 if other race, = 0 otherwise	0.121	0.326	0.101	0.301
Race missing	= 1 if race is missing, = 0 otherwise	0.017	0.129	0.015	0.126
Nonwage1	= 1 if nonwage income is negative or $0, = 0 otherwise	0.543	0.498	0.516	0.500
Nonwage2	= 1 if nonwage income is between $0 and $5,000, = 0 otherwise	0.283	0.450	0.312	0.463
Nonwage3	= 1 if nonwage income is between $5,000 and $10,000, = 0 otherwise	0.050	0.217	0.052	0.223
Nonwage4[d]	= 1 if nonwage income is more than $10,000, = 0 otherwise	0.125	0.330	0.119	0.324
Nonwage missing	= 1 if nonwage income is missing, = 0 otherwise	0.071	0.257	0.067	0.250
Healthy	= 1 if in good or better health, = 0 otherwise	0.963	0.188	0.945	0.227
Healthy missing	= 1 if health is missing, = 0 otherwise	0	0	0.0002	0.016
USborn	= 1 if born in the U.S., = 0 otherwise	0.916	0.278	0.922	0.268
USborn missing	= 1 if U.S. born is missing, = 0 otherwise	0.0001	0.012	0.0002	0.016
Catholic	= 1 if religion is Catholic, = 0 otherwise	0.252	0.434	0.249	0.433
Protestant	= 1 if religion is Protestant, = 0 otherwise	0.363	0.481	0.428	0.495
No religion	= 1 if believes in no religion, = 0 otherwise	0.225	0.418	0.181	0.385
Other religion[d]	= 1 if believes in other religion, = 0 otherwise	0.142	0.349	0.127	0.333
Religion missing	= 1 if religion is missing, = 0 otherwise	0.017	0.130	0.015	0.120
Jailed father	= 1 if father was ever jailed, = 0 otherwise	0.133	0.340	0.141	0.348
Jailed father missing	= 1 if jailed father is missing, = 0 otherwise	0.073	0.261	0.068	0.252
Mother high school[d]	= 1 if mother has less than high school degree, = 0 otherwise	0.132	0.338	0.156	0.363
Mother high school	= 1 if mother has high-school degree, = 0 otherwise	0.322	0.467	0.310	0.463
Mother high school +	= 1 if mother had more than high school degree, = 0 otherwise	0.435	0.496	0.437	0.496
Mother education missing	= 1 if mother's education is missing, = 0 otherwise	0.111	0.315	0.097	0.296
Parental welfare	= 1 if parents were receiving welfare during wave I, = 0 otherwise	0.071	0.256	0.080	0.272
Parental welfare missing	= 1 if parental welfare is missing, = 0 otherwise	0.138	0.345	0.144	0.352
Biological father	= 1 if biological father was present during wave 1, = 0 otherwise	0.604	0.489	0.562	0.496
Stepfather	= 1 if stepfather was present during wave 1, = 0 otherwise	0.108	0.311	0.109	0.312
Father absent	= 1 if the father is absent during wave 1, = 0 otherwise	0.003	0.059	0.003	0.055
Father information is missing[d]	= 1 if the father information is missing during wave 1, = 0 otherwise	0.284	0.451	0.326	0.469
Mother's age at birth 1[d]	= 1 if mother's age at birth was less than 19, = 0 otherwise	0.073	0.261	0.078	0.268
Mother's age at birth 2	= 1 if mother's age at birth was between 20 and 30, = 0 otherwise	0.507	0.500	0.520	0.500
Mother's age at birth 3	= 1 if mother's age at birth was between 31 and 40, = 0 otherwise	0.134	0.342	0.131	0.337

TABLE 3.—*(CONTINUED)*

Variable Name	Definition	Males		Females	
		Mean	Standard Deviation	Mean	Standard Deviation
Mother's age at birth 4	= 1 if mother's age at birth was 41 or more, = 0 otherwise	0.007	0.085	0.005	0.074
Mother's age at birth missing	= 1 if mother's age at birth was missing, = 0 otherwise	0.278	0.448	0.267	0.442
Parental income 1[d]	= 1 if total parental income was less $10,000, = 0 otherwise	0.058	0.233	0.060	0.237
Parental income 2	= 1 if total parental income was between $10,000 and $25,000, = 0 otherwise	0.160	0.366	0.158	0.365
Parental income 3	= 1 if total parental income was between $25,000 and $75,000, = 0 otherwise	0.435	0.496	0.420	0.494
Parental income 4	= 1 if total parental income was between $75,000 and $125,000, = 0 otherwise	0.094	0.292	0.088	0.284
Parental income 5	= 1 if total parental income was more than $125,000, = 0 otherwise	0.017	0.130	0.022	0.146
Parental income missing	= 1 if total parental income was missing, = 0 otherwise	0.236	0.425	0.252	0.434
Birthweight1	= 1 if birth weight was less than 1,500 grams, = 0 otherwise	0.018	0.133	0.019	0.135
Birthweight2	= 1 if birth weight was between 1,500 and 2,500 grams, = 0 otherwise	0.065	0.247	0.082	0.274
Birthweight3[d]	= 1 if birth weight was more than 2,500 grams, = 0 otherwise	0.734	0.442	0.717	0.450
Birthweight missing	= 1 if birth weight is missing, = 0 otherwise	0.183	0.389	0.182	0.386
Number of observations		7,159		8,020	

Note: Wave I pertains to 1994–1995, when the respondents were first surveyed while they were in high school.
[a] Numbers of observations range from 7,034 to 7,147 for males and from 7,959 to 8,015 for females.
[b] Numbers of observations for Wage are 4,745 and 4,896 for males and females, respectively.
[c] Numbers of observations for PPVT percentile are 6,881 and 7,753 for males and females, respectively.
[d] Omitted category.

can be found in Mocan & Tekin, 2006.) The reported coefficients are obtained from linear probability models. Robust standard errors are in parentheses. Estimation of logit models generated similar results. The table displays the results from three specifications. Model I includes no control variables. Model II includes personal characteristics of the individual in addition to the level of beauty: age, race, Hispanic ethnicity, birth weight, nonwage income, health status, religious affiliation, and whether the person was born in the United States. Model III contains the same explanatory variables as model II, but it also includes family socioeconomic background characteristics: family income when the individual was in high school; whether parents were receiving welfare; mother's education; whether the father was biological, stepfather, or absent; mother's age at birth; and whether father was ever jailed. In each model only the coefficients of two beauty dummies (Very Attractive and Unattractive) are reported.[8] By comparing models with and without personal and socioeconomic background characteristics, we can investigate the extent to which the relationship between attractiveness and criminal outcomes is affected by the inclusion of detailed controls for observable characteristics.

One concern is that each interviewer may have a different standard for beauty. To the extent that these differing standards are correlated with the respondents' criminal behavior, our estimates may be biased. To guard against this potential problem, models II and III are estimated using interviewer-specific fixed effects in addition to the set of controls described above. A number of aspects of table 4 are noteworthy. First, the estimated coefficients are of the expected sign in the overwhelming majority of the cases. For example, in case of females, the coefficient of Very Attractive is negative in six of seven crime measures. Similarly, the coefficient of Unattractive is positive in six of seven cases. For males, all of the coefficients are of expected signs in models with control variables. Second, the estimated coefficients are stable across specifications. Put differently, inclusion of personal characteristics (model II) and personal and family characteristics (model III) does not change the magnitude of the estimated beauty effects appreciably. This suggests that the measure of beauty is not likely to be correlated with personal or family attributes.

