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Who Marries Differently-Aged Spouses? Earnings, Ability and Appearance*

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Abstract

In direct contrast to conventional wisdom and most economic models of gender differences in age of marriage, we present robust evidence that men and women who are married to differently-aged spouses are negatively selected.

Earnings analysis of married couples in the 1970, 1980, 1990 and 2000 Decennial Censuses finds that male earnings decrease with within-couple age difference, regardless of whether the man is older or younger than his wife. In contrast, female earnings increase with within-couple age difference. We argue and present evidence that women in differently-aged couples have higher earnings not because of positive selection, but because their hours of work increase in response to partnering with a lower earning man.

We test for negative selection into differently-aged couples using three measures: average earnings per hour in occupation using Census data, cognitive skills assessments from the National Longitudinal Survey of Youth 1979 cohort (NLSY79), and measures of physical appearance from the National Longitudinal Study of Adolescent Health (Add Health). The point estimates indicate negative selection on all of these characteristics, although statistical significance varies by outcome and sample.

JEL Classification: J11, J12, J24

Keywords: marital sorting, occupational choice, non-labor market outcomes.

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I. Introduction

While there is limited research on within-couple age differences, the popular press has focused recently on so-called "Cougars," women partnered with considerably younger men. Press accounts typically explain that the improving economic status of women has freed them to partner with younger men, who typically have lower earnings than men their same age or older.[1] This parallels conventional wisdom regarding couplings between older men and younger women, which likewise suggests that successful men have the advantage of being able to attract and retain younger partners.

Economic models of age of marriage and within-partner age difference mostly generate similar predictions, that pairings between an older and younger spouse require financial success on the part of the older partner (Bergstrom and Bagnoli, 1993; Siow, 1998; Coles and Francesconi, forthcoming). As a result, both the academic literature and popular perception suggest positive selection, at least on the part of the older partner, into differently-aged couples. In direct contrast, this paper presents robust empirical evidence of negative selection into differently-aged couples.

Earnings analysis of prime-aged married couples in the 1970, 1980, 1990 and 2000 Decennial Censuses finds that male earnings are lower for men in differently-aged couples compared to similarly-aged couples. This finding applies both to men married to younger women and to men married to older women. Unlike male earnings, female earnings increase with within-couple age difference. We argue and present evidence that women in these couples have somewhat higher earnings than women in similarly-aged couples not because they are positively selected on earnings potential, but that their labor market effort increases in response to partnering with a lower earning man.

[1] An example is "Rethinking the Older Woman-Younger Man Relationship" *New York Times* 10/15/09.

Three measures of quality are used to test between positive and negative selection into marriage with a differently-aged spouse: average earnings per hour in occupation from Decennial Census data, cognitive skills assessments from the National Longitudinal Survey of Youth 1979 cohort (NLSY79), and measures of physical appearance from the National Longitudinal Study of Adolescent Health (Add Health). None of the results provide any support for positive selection into differently-aged couples by either men or women. The point estimates overwhelmingly suggest negative selection on all of these characteristics, although statistical significance varies by outcome and sample.

These findings are not merely an artifact of the fact that later age of marriage and remarriage after divorce tend to result in wider within-couple age differences. It is a concern that later marriage and divorce both might be signals of negative quality and therefore might generate a negative association between age difference and quality. In the Census analysis, it is only possible to control for age of marriage and previous marriage in the 1980 Census, but the results are robust to those controls in that Census. In the NLSY and Add Health, controls for age of marriage are included in all regressions, and the negative selection effects are observed in samples of first marriages.

II. Within-Couple Age Difference and Marital Sorting

Historically, the average age of first marriage for men has been older than the average age of first marriage for women, and marriages have most commonly consisted of an older husband and younger wife. Bergstrom and Bagnoli (1993) develop a model in which these patterns are explained by differences in household specialization between men and women, and in which men's value in the marriage market, meaning their earnings potential, is revealed at later ages than women's value in household production. Women marry young,

but higher quality women marry higher quality older men who have delayed marriage to reveal their high worth. Lower quality young women marry lower quality young men who have no gains from marriage delay.[2] In this model, both men and women in differently-aged couples are higher quality than men and women in similarly aged couples.

Siow (1998) also has the theoretical prediction that older men who marry younger women are financially successful. His model also has the feature that all women marry young, due to declining fecundity. Young men all have the same wage, but some exogenously experience labor market success and have high wages as older men. Never-married and divorced old men are only able to marry or remarry young women if they are high wage.

Coles and Francesconi (forthcoming) assume that both men and women receive utility from their partner's "fitness", which decays with age. Both men and women start out low wage. If both men and women have similar probabilities of experiencing labor market success and receiving high wages at older ages, then we will observe men and women who have experienced labor market success partnered with younger, fitter, but unsuccessful, spouses.[3]

Diaz-Gimenez and Giolito (2010) focus on the marriage market implications of gender differentials in lifecycle declines in fecundity. They show that simply using these differences in fecundity, they can replicate key features of the US Marriage market in terms of gender differences in age of marriage and gender differences in rising age gap with spouse

[2] All women marry young in the model by Bergstrom and Bagnoli (1993) and Siow (1998). Loughran (2002) offers an alternative model and empirical evidence that suggests that women will delay marriage and search longer as male wage inequality increases.

[3] Mahony (1995) counsels women to strategically choose men younger than themselves to reduce the earnings gap with their husband and increase their bargaining power in marriage. Her argument is that this will allow them to more effectively bargain for household decisions that benefit their career (such as timing of children, division of household labor and geographic location). In this case, the strategic choice of a younger spouse generates financial success.

at later ages of marriage. Using a calibrated model, they are able to replicate these features even assuming identical income for men and women that is constant over the lifecycle. As the authors point out, their results call into question whether lifecycle earnings differences are necessary to generate pairings between older and younger spouses.[4]

Much of the theory literature assumes that, conditional on income, individuals receive higher utility from younger, more fecund or more attractive, partners. Other research suggests that individuals might receive utility from similarly-aged spouses. Recent work by Hitsch, Hortascu and Ariely (2010) using data from online dating suggests that both men and women are more likely to contact similarly aged prospective mates. Choo and Siow (2005) develop and estimate a model of age of marriage and find that positive assortative matching by spousal age is driven by the desire to accumulate marriage specific capital. They argue:

"A young individual who marries an older spouse will anticipate having less time to accumulate and enjoy marriage specific capital relative to marrying a same age or younger spouse. From this perspective, younger spouses prefer to marry each other. Older individuals do not value younger spouses more than older spouses since they have shorter expected lifespans, and so will be willing to marry each other." (p.2)

Preferences for similarly-aged spouses could also be generated by complementarities in consumption. If men and women prefer, for example, having children at similar points in their lifecycle, then they will best be able to optimally time this consumption if they marry similarly aged spouses. To the extent that household specialization and complementarities in production are declining in importance, while complementarities in consumption are increasingly important in generating marital surplus (see Stevenson and Wolfers, 2007), preferences for similarly aged spouses could be changing over time. Finally, there is also

[4] England and McClintock (2009) also note that the age gap with spouse rises much more steeply with age of marriage for men than women. They argue, however, that this has to do with social norms regarding women's appearance rather than declining fecundity.

evidence that the age difference between spouses is negatively related to marital stability (Cherlin, 1977; Lillard et al, 1995)

Most recent empirical work that considers within-couple age difference has focused on the relative earnings of the husband and wife. Coles and Francesconi (forthcoming) find using US and British data that women who have higher income, higher education or higher occupational status than their husbands are more likely to be at least five years older than their husbands. They also find, in the British data, that women who are in professional or managerial occupations are more likely to be at least 5 years older than their spouse. Raley, Mattingly and Bianchi (2006), using Current Population Surveys from 1970-2001, find that dual-earner couples in which the husband is at least 5 years older than the wife are slightly more likely to have the wife be the majority earner, but the point estimates are mostly insignificant. Bloemen and Stancanelli (2008), in analysis of French Labor Force Surveys from 1990-2002, find that couples in which the husband is at least 5 years older or the wife is at least 3 years older are more likely to have a sole-provider wife, but among dual-earner couples these couples are less likely to have female earnings that exceed male earnings.