Although the results lend support to theoretical expectations, not all the coefficients are statistically significant at conventional levels. This is not surprising given that crime is a rare outcome in the data. For females, beauty has a statistically significant impact on all crimes but theft and burglary. Being a very attractive female reduces the propensity to damage property by 1.1 percentage points, to commit nondrug crime (burglary, theft, robbery, assault, or property damage) by 2.5 percentage points, and the propensity to assault somebody by 2 percentage points in comparison to being of average attractiveness in the most comprehensive model (III). The coefficient is not quite significant ($p = 0.11$) in the case of burglary. Being an unattractive female increases the

[8] The models do not include deterrence variables such as the arrest rates or the size of the police force, because we have no information on the geographic location of the individuals in the data. However, the extent of the beauty of the individual and the level of deterrence in his or her locality should be uncorrelated. Therefore, the omission of deterrence variables does not bias the estimated coefficients of beauty variables.

TABLE 4.—EFFECT OF BEAUTY ON CRIME, WAVE III

	Females						
	Damaging Property	Burglary	Robbery	Theft	Assault	Nondrug Crime	Selling Drugs
I							
Very Attractive	−0.013**	−0.005*	−0.0005	0.001	−0.023***	−0.031***	−0.004
	(0.006)	(0.002)	(0.003)	(0.005)	(0.005)	(0.009)	(0.006)
Unattractive	−0.005	0.007	0.017***	0.001	0.031***	0.019	0.029***
	(0.009)	(0.006)	(0.007)	(0.006)	(0.011)	(0.014)	(0.011)
Control variables	No	No	No	No	No	No	No
Interviewer fixed effects	No	No	No	No	No	No	No
II							
Very Attractive	−0.012*	−0.004	−0.0004	0.003	−0.021***	−0.026***	−0.005
	(0.006)	(0.003)	(0.003)	(0.005)	(0.005)	(0.009)	(0.006)
Unattractive	−0.006	0.008	0.015**	0.003	0.022**	0.012	0.029***
	(0.009)	(0.006)	(0.007)	(0.007)	(0.011)	(0.014)	(0.011)
Control variables	Personal attributes	Personal attributes	Personal attributes	Personal attributes	Personal attributes	Personal attributes	Personal attributes
Interviewer fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
III							
Very Attractive	−0.011*	−0.005	−0.0002	0.003	−0.020***	−0.025***	−0.006
	(0.006)	(0.003)	(0.003)	(0.005)	(0.005)	(0.009)	(0.006)
Unattractive	−0.006	0.008	0.015**	0.004	0.022**	0.012	0.030***
	(0.009)	(0.006)	(0.007)	(0.007)	(0.011)	(0.014)	(0.011)
Control variables	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES
Interviewer fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	7,959	7,976	7,974	7,974	8,003	7,966	7,960
	Males						
	Damaging Property	Burglary	Robbery	Theft	Assault	Nondrug Crime	Selling Drugs
I							
Very Attractive	−0.006	0.001	−0.011*	−0.004	−0.009	−0.009	−0.022*
	(0.015)	(0.007)	(0.006)	(0.009)	(0.014)	(0.019)	(0.013)
Unattractive	0.013	0.009	0.023**	0.031**	0.023	0.036*	0.017
	(0.017)	(0.009)	(0.011)	(0.013)	(0.017)	(0.022)	(0.016)
Control variables	No	No	No	No	No	No	No
Interviewer fixed effects	No	No	No	No	No	No	No
II							
Very Attractive	−0.002	−0.002	−0.012*	−0.006	−0.012	−0.012	−0.023
	(0.016)	(0.008)	(0.007)	(0.010)	(0.014)	(0.020)	(0.014)
Unattractive	0.011	0.001	0.023**	0.025*	0.010	0.019	0.005
	(0.019)	(0.009)	(0.011)	(0.013)	(0.018)	(0.023)	(0.017)
Control variables	Personal attributes	Personal attributes	Personal attributes	Personal attributes	Personal attributes	Personal attributes	Personal attributes
Interviewer fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
III							
Very Attractive	−0.001	−0.001	−0.010	−0.006	−0.006	−0.006	−0.021
	(0.016)	(0.008)	(0.007)	(0.009)	(0.014)	(0.020)	(0.014)
Unattractive	0.012	0.001	0.023**	0.024*	0.005	0.017	0.004
	(0.019)	(0.009)	(0.011)	(0.013)	(0.018)	(0.023)	(0.017)
Control variables	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES
Interviewer fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	7,047	7,076	7,075	7,067	7,147	7,103	7,034

Note: The number of observations remain the same between models I, II, and III for each crime. Robust standard errors are in parentheses. * Estimated coefficients is statistically different from 0 at the 10% level, ** significance at 5%, and *** significance at 1% or better. Model I includes no control variables. Model II includes age, race, Hispanic ethnicity, nonwage income, health status, religious affiliation, and whether the person was born in the United States. Model III contains the same explanatory variables as model II, but it also includes family socioeconomic background characteristics: family income in 1994; mother's education; whether the father was biological, stepfather, or absent; mother's age at birth; whether father was ever jailed; and whether parents were receiving welfare.

propensity for robbery by 1.5 percentage points, the propensity to assault by 2.2 percentage points, and selling drugs by 3 percentage points. For males, we observe that the coefficients of Very Attractive are always negative in the most comprehensive model (model III), and the coefficients of Unattractive are always positive once the models include interviewer fixed effects, although the coefficients are estimated with less precision. We provide more evidence on robustness of the results in section IIIB.

A. Alternative Specifications

An alternative method to categorize beauty is to use the four-way classification described earlier. The results from this specification of attractiveness are presented in table 5 and are consistent with those in table 4. As in table 4, in the overwhelming majority of the cases, the coefficients are of the expected sign. An interesting finding in this table is that the absolute values of the coefficients of Very Attractive are larger than those of Attractive, indicating that attractive individuals commit less crime in comparison to those with average attractiveness (the left-out category) and very attractive individuals commit less crime in comparison to attractive ones. Consistent with table 4, the effect of attractiveness on criminal behavior is found to be weaker for males, but the directions of the effects are mostly consistent with our predictions.

We also used all three beauty ratings assigned to the individuals in the three waves of the survey and added up these three ratings. Thus, an individual's total beauty rating after three evaluations can range from 3 (being rated 1 in each case) to 15 (being rated 5 in each case). We classified individuals into three categories: very attractive (if total rating is greater than or equal to 14), unattractive (if the total rating is less than or equal to 9), and average (if total rating is between 10 and 13). The results of this specification are reported in table 6. They are consistent with those reported in table 4, but here beauty has no impact on robbery for females and no impact on theft for males. Now, the coefficients of both Very Attractive and Unattractive, which were not quite significant for males in table 4, become statistically significant in this specification. In table 6, very attractive females are about 2 percentage points less likely to damage property and 0.5 percentage points less likely to burglarize in comparison to average-looking ones. Unattractive females are 1.4 percentage points more likely to damage property, 1.8 percentage points more likely to assault somebody, about 1 percentage point more likely to sell drugs, and 2.8 percentage points more likely to commit nondrug crime. In the case of males, unattractive individuals are about 1 percentage point more likely to commit robbery and 1.7 percentage points more likely to sell drugs in comparison to average-looking males. Very attractive males are 4 percentage points less likely to sell drugs. These magnitudes are similar to those reported in table 4, which were based on wave III data.[9]

[9] It is not feasible to analyze the impact of the change in beauty between high school and adult years on the change in crime between the same periods for two reasons. First, the ratings of beauty are, though not perfectly, highly correlated between time periods; thus, first-differenced beauty ratings do not provide much information. Second, although we can take the difference in criminal activity between adult and high school periods, conceptually they are not quite comparable because adults presumably make the crime-work decision as a labor market choice in wave III, but the decision to engage in crime in high school may have been done in a different framework.