Among the papers that study absolute rather than relative outcomes, both Atkinson and Glass (1985) and Vera et al (1985) report relatively descriptive analysis showing that couples with large age differences have lower family income on average. Grossbard-Shechtman and Newman (1988) find in 1974 Israeli Census data that marriage to a husband who is more than three years older is associated with lower labor force participation, even conditional on husband's income.

Most of the empirical studies relating labor market earnings to within-couple age difference focus on the relative earnings of the man and woman, and therefore do not provide

insight into the absolute earnings or earnings potential of either the man or the woman. Most of previous studies do not include detailed controls for age and children, which we find to be important. Finally, none of the existing literature examines characteristics, such as cognitive skills or appearance, which are exogenous to the current match.

It is useful to distinguish between the unconditional relationship between individual quality and within-couple age difference and the relationship conditional on age of marriage. It has been observed that average age difference with spouse increases with age of marriage (e.g. Oppenheimer 1988). This could result simply from a case in which search costs are much lower for similarly aged partners at younger ages, but search costs are less related to age of partner at older ages. If, for example, age of marriage is higher for high-quality individuals who experience a greater return to delaying marriage for career investment (e.g. Goldin and Katz, 2002), then this will generate a positive relationship between age difference and quality unconditional on age of marriage. Unfortunately, in most years the Decennial Census data do not report age of marriage. The results for the 1980 Census are robust to the inclusion of age of first marriage, the only year in which the information is available. The analysis using the NLSY79 and Add Health data includes controls for age of marriage.

III. Prevalence of Differently-Aged Couples

It is useful to first establish stylized facts regarding within-couple age difference. Table 1 investigates the prevalence of differently aged couples across Census years. Samples of women ages 30-55 in the 1970, 1980, 1990 and 2000 Decennial Censuses were obtained from the IPUMS database. For Table 1, women are identified as partnered if they are married or cohabiting. Women who identify an unmarried partner of the opposite sex in 1990 or 2000 are identified as cohabiting. The unmarried partner designation is not available

prior to 1990. Women who identify a roommate of the opposite sex in 1980 or 1970 are also identified as cohabiting.[5] The assumption is that in 1970 and 1980, a woman between the ages of 30 and 55 who identifies a roommate of the opposite sex has a high probability of being romantically partnered with that roommate.[6]

Table 1 reports, for each 5-year age group and Census year, the fraction of women who are partnered with men who are 5 or more years older, 10 or more years older, 5 or more years younger, and 10 or more years younger. As expected, the fraction of women partnered with older men is much larger than the fraction of women partnered with younger men. But the pairings with older men have become slightly less common over time and the pairings with older women have become slightly more common over time.[7] This likely reflects in part rising age of first marriage for women.

The results for women partnered with younger men have a few interesting features. First, while the fraction of women partnered with younger men has increased over time, it has considerably less than doubled in all age groups, and in several age groups, peaked in 1990 and decreased between 1990 and 2000.[8] The peak in 1990 likely results from the fact that

[5] The unmarried partner designation in the 1990 and 2000 Censuses also allows the identification of same-sex partners. We are obviously unable, however, to use an analogous assumption in 1980 and 1970 that same-sex roommates are romantic partners. Table 1, somewhat unsatisfactorily, groups women who identify same-sex partners in 1990 and 2000 as unpartnered, to maintain consistency across Census years.

[6] Using this approach, we obtain very reasonable estimates of the proportion of women cohabiting, causing us to judge it as a reasonable assumption. For example, for women ages 35-39, we find that 5.21% are cohabiting in 2000, 3.49% are cohabiting in 1990, 1.46% are cohabiting in 1980 and 0.21% are cohabiting in 1970.