One legitimate concern is that each interviewer might have a different standard for beauty. As Hamermesh and Biddle (1994) point out, these differences could be regarded as a source of measurement error, which would bias our estimates toward 0 to the extent that interviewer standards are randomly correlated with the respondents' criminal propensities. Including interviewer fixed effects, as we do throughout the paper, accounts for this potential confounding. It is also conceivable that male and female interviewers provided systematically different beauty ratings. A great majority of our interviewers (about 80 percent) are female, and when we estimated our models restricting the sample to female interviewers only, the results remained essentially the same.[10] A similar argument can be made for the differences in ratings between interviewers of different races. More than 77% of the interviewers are white. The results did not change when the models were reestimated with white interviewers only. We also restricted the sample to white respondents who were rated by white interviewers. Estimating the models using this subsample did not alter the results in a systematic way. Despite the reduction in the sample size, the signs of all estimated coefficients remained the same. For females, although the impact of attractiveness on damaging property and robbery became insignificant, attractiveness became statistically significant in the burglary regression. For males, the coefficient of very attractive turned insignificant for robbery and theft, but it became significant in damage and burglary.

B. Extensions

Wages and Beauty. For the sorting mechanism to be effective, there should be a labor market premium to beauty as discussed in section I. Although earlier papers have demonstrated this effect, it is important to investigate its existence in this data set as well. We estimated models where the logarithm of hourly wages of the individuals is regressed on the same large set of explanatory variables and the beauty dummy variables. The results obtained from the third wave and the sample of all three waves with nonmissing beauty ratings are displayed in table 7. The coefficients are always consistent with the sorting mechanism and are always significant. More specifically, for females, the analysis of individuals in wave III indicates that being very attractive is associated with a wage premium of 6.5%, and being unattractive is associated with a wage penalty of 4.3%.

In the sample of individuals who received beauty ratings in all three waves (the lower panel of table 7), the beauty premium is 4.5% for females, and being unattractive is associated with a reduction in wages by 7%. For males, being very attractive commands a wage premium of 10.7%,

[10] The distribution of ratings provided by female raters is as follows by order of category: 2.01%, 4.90%, 44.72%, 36.55%, and 11.83%. The ratings provided by male interviewers were distributed as 1.61%, 5.73%, 50.25%, 33.33%, and 9.07%.

TABLE 5.—EFFECT OF BEAUTY ON CRIME (FOUR-WAY CLASSIFICATION OF BEAUTY), WAVE III

	Females						
	Damaging Property	Burglary	Robbery	Theft	Assault	Nondrug Crime	Selling Drugs
I							
Very Attractive	−0.017***	−0.007***	−0.001	−0.002	−0.030***	−0.043***	−0.006
	(0.007)	(0.003)	(0.003)	(0.005)	(0.006)	(0.009)	(0.006)
Attractive	−0.008	−0.005**	−0.001	−0.007**	−0.015***	−0.025***	−0.003
	(0.005)	(0.003)	(0.002)	(0.003)	(0.005)	(0.008)	(0.005)
Unattractive	−0.009	0.005	0.016**	−0.002	0.024**	0.007	0.028***
	(0.009)	(0.006)	(0.007)	(0.007)	(0.011)	(0.015)	(0.011)
Control variables	No	No	No	No	No	No	No
Interviewer fixed effects	No	No	No	No	No	No	No
II							
Very Attractive	−0.017**	−0.007**	−0.0007	−0.0002	−0.026***	−0.036***	−0.007
	(0.007)	(0.003)	(0.004)	(0.005)	(0.006)	(0.010)	(0.007)
Attractive	−0.010*	−0.005*	0.000	−0.006*	−0.010*	−0.019**	−0.002
	(0.006)	(0.003)	(0.003)	(0.004)	(0.005)	(0.008)	(0.005)
Unattractive	−0.011	0.005	0.015**	0.0002	0.018*	0.003	0.028***
	(0.009)	(0.006)	(0.007)	(0.007)	(0.011)	(0.015)	(0.011)
Control variables	Personal attributes	Personal attributes	Personal attributes	Personal attributes	Personal attributes	Personal attributes	Personal attributes
Interviewer fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
III							
Very Attractive	−0.016**	−0.007**	0.0004	−0.0008	−0.025***	−0.034***	−0.007
	(0.007)	(0.003)	(0.004)	(0.005)	(0.006)	(0.010)	(0.007)
Attractive	−0.010*	−0.005*	0.0003	−0.007*	−0.009*	−0.018**	−0.003
	(0.006)	(0.003)	(0.003)	(0.004)	(0.005)	(0.008)	(0.005)
Unattractive	−0.011	0.005	0.016**	0.0005	0.018	0.003	0.028***
	(0.009)	(0.006)	(0.007)	(0.007)	(0.011)	(0.015)	(0.011)
Control variables	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES
Interviewer fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	7,959	7,976	7,974	7,974	8,003	7,966	7,960
	Males						
	Damaging Property	Burglary	Robbery	Theft	Assault	Nondrug Crime	Selling Drugs
I							
Very Attractive	−0.004	−0.001	−0.012*	−0.004	−0.011	−0.008	−0.027**
	(0.015)	(0.008)	(0.007)	(0.009)	(0.014)	(0.020)	(0.014)
Attractive	0.005	−0.004	−0.003	−0.001	−0.003	0.001	−0.013
	(0.009)	(0.004)	(0.004)	(0.006)	(0.009)	(0.011)	(0.008)
Unattractive	0.015	0.007	0.022**	0.031**	0.021	0.036*	0.012
	(0.018)	(0.009)	(0.011)	(0.013)	(0.017)	(0.022)	(0.017)
Control variables	No	No	No	No	No	No	No
Interviewer fixed effects	No	No	No	No	No	No	No
II							
Very Attractive	−0.002	−0.004	−0.012*	−0.007	−0.016	−0.014	−0.028**
	(0.017)	(0.008)	(0.007)	(0.010)	(0.015)	(0.021)	(0.015)
Attractive	0.000	−0.004	−0.002	−0.003	−0.007	−0.005	−0.012
	(0.010)	(0.005)	(0.005)	(0.006)	(0.009)	(0.012)	(0.009)
Unattractive	0.011	−0.001	0.023**	0.024*	0.007	0.017	0.000
	(0.019)	(0.010)	(0.012)	(0.013)	(0.018)	(0.024)	(0.017)
Control variables	Personal attributes	Personal attributes	Personal attributes	Personal attributes	Personal attributes	Personal attributes	Personal attributes
Interviewer fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
III							
Very Attractive	−0.002	−0.004	−0.011	−0.008	−0.009	−0.009	−0.026*
	(0.017)	(0.008)	(0.007)	(0.010)	(0.015)	(0.021)	(0.015)
Attractive	−0.002	−0.005	−0.001	−0.003	−0.005	−0.005	−0.013
	(0.010)	(0.005)	(0.005)	(0.006)	(0.009)	(0.012)	(0.009)
Unattractive	0.011	−0.001	0.022**	0.023*	0.003	0.015	−0.001
	(0.019)	(0.010)	(0.012)	(0.013)	(0.018)	(0.024)	(0.017)
Control variables	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES	Personal attributes and SES
Interviewer fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	7,047	7,076	7,075	7,067	7,147	7,103	7,034

Note: See notes to table 4.

TABLE 6.—EFFECT OF BEAUTY ON CRIME, WAVES I, II, AND III (INDIVIDUALS WITH NO MISSING BEAUTY INFORMATION)[a]

	Damaging Property	Burglary	Robbery	Theft	Assault	Nondrug Crime	Selling Drugs
Females							
I							
Very Attractive	−0.022***	−0.006*	−0.005	−0.005	−0.002	−0.024*	−0.008
	(0.007)	(0.003)	(0.003)	(0.006)	(0.008)	(0.013)	(0.008)
Unattractive	0.014**	0.002	0.006*	0.001	0.025***	0.035***	0.011*
	(0.007)	(0.003)	(0.004)	(0.005)	(0.007)	(0.010)	(0.006)
Control variables	No	No	No	No	No	No	No
II							
Very Attractive	−0.019***	−0.005	−0.004	−0.004	0.001	−0.016	−0.007
	(0.007)	(0.003)	(0.003)	(0.006)	(0.009)	(0.012)	(0.008)
Unattractive	0.015**	0.001	0.005	0.0004	0.020***	0.029***	0.011*
	(0.007)	(0.003)	(0.004)	(0.005)	(0.007)	(0.010)	(0.006)
Control variables	Personal attributes	Personal attributes	Personal attributes	Personal attributes	Personal attributes	Personal attributes	Personal attributes
III							
Very Attractive	−0.020***	−0.005*	−0.003	−0.004	0.001	−0.015	−0.007
	(0.007)	(0.003)	(0.003)	(0.006)	(0.009)	(0.012)	(0.008)
Unattractive	0.014**	0.001	0.005	0.0003	0.018***	0.028***	0.011*
	(0.007)	(0.003)	(0.004)	(0.004)	(0.007)	(0.010)	(0.006)
Control variables	Personal and family attributes	Personal and family attributes	Personal and family attributes	Personal and family attributes	Personal and family attributes	Personal and family attributes	Personal and family attributes
Number of observations	6,091	6,103	6,098	6,099	6,126	6,100	6,090
Males							
	Damaging Property	Burglary	Robbery	Theft	Assault	Nondrug Crime	Selling Drugs
I							
Very Attractive	0.001	−0.003	0.003	−0.02	0.007	0.015	−0.045**
	(0.031)	(0.015)	(0.015)	(0.015)	(0.029)	(0.039)	(0.023)
Unattractive	−0.009	−0.003	0.011**	0.002	0.017*	0.007	0.017*
	(0.010)	(0.005)	(0.005)	(0.006)	(0.010)	(0.013)	(0.010)
Control variables	No	No	No	No	No	No	No
II							
Very Attractive	0.012	−0.0003	0.004	−0.016	0.011	0.025	−0.041*
	(0.031)	(0.015)	(0.015)	(0.015)	(0.029)	(0.039)	(0.023)
Unattractive	−0.007	−0.003	0.009*	0.001	0.014	0.005	0.015
	(0.010)	(0.005)	(0.005)	(0.006)	(0.010)	(0.013)	(0.010)
Control variables	Personal attributes	Personal attributes	Personal attributes	Personal attributes	Personal attributes	Personal attributes	Personal attributes
III							
Very Attractive	0.010	−0.002	0.003	−0.016	0.009	0.020	−0.040*
	(0.031)	(0.015)	(0.015)	(0.015)	(0.029)	(0.038)	(0.023)
Unattractive	−0.003	−0.003	0.010*	0.001	0.010	0.007	0.017*
	(0.010)	(0.005)	(0.005)	(0.006)	(0.010)	(0.013)	(0.010)
Control variables	Personal and family attributes	Personal and family attributes	Personal and family attributes	Personal and family attributes	Personal and family attributes	Personal and family attributes	Personal and family attributes
Number of observations	5,335	5,354	5,355	5,350	5,400	5,369	5,329

Note: See notes to table 4.

[a] These models do not contain interviewer fixed effects, because being attractive and unattractive are determined by the sum of all three ratings assigned by different interviewers in three different waves.

and being unattractive is associated with a wage reduction of about 4% in the wave III sample. In the sample of individuals with nonmissing beauty rating in all three years, the male wage premium to being very attractive is 10.8%, and the penalty for being unattractive is 7%. Thus, these results confirm that the findings of previous research (Hamermesh & Biddle, 1994; Biddle & Hamermesh, 1998) also hold in this sample of young adults.

Is There a Human Capital Impact of Beauty? The positive impact of beauty on wages reported by previous research and also identified in these data may reflect some unobserved factor that may be correlated with beauty. For example, it has been shown that good-looking people receive more attention at school (Bull & Rumsey, 1988). Also, attractive individuals are considered more trustworthy (Wilson & Eckel, 2005), and young adolescents' physical attractiveness is related to peer relations and academic performance (Lerner et al., 1990). Interestingly, good-looking people receive more attention even from babies (Samuels & Elwy, 1985). It can also be argued that unattractive students may devote themselves to studying because they may have

TABLE 7.—EFFECT OF BEAUTY ON WAGES AND TEST SCORES

	Females		Males	
	Log Wages	Test Score	Log Wages	Test Score
Data Set: Wave III				
Very Attractive	0.065***	2.999***	0.107***	3.706***
	(0.014)	(0.906)	(0.024)	(1.163)
Unattractive	−0.043**	−2.330*	−0.041*	−1.800
	(0.020)	(1.210)	(0.025)	(1.326)
Control variables	Personal and family attributes	Personal and family attributes	Personal and family attributes	Personal and family attributes
Interviewer fixed effects	Yes	Yes	Yes	Yes
Number of observations	4,896	7,753	4,745	6,881
Data Set: Waves I–III Using Individuals with No Missing Beauty Information[a]				
Very Attractive	0.045***	2.340*	0.108***	4.694**
	(0.019)	(1.292)	(0.040)	(2.374)
Unattractive	−0.070***	−3.900***	−0.070***	−3.726***
	(0.014)	(0.850)	(0.014)	(0.791)
Control variables	Personal and family attributes	Personal and family attributes	Personal and family attributes	Personal and family attributes
Number of observations	3,730	5,954	3,521	5,209

Note: * Estimated coefficient is statistically different from 0 at the 10% level, ** significance at 5%, and *** significance at 1% or better.
[a] These models do not contain interviewer fixed effects, because being attractive and unattractive are determined by the sum of all three ratings assigned by different interviewers in three different waves. Robust standard errors are in parentheses.

difficulties in social aspects of schooling. The net impact of beauty on school outcomes therefore could be uncertain. Hamermesh and Parker (2005) find that better-looking university instructors receive higher ratings from students within particular courses of a given department. However, their data do not allow for identification of whether this result emerges because students perceive better-looking instructors as better teachers or better-looking instructors are indeed more productive.

During the third wave of the survey, the individuals in the age range 18 to 26 were given the adult version of the Peabody Vocabulary Test. Table 7 reports the results from the models where these test scores are explained by beauty and all other personal and family characteristics. As can be seen, very attractive females in wave III (the top panel) score 3 percentage points higher in comparison to average-looking females, and unattractive females score 2.3 percentage points lower. In the case of males, very attractive ones score 3.7 percentage points higher, and unattractive ones score 1.8 percentage points lower than average-looking males, although the latter impact is not significantly different from 0. The results from the sample of all three waves (lower panel of table 7) are similar: the coefficients of being very attractive are positive, and the ones for being unattractive are negative for both males and females. All are significant.

These findings are consistent with prior research showing that attractiveness influences achievement and even psychological well-being (Umberson & Hughes, 1987), and they suggest a secondary mechanism through which beauty affects crime. If less attractive students face social and educational disadvantages in high school that hinder their human capital accumulation, then high school beauty would have an impact on current crime because it would act as a proxy for the extent and quality of human capital formation in high school. For example, research indicates that attractive children receive more attention in the classroom than do unattractive children (Clifford & Walster, 1973), and attractiveness influences perceptions of intellectual competence in both adults and children (Jackson, Hunter, & Hodge, 1995).