[7] Interestingly, Atkinson and Glass (1985) show using 1900 Census data that 47.1% of married couples had a husband at least 5 years older than the wife, and 15.8% had a wife at least 5 years older than the husband, but that these percentages had dropped to 33% and 3.7% by the 1960 Census.

[8] Table 1 does not separate out marriage from cohabitation, but the role of cohabitation has evolved over time. While cohabitation was much more uncommon in 1980 and 1970, partnerships with younger men conditional on cohabitation was not uncommon at all. Conditional on cohabitation, 27.1% of women in 1970 were partnered with men at least 5 years younger. The corresponding numbers for 1980, 1990 and 2000 are 24.8%, 20.8% and 16.4%. Likewise, 17.7% of cohabiting women in 1970 were partnered with men at least 10 years younger, and the corresponding numbers for 1980, 1990 and 2000 are 9.7%, 6.4% and 4.2%. Our interpretation is that in 1970 and 1980, cohabitation was uncommon and reserved for cases in which one was partnered with an individual who was unsuitable for marriage. A large age difference was one sign that the couple may be

such partnerships are more likely when women are experiencing a "marriage squeeze," in other words, when there is a shortage of similarly aged partners (Schoen, 1983; Oppenheimer, 2000). The cohort of women in their 30's and early 40's in 1990 experienced a larger age squeeze than the women in the same age range in 2000. This cohort of women was on the front end of the baby boom, and therefore the cohorts of men at older ages were considerable smaller than the cohorts of men at younger ages. Table 1 also shows a corresponding "trough" in the fraction of women partnered with older men for this same cohort.

Table 1 reports prevalence of partnership with older or younger men as a fraction of all women, partnered or not. Table 2, using only the 2000 Census, reports the distribution of within-couple age differences for the sample of married couples ages 25-60 and the sample of cohabiting couples ages 25-60. The convention used throughout this paper is to take the age difference as the man's age minus the woman's. Therefore, the top row of Table 2 is for couples in which the man is at least 10 years older than the woman, and the bottom row is for couples in which the man is at least 10 years younger than the woman.

As is generally expected, the most common marriages involve women who are the same age or a few years younger than the man. Comparing cohabiting couples to married couples, there are a higher fraction of couples with an older woman and a higher fraction of couples with a much older man.

IV. Earnings Analysis, Census Data

The earnings analysis uses the sample of married couples in which the husband and wife are both ages 25-60 from the 1970, 1980, 1990 and 2000 Censuses. Cohabitating

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considered an unsuitable match for marriage. As cohabitation became more common and "normalized," the fraction of cohabitants with large age differences decreased.

couples are excluded from the sample.[9] The dependent variable is the annual wage and salary earnings, in 2000 dollars. Non-earners are included in the sample.

A. Preliminary Results, 2000 Census

Table 3 reports preliminary results using only the 2000 Census. Regressions are estimated separately for men and women with and without college degrees. The regression for the college samples is:

$$(1)\ Earn_i = \beta_0 + \sum_{j=1}^{8} \beta_j * AgeDiff_{ij} + Race_i\alpha + \sum_{a=1}^{A} \gamma_a * Age_{ia} + \sum_{a=1}^{A} \delta_a * Age_{ia} * Advanced_i + \varepsilon_i$$

where *Earn* is annual earnings in 2000 dollars, and *AgeDiff* is a vector of 8 indicator variables for the same categories of within-couple age difference used in Table 2 (the omitted category is same-aged couples). *Race* contains indicators for black and Hispanic. *Age* is a vector of single-year age indicators and *Advanced* is an indicator for advanced degree. The estimates of γ_a therefore trace out a flexible age-earnings profile for college graduates without an advanced degree. The δ_a's trace out the differential age-earnings profile for those with an advanced degree. These flexible lifecycle controls are important, as individuals in differently-aged couples tend, on average, to be at different points on their age-earnings profile compared to similarly-aged couples.

For the non-college samples, the indicator for advanced degree is replaced with an indicator for high school degree, so that the fixed-effects control for separate age-earnings profiles for high school dropouts and high school graduates.