To investigate the extent to which beauty in high school has an impact on current (adult) crime, we estimate models where current crime is explained by beauty in high school, conditioning on all other explanatory variables. To create a beauty rating for high school, we averaged the ratings assigned to individuals in waves I and II (when they were in high school). The average of the two years' beauty ratings ranges from 1 to 5. Of the 11,567 individuals with nonmissing beauty ratings in waves I and II, 5.6% received an average rating of 2.5, and 5.1% received an average rating of 5. Two dummy variables are created (Very Attractive–High School, and Unattractive–High School) to identify these ratings, which are added as additional explanatory variables to model III.

The results, reported in the first panel of table 8A for females, show that beauty in high school has a statistically significant effect on current criminal activity in the cases of damaging property, assault, and nondrug crime, controlling for all other explanatory variables included in model III. In the bottom panel of table 8A, we present the results of the models for females, where, in addition to the complete set of explanatory variables measuring personal attributes and family background characteristics, beauty in high school as well as current beauty are included as additional explanatory variables. As explained earlier in the paper, beauty ratings that were assigned in high school and those that were

TABLE 8.—EFFECT OF CURRENT BEAUTY ON CRIME, CONDITIONAL ON HIGH SCHOOL BEAUTY

	Damaging Property	Burglary	Robbery	Theft	Assault	Nondrug Crime	Selling Drugs
A. Females (*n*: 6,091–6,126)							
Models with High School Beauty							
Very Attractive-High School	−0.022***	−0.006	−0.004	0.003	0.005	−0.009	−0.001
	(0.008)	(0.004)	(0.004)	(0.008)	(0.010)	(0.014)	(0.011)
Unattractive-High School	0.018	−0.005	0.001	−0.008	0.026**	0.040**	0.016
	(0.013)	(0.005)	(0.005)	(0.007)	(0.012)	(0.018)	(0.012)
Models with Adult Beauty and High School Beauty							
Very Attractive	−0.018**	−0.005	0.001	−0.001	−0.019***	−0.033***	−0.009
	(0.007)	(0.003)	(0.004)	(0.006)	(0.006)	(0.011)	(0.007)
Unattractive	−0.007	0.007	0.017*	−0.00004	0.024*	0.010	0.035***
	(0.010)	(0.006)	(0.009)	(0.007)	(0.013)	(0.017)	(0.013)
Very Attractive-High School	−0.019**	−0.005	−0.003	0.003	0.009	−0.003	0.001
	(0.008)	(0.004)	(0.004)	(0.008)	(0.010)	(0.014)	(0.011)
Unattractive-High School	0.018	−0.006	−0.0004	−0.008	0.023*	0.038**	0.012
	(0.013)	(0.005)	(0.005)	(0.007)	(0.012)	(0.018)	(0.012)
B. Males (*n*: 5,335–5,400)							
Models with High School Beauty							
Very Attractive-High School	−0.024	−0.003	0.012	0.002	−0.023	−0.017	−0.054**
	(0.029)	(0.013)	(0.015)	(0.018)	(0.028)	(0.038)	(0.025)
Unattractive-High School	0.012	−0.009	0.007	0.00008	0.009	0.005	−0.023
	(0.018)	(0.008)	(0.009)	(0.011)	(0.017)	(0.022)	(0.016)
Models with Adult Beauty and High School Beauty							
Very Attractive	−0.003	0.0005	−0.008	−0.011	−0.007	−0.006	−0.015
	(0.019)	(0.010)	(0.008)	(0.011)	(0.017)	(0.024)	(0.017)
Unattractive	0.004	0.0004	0.021*	0.026*	0.011	0.017	−0.003
	(0.022)	(0.011)	(0.013)	(0.015)	(0.021)	(0.027)	(0.020)
Very Attractive-High School	−0.024	−0.003	0.013	0.003	−0.023	−0.017	−0.053**
	(0.029)	(0.013)	(0.015)	(0.018)	(0.028)	(0.038)	(0.025)
Unattractive-High School	0.012	−0.009	0.004	−0.003	0.008	0.003	−0.024
	(0.018)	(0.008)	(0.009)	(0.011)	(0.017)	(0.022)	(0.016)

Note: These models include the complete list of personal and family background characteristics, listed in table 3, and included in models reported in table 4. Robust standard errors are in parentheses. * estimated coefficient is statistically different from 0 at the 10% level, ** significance at 5%, and *** significance at 1% or better.

assigned when the individuals were young adults are highly correlated, although they are assigned by different interviewers seven to eight years apart. The lower panel of table 8A shows that despite the high correlation between high school beauty and adult beauty, inclusion of adult beauty does not affect the magnitude or the statistical significance of the estimated coefficients of high school beauty. Furthermore, adult beauty has a separate effect on adult crime in five different crimes. Thus, although beauty ratings are highly correlated between high school years and when the individuals are young adults, adult beauty and high school beauty have separate impacts on current crime for females, controlling for all other variables. Table 8B displays the results for males. The top panel shows that high school beauty has an impact on current crime only in the case of selling drugs, and the bottom panel demonstrates that adding current beauty does not eliminate this effect.

If high school beauty is indeed a proxy for the learning experience of the individual when in high school, then adding measures of high school learning environment would reduce the size of the coefficients of high school beauty. Table 9 reports the results of the models where in addition to all explanatory variables and current and high school beauty measures, six additional variables are included that aim to capture various aspects of the students' high school experience: the grade point average of students in high school (in wave I), whether they were suspended from school, expelled from school, had problems with teachers, had problems with other students, and felt they were part of school.

Panel A of table 9 shows that in the case of females, higher high school GPA is negatively correlated with current criminal activity. Suspension in high school and problems with teachers increase the likelihood of current crime. Note

TABLE 9.—EFFECT OF CURRENT BEAUTY ON CRIME CONDITIONAL ON HIGH SCHOOL BEAUTY AND EXPERIENCE

	Damaging Property	Burglary	Robbery	Theft	Assault	Nondrug Crime	Selling Drugs
A. Females (*n*: 6,091–6,126)							
Very Attractive	−0.016**	−0.005	0.002	−0.0004	−0.017***	−0.029***	−0.007
	(0.008)	(0.003)	(0.004)	(0.006)	(0.006)	(0.011)	(0.007)
Unattractive	−0.007	0.007	0.017*	−0.001	0.016	0.001	0.035***
	(0.011)	(0.007)	(0.009)	(0.008)	(0.012)	(0.017)	(0.013)
Very Attractive-High School	−0.017**	−0.005	−0.002	0.003	0.012	0.003	0.004
	(0.008)	(0.004)	(0.004)	(0.008)	(0.010)	(0.015)	(0.011)
Unattractive-High School	0.015	−0.006	−0.001	−0.009	0.014	0.024	0.013
	(0.013)	(0.005)	(0.006)	(0.007)	(0.012)	(0.019)	(0.012)
GPA	−0.007*	0.001	−0.003	0.003	−0.011***	−0.014**	−0.004
	(0.004)	(0.002)	(0.002)	(0.003)	(0.004)	(0.006)	(0.004)
Suspension	0.019**	0.003	0.007	0.007	0.012	0.040***	0.013
	(0.009)	(0.004)	(0.005)	(0.006)	(0.009)	(0.013)	(0.008)
Expelled	0.061***	0.024*	0.021	0.018	0.050**	0.102***	0.058***
	(0.022)	(0.013)	(0.013)	(0.013)	(0.021)	(0.029)	(0.021)
Problems with teachers	0.011**	0.003	0.002	0.005	0.008	0.025***	0.016***
	(0.006)	(0.003)	(0.003)	(0.004)	(0.005)	(0.008)	(0.006)
Problems with other students	0.007	−0.00007	0.003	0.003	0.006	0.005	0.003
	(0.006)	(0.003)	(0.003)	(0.004)	(0.005)	(0.008)	(0.005)
Felt part of school	0.007	0.007**	−0.0003	0.005	0.007	0.009	0.004
	(0.007)	(0.003)	(0.003)	(0.005)	(0.006)	(0.009)	(0.006)
B. Males (*n*: 5,335–5,400)							
Very Attractive	−0.007	0.001	−0.007	−0.011	−0.004	−0.006	−0.014
	(0.019)	(0.010)	(0.008)	(0.011)	(0.017)	(0.024)	(0.017)
Unattractive	0.008	0.004	0.021	0.030*	0.013	0.028	−0.002
	(0.022)	(0.012)	(0.013)	(0.016)	(0.021)	(0.027)	(0.020)
Very Attractive-High School	−0.021	−0.002	0.015	0.005	−0.016	−0.008	−0.046*
	(0.030)	(0.014)	(0.015)	(0.018)	(0.028)	(0.039)	(0.026)
Unattractive-High School	0.013	−0.012	−0.001	−0.006	0.001	0.003	−0.033**
	(0.018)	(0.008)	(0.009)	(0.011)	(0.017)	(0.023)	(0.016)
GPA	0.015**	−0.004	−0.003	−0.001	−0.012**	−0.001	−0.003
	(0.006)	(0.003)	(0.003)	(0.004)	(0.006)	(0.008)	(0.006)
Suspension	−0.004	0.001	0.003	0.010	0.053***	0.035**	0.038***
	(0.012)	(0.006)	(0.006)	(0.008)	(0.012)	(0.015)	(0.012)
Expelled	0.044**	0.019*	0.040***	0.035***	0.110***	0.136***	0.101***
	(0.019)	(0.011)	(0.012)	(0.014)	(0.021)	(0.025)	(0.020)
Problems with teachers	0.068***	0.013**	0.006	0.019***	0.029***	0.083***	0.057***
	(0.011)	(0.005)	(0.005)	(0.007)	(0.010)	(0.014)	(0.010)
Problems with other students	0.016	0.008	0.007	−0.013*	−0.012	0.005	−0.009
	(0.011)	(0.006)	(0.005)	(0.007)	(0.010)	(0.014)	(0.010)
Felt part of school	0.002	0.001	−0.006	0.003	0.008	0.001	−0.018*
	(0.012)	(0.006)	(0.005)	(0.007)	(0.011)	(0.015)	(0.011)

Note: These models include the complete list of personal and family background characteristics, listed in table 3, and included in models reported in table 4. Robust standard errors are in parentheses. * The estimated coefficients is statistically different from 0 at the 10% level, ** significance at 5%, and *** significance at 1% or better. The models are identical to those reported in the bottom panel of table 8A, with the difference of the six high school variables listed in the table.

that the models used in the bottom panel of table 8A and the model in table 9A are very similar; the only difference is that six additional high school environment variables are included in the latter. Comparison of the bottom panel of table 8A and table 9A shows that inclusion of these high school variables reduces the magnitude of the estimated high school beauty effects and eliminates the statistical significance of these high school attractiveness coefficients in cases of assault and nondrug crime. This suggests that the impact of high school beauty on current crime is due to the correlation between high school beauty and the variables that capture high school experience for females. The coefficients of current beauty remain significant; that is, adding high school environment variables does not influence the impact of current beauty on current crime.

Table 9B demonstrates that for males, GPA, suspension, having being expelled, and problems with teachers are significant determinants of current crime, but inclusion of high school environment variables to the models does not reduce the estimated coefficients of high school beauty in a systematic and meaningful way. These results suggest that the extent of beauty in high school has an impact on human capital formation in high school for female students, but the same is not the case for male students.

IV. Interpretation

The results presented in tables 4, 5, and 6 indicate that unattractive individuals are more likely to commit crimes and attractive individuals are less likely to commit crimes in comparison to average-looking individuals. The results are robust to a variety of specifications, and beauty seems to be measured rather consistently: there is a high degree of agreement between beauty ratings provided for individuals

by different evaluators over three evaluations, where the first and last one were six years apart.[11] There is always a concern about whether beauty is acting for a proxy for family background. For example, one can argue that individuals from low-income families may have worse features such as bad teeth, and it is family background, not beauty, that is driving the results. In our case, these concerns are mitigated because inclusion of a host of family socioeconomic characteristics does not influence the estimated coefficients, suggesting that beauty is not likely to be acting as a proxy for family background. On the other hand, the data are obtained from a nonexperimental design, and therefore we cannot rule out the possibility of confounding due to some unobservables.

Because the hypothesis of sorting to the criminal sector is based on expected monetary payoffs in labor and criminal markets, a natural question is why assaulting somebody and damaging property are influenced by beauty. A possible answer is that these acts generate utility to the individual as the economic theory suggests. And if less attractive individuals have less to lose in the legal labor market in the present and in the future should they be apprehended, then it follows that beauty will have an effect on these crimes as well.[12]

If less attractive individuals are more likely to engage in crime and if these individuals are imprisoned quickly after high school or drop out from the longitudinal survey for some other reason, our data set from wave III (of young adults) will not include less attractive and more crime-prone individuals. However, a comparison of the beauty ratings of those who were observed in wave I, but not since (those who dropped out of the sample), with those who were observed in wave III demonstrated that both the means and the distributions of the beauty ratings are similar between these two groups. The same result is obtained by comparing those who were observed in wave II but not in wave III, as well as those who were observed in wave I but not in wave II. Thus, we find that attrition is independent of beauty. Also, note that estimating the models using individuals who have nonmissing beauty rating in all three waves (table 6) and using a four-way classification of beauty (table 5) did not alter the results.

Alternative interpretations of the results are possible. For example, although the beauty question explicitly asks the interviewer to rate the "physical attractiveness" of the individual, it is conceivable that individuals with a bad attitude during the interview were assigned lower ratings on their physical attractiveness. To control for such potential confounding, we added to the models a variable gauging the attractiveness of the personality. This variable is based on the question, "How attractive is the personality of the respondent?" which the interviewer answered at the end of the interview. We created dichotomous variables to indicate if the respondent's personality was rated as unattractive (mean = 0.023) or as very unattractive (mean = 0.013) by the interviewer. Adding these personality controls did not alter the results. Similarly, based on the question, "How attractive is the respondent's grooming?" we created a dummy variable for unattractive grooming (mean = 0.058). Adding this grooming variable to the models did not change the results either.[13]

Another related issue is that some interviewers might have believed that certain respondents had not answered some questions truthfully even though, by design, the interviewers did not see any answers the respondents entered. If the interviewer's perception of the truthfulness of the respondent influenced the beauty rating of the respondent, and if truthfulness is correlated with how respondents answered questions about criminal behavior, the estimates might be biased. In addition to controlling for personality, we also utilized information about the perceived truthfulness of the respondents reported by the interviewers. This information is based on the question, "In your opinion, was the respondent candid in his/her responses?" About 95% of the respondents were rated as candid in their answers by the interviewer. When we limited our analysis to the sample of individuals who are labeled as candid, the current implications of the results became more precise despite a loss of about 700 observations. For example, the coefficient of Very Attractive on robbery for males became significant at the 5% level, and the coefficient of Very Attractive of burglary for females became significant at the 10% level.

Another concern stems from the possibility that attractive individuals may be more likely to be confident than others (Mobius & Rosenblatt, 2006), and confidence may be correlated with the criminal behavior of individuals. For example, if attractive people are more confident and confident people are more likely to report crime than others, then the estimates may be biased upward. In order to guard against bias from this possibility, we used answers to the question, "How confident are you of yourself?" and generated a binary indicator for confidence that takes on the value of 1 if the person was very confident and 0 otherwise (moderately confident, slightly confident, not at all confident). About 47% of our sample is very confident of himself or

[11] Note that measurement error in a beauty variable would make it more difficult to obtain significant coefficients.

[12] Also, individuals who commit assault or property damage tend to engage in other crimes as well. Thus, assault and damaging property are highly correlated with other crimes. For example, among individuals who commit assault, the mean of robbery incident is 0.12, the mean of burglary is 0.08, the mean of theft is 0.10, and that of selling drugs is 0.22. In contrast, the corresponding means among those who have not committed an assault are 0.01, 0.01, 0.03, and 0.06, respectively. The same is true for damaging property. Among those who damaged property, the means of committing robbery, burglary, theft, and selling drugs are 0.11, 0.12, 0.18, and 0.25. The corresponding means among those who have not damaged property are 0.01, 0.01, 0.02, and 0.09, respectively.

[13] It is unclear whether controlling for personality and grooming is necessary. If a person's personality and grooming are affected by his or her beauty, adding these variables into the model would lead to overcontrolling.

herself according to this measure. There is not a clear pattern on criminal behavior by confidence in our sample. Among the crime measures that we examine, the proportion committing property damage and burglary is higher among confident individuals than others, while the proportion committing assault and any nondrug crime is lower among confident individuals. There is no statistical difference for robbery, theft, and selling drugs between confident individuals and others. Controlling for this variable in our empirical models did not change the results.

Obese individuals are likely to receive lower attractiveness ratings. Strictly speaking, obesity or body mass index (BMI) should not be controlled for in the regressions, because it is part of an individual's "physical attractiveness." Controlling for BMI would imply that attractiveness is measured by facial beauty.[14] Nevertheless, using the measured height and weight of the individual, we created the BMI for each individual and added a dummy variable to the models to indicate if the respondent's BMI is greater than or equal to 30 (the cutoff for obesity; mean = 0.224). Again, the results remain unchanged.

One would argue that individuals with depression and other psychological problems are likely to pay less attention to their looks than others, or they may appear to be disturbed, which may be considered unattractive by the interviewers. It is also possible that these individuals are more likely to engage in risky behavior like crime. In order to test this possibility, we generated indicators for depression symptoms and suicidal behavior. In wave III, the Add Health asks nine questions measuring the extent of depressive symptoms of individuals.[15] Responses to the depressive symptoms questions were 0 (never or rarely), 1 (sometimes), 2 (a lot of time), and 3 (most of the time or all of the time). After summing up scores to these questions, we generated a dichotomous indicator that equals 1 if the individual's score places him or her at the 75th percentile or higher in the sample distribution and 0 otherwise (Tekin & Markowitz, 2008). This variable may capture elevated levels of depressive symptoms but may not correspond to diagnosis of major depression. In order to proxy for the latter, we use a binary indicator for whether the individual ever thought seriously about committing suicide in the past twelve months. The inclusion of these variables in the models did not alter the results in any significant way.[16]

A. *Is It an Income Effect?*

The measure of beauty is unlikely to be affected by the extent of the criminal activity of the individual. Although it can be argued that committing property crime would increase income, which would in turn allow the individual to enhance his or her attractiveness through the consumption of beauty products, Hamermesh and Biddle (1994) show that such reverse causality is not crucial even in the context of wages and beauty, so it should be even less important in case of crime and beauty. Furthermore, in our case, any such reverse causality would bias the result in the opposite direction detected in the paper.

Could beauty be picking up some other effect that is correlated with criminal activity? For example, if interviewers consistently rated poorer individuals as unattractive, then beauty would be acting as a proxy for poverty. Given that poverty is correlated with criminal activity, we might be picking up the impact of poverty on crime. Note that we control for a very large number of individual and socioeconomic background variables, including personal unearned income, mother's education, whether the individual's family was on welfare, family income, whether the father was ever jailed, and so on. Also note that adding all the personal and family attributes (model III, reported in table 4) did not alter the results in comparison to those obtained from models that omitted them, indicating that unobserved factors are not influencing the relationship between beauty and crime.

Although the models contain an exhaustive list of personal and family background characteristics (see table 3), if interviewers consistently assigned higher beauty ratings to individuals who live in high-income, low-crime neighborhoods and if these individuals have lower criminal propensities, beauty might be picking up this neighborhood effect. To account for this possibility, we estimated the most comprehensive models with the addition of county-specific contextual variables. These pertain to the county of residence when the individual was in high school. These additional variables are the proportion of the population living in a rural area in the county of the individual in 1990, population density (number of persons per square kilometer) in 1990, proportion black in the county in 1990, proportion Hispanic in the county in 1990, median household income in the county in 1990, the unemployment rate in the county in 1990, the total crime rate per 100,000 population in the county in 1993, the proportion voting Democratic in the 1992 presidential election in the county, and the proportion voting for Ross Perot in the 1992 presidential election in the county. Estimating the models with these variables did not alter the results. Alternatively, we added to the models

[14] This is clearly not the case in current popular culture, and the most recent evidence can be found in the TV show *Biggest Loser* on NBC, where fourteen unattractive individuals—by their own declaration in some cases—were competing to lose weight. Every contestant had beautiful facial features, but they were unattractive because of their obesity. Similarly, it was reported on ABC that when supermodel Tyra Banks wore a "fat suit" on the street, she faced laughter, stares, and nasty comments (http://abcnews.go.com/GMA/BeautySecrets/story?id=1280787).

[15] These questions are identical to those that are used in the standard Center for Epidemiological Scale for Depression (CES-D) (Radloff, 1977), which is widely used in related literature. The original CES-D measure contains twenty questions, so the Add Health measure is only a proxy of the CES-D index.

[16] These results are available from the authors on request.

county dummies to control county-level unobservables, which did not change the results either.

The estimated specifications described above are aimed at controlling for the impact of potential unobservables that may contaminate the estimated effects. While we have conducted an extensive set of analyses to account for potential confounding, in the absence of a design that ensures complete random assignment of beauty among individuals (such as conducting random plastic surgery), we can never be sure that the identified association is completely nonspurious.

V. Conclusion

It has been shown that beauty commands a wage premium in the labor market (Hamermesh & Biddle, 1994). If crime is a labor market activity where individuals make decisions based on expected current and future payoffs from the criminal sector and the legal labor market, then on the margin, less attractive individuals should engage in crime more frequently because they face a wage penalty in the legal labor market.

In this paper, we use data from three waves of Add Health (a nationally representative data set of U.S. young adults, designed to provide information about risky behavior) to investigate the relationship between attractiveness and criminal activity of young adults, aged 18 to 26. Beauty ratings are assigned by interviewers on a scale from 1 to 5, and they are rather consistent between the ratings assigned by different interviewers in different years of the survey.

Being very attractive reduces the individual's propensity for criminal activity, and being unattractive increases it for a number of crimes, ranging from burglary to selling drugs. The effect of beauty on crime is estimated with more precision for females than for males. Prior work has shown that unattractive females have lower labor force participation rates and have husbands who have less education (Hamermesh & Biddle, 1994). Thus, unattractive females face additional labor- and marriage-market handicaps that translate into lower opportunity cost of crime, which would reinforce the beauty-crime connection.

Beauty could be related to socioeconomic background characteristics. However, the results are insensitive to the inclusion of a large number of personal and family characteristics ranging from family income when the individual was in high school to family's welfare participation; from whether the father was ever jailed to birth weight, to a variety of contextual variables measured at the county level. The results are also robust to a number of tests, such as classification of beauty, measurement of beauty by different interviewers in different years, inclusion or exclusion of explanatory variables, accounting for potential interviewer effects, inclusion of county-level contextual variables, and controlling for individual characteristics ranging from personality to emotional health and self-esteem. However, it is always possible that some of the documented relation between crime and beauty might be due to other unobservables.

For unattractive individuals to sort themselves into the criminal sector, they should face an earnings penalty in the legal labor market based on their looks. Consistent with prior research, we find that being a very attractive young adult is positively associated with wages, and being unattractive is associated with a wage penalty. We also show that beauty is related to adult vocabulary test scores, which suggests that beauty may have an impact on human capital formation.

Recent research has shown that a student's height and even a student's name can influence the student's human capital and skill formation during school. Height influences participation in club activities (Persico et al., 2004), and names that signal lower socioeconomic status generate lower teacher expectations (Figlio, 2005). Also, an extensive psychology literature shows that people prefer to interact with individuals who have attractive features, and attractive children receive more attention in the classroom than do unattractive children (Clifford & Walster, 1973). Thus, it can be conjectured that looks influence human capital formation in school through the attention received from teachers and interactions with other students. This would have an impact on the learning experience of unattractive students by adversely influencing their quantity and quality of schooling, although a counterbalancing argument can be made based on the assumption that unattractive students may devote themselves to studying as a defense mechanism.

We demonstrate that, especially for females, holding constant current beauty, high school beauty (pre–labor market beauty) has a separate impact on crime, and high school beauty is correlated with variables that gauge various aspects of high school experience, such as GPA, suspension or having being expelled from school, and problems with teachers. Thus, high school beauty seems to act as a proxy for the extent and quality of human capital formation in high school.

Although one can never be completely certain of the true nature of the cause-and-effect relationships in nonexperimental data, the results of this paper are consistent with two handicaps that unattractive individuals face. First, a labor market penalty seems to provide a direct incentive for unattractive individuals toward criminal activity. Second, the level of beauty in high school has an effect on criminal propensity seven or eight years later, which seems to be due to the impact of the level of beauty in high school on human capital formation, although this second avenue seems to be effective for females only.

REFERENCES

Becker, Gary S., "Crime and Punishment: An Economic Approach," *Journal of Political Economy* 76 (1968), 169–217.

Biddle, Jeff E., and Daniel S. Hamermesh, "Beauty, Productivity, and Discrimination: Lawyers' Looks and Lucre," *Journal of Labor Economics* 16:1 (1998), 172–201.

Black, Sandra E., Paul J. Devereux, and Kjell Salvanes, "From the Cradle to the Labor Market? The Effect of Birth Weight on Adult Outcomes," *Quarterly Journal of Economics* 122 (2007), 409–439.
Block, Michael K., and John M. Heineke, "A Labor Theoretic Analysis of the Criminal Choice," *American Economic Review* 65:3 (1975), 314–325.
Bull, Ray, and Nicola Rumsey, *The Social Psychology of Facial Appearance* (New York: Springer-Verlag, 1988).
Clifford, Margaret M., and Elaine Walster, "The Effect of Physical Attractiveness on Teacher Expectations," *Sociology of Education* 46:2 (1973), 248–258.
Corman, Hope, and H. Naci Mocan, "A Time-Series Analysis of Crime, Deterrence, and Drug Abuse in New York City," *American Economic Review* 90:3 (2000), 584–604.
Currie, Janet, and Enrico Moretti, "Biology as Destiny? Short and Long-Run Determinants of Intergenerational Transmission of Birth Weight," *Journal of Labor Economics* 25:2 (2007), 231–264.
Ehrlich, Isaac, "Participation in Illegitimate Activities: A Theoretical and Empirical Investigation," *Journal of Political Economy* 81 (1973), 521–565.
Figlio, David N., "Names, Expectations and Black-White Test Score Gap," NBER working paper no. 11195 (2005).
Grogger, Jeffrey T., "Market Wages and Youth Crime," *Journal of Labor Economics* 16:4 (1998), 756–791.
Hamermesh, Daniel S., and Jeff E. Biddle, "Beauty and the Labor Market," *American Economic Review* 84:5 (1994), 1174–1194.
Hamermesh, Daniel S., Xin Meng, and Junsen Zhan, "Dress for Success: Does Primping Pay?" *Labour Economics* 9 (2002), 361–373.
Hamermesh, Daniel S., and Amy Parker, "Beauty in the Classroom: Instructors' Pulchritude and Putative Pedagogical Productivity," *Economics of Education Review* 24 (2005), 369–376.
Harper, Barry, "Beauty, Stature and the Labour Market: A British Cohort Study," *Oxford Bulletin of Economics and Statistics* 62:s1 (2000), 771–800.
Hatfield, Elaine, and Susan Sprecher, *Mirror, Mirror: The Importance of Looks in Everyday Life* (Albany: State University of New York Press, 1986).
Jackson, Linda A., John E. Hunter, and Carole N. Hodge, "Physical Attractiveness and Intellectual Competence: A Meta-Analytic Review," *Social Psychology Quarterly* 58:2 (1995), 108–122.
Kuhn, Peter, and Catherine Weinberger, "Leadership Skills and Wages," *Journal of Labor Economics* 23:3 (2005), 395–436.
Lerner, R., M. Delaney, L. Hess, J. Jovanovic, and A. von Eye, "Early Adolescent Physical Attractiveness and Academic Competence," *Journal of Early Adolescence* 10 (1990), 4–20.
Levitt, Steven, "Juvenile Crime and Punishment," *Journal of Political Economy* 106:6 (1998), 1156–1185.
Lewison, E., "Twenty Years of Prison Surgery: An Evaluation," *Canadian Journal of Otolaryngology* 3 (1974), 42–50.
Mobius, Markus M., and Tanya S. Rosenblatt, "Why Beauty Matters," *American Economic Review* 96:1 (2006), 222–235.
Mocan, H. Naci, and Erdal Tekin, "Drug Use and Juvenile Crime: Evidence from a Panel of Siblings and Twins," in Bjorn Lindgren and Michael Grossman (Eds.), *Substance Use: Individual Behavior, Social Interactions, Markets, and Politics* (Amsterdam: Elsevier, 2005).
Mocan, H. Naci, and Erdal Tekin, "Guns and Juvenile Crime," *Journal of Law and Economics* 49 (2006a), 507–531.
Mocan, H. Naci, and Erdal Tekin, "Ugly Criminals," NBER working paper 12019 (2006b).
Mocan, H. Naci, Steve Billups, and Jody Overland, "A Dynamic Model of Differential Human Capital and Criminal Activity," *Economica* 72 (2005), 655–681.
Mocan, H. Naci, and Daniel Rees, "Economic Conditions, Deterrence and Juvenile Crime," *American Law and Economics Review* 7:2 (2005), 319–349.
Persico, Nicola, Andrew Potlewaite, and Dan Silverman, "The Effect of Adolescent Experience on Labor Market Outcomes: The Case of Height," *Journal of Political Economy* 112:5 (2004), 1019–1053.
Radloff, L., "The CES-D Scale: A Self-Reported Depression Scale for Research in the General Population," *Applied Psychological Measurement* 1 (1977), 385–401.
Samuels, C. A., and Elwy, R., "Aesthetic Perception of Faces during Infancy," *British Journal of Psychology* 3 (1985), 221–228.
Tekin, Erdal, and Sara Markowitz, "Suicidal Behavior and the Labor Market Productivity of Young Adults," *Southern Economic Journal* 75:2 (2008), 300–331.
Umberson, Debra, and Michael Hughes, "The Impact of Physical Attractiveness on Achievement and Psychological Well-Being," *Social Psychology Quarterly* 50:3 (1987), 227–236.
Wilson, Rick K., and Catherine C. Eckel, "Judging a Book by Its Cover: Beauty and Expectations in the Trust Game," *Political Research Quarterly* 59 (2006), 189–200.