[9] The results in the paper are highly robust, and even stronger, when we include the cohabiting couples. Cohabitating couples have lower specialization, reinforcing our finding of higher women's earnings and lower men's earnings in differently-aged couples. Conducting analysis exclusively on the sample of cohabiting couples is problematic, as selection into cohabitation (as opposed to marriage) appears to be a function of the within-couple age difference.

The first two columns of Table 3 report the age-difference coefficients for men. For both the college and non-college samples, all of the age-difference categories have negative earnings relative to the omitted same-age group, and the earnings gap increases with the size of the age difference. All of these results indicate that men in differently-aged couples are on average lower earning than men in similarly-aged couples. Interestingly, this is true both for men married to younger women and men married to older women. In fact, the effect is rather symmetric except for the most extreme age differences.

The next two columns of Table 3 report the results for women. For women with college degrees, the results indicate that within-couple age differences is positively related to earnings, and the effect is fairly symmetric between women who are married to older men and women who are married to younger men. For women with less than a college degree, there is moderate evidence of a positive relationship between age differences and earnings, but in general the relationship is flatter than for the other three groups.

B. Detailed Earnings Results

Table 4 presents estimates from earnings regressions with a fuller compliment of control variables. Because the regression is estimated separately for each of four Census, by sex, college education and age group, the categorical specification of age difference is replaced with a linear one. The specification is:

$$
\begin{aligned}
Earn_i = {} & \beta_0 + \beta_1 AgeDiff_i * Pos_i + \beta_2 (-AgeDiff_i) * (1 - Pos_i) + X_i \alpha \\
& + \sum_{a=1}^{A} \gamma_a * Age_{ia} + \sum_{a=1}^{A} \delta_a * Age_{ia} * Advanced_i \\
& + \sum_{c=1}^{17} \lambda_c^1 * AgeChild1_{ic} + \sum_{c=1}^{17} \lambda_c^2 * AgeChild2_{ic} + \sum_{c=1}^{17} \lambda_c^3 * AgeChild3_{ic} \\
& + \sum_{n=1}^{6} \theta_n * NumChild_{in} + \sum_{s=1}^{S} \phi_s * State_{is} + \sum_{s=1}^{S} \psi_s * (State_{is} * Urban_i) + \varepsilon_{is}
\end{aligned}
\tag{2}
$$

where *Earn* is annual earnings, *AgeDiff* is the age of the man minus the age of the woman, and *Pos* is an indicator variable for a positive age difference. *AgeDiff*Pos* is therefore the number of years the man is older than the woman and equals 0 if the woman is older. *(-AgeDiff)*(1-Pos)* is therefore the number of years the woman is older than the man and equals zero if the man is older.

Because similarly aged couples have higher fertility than differently aged couples, we include a rich set of controls for presence and age of children. *AgeChild1* is a vector of single-year age fixed-effects for the age of the *youngest* child in the household. *AgeChild2* and *AgeChild3* are vectors of single-year age fixed-effects for the age of the second and third *youngest* children in the household. *NumChild* is a vector of fixed-effects for number of children in the household up to 6 or more children. For the 1970, 1980 and 1990 Census, fixed-effects for total number of children ever born are also included. This variable is not available in the 2000 Census. The regression also includes state fixed-effects and state fixed-effects interacted with an indicator for urban location. Observations with zero earnings are included in the sample. Equation (2) is therefore estimated using a standard Tobit model.[10]

The child controls are included out of the concern that individuals with low preferences for children self-select into differently-aged couples. In this case, the higher earnings of women in differently-aged couples may reflect the fact that they had lower preferences for childbearing. To the extent, however, that the lower fertility of differently-aged couples is a direct result of the coupling, for example as a result of lower marital quality, less household specialization and lower earnings potential, it is not clear that these controls

[10] To the extent that selection into labor force participation varies between similarly-aged couples and differently-aged couples, comparing earnings between these couples with a sample restricted to positive earnings is problematic. We, however, find that the results in Table 3 are quite robust to estimating equation (2) on the subsample of positive earners, both using linear earnings and using logged earnings as the dependent variable.

are appropriate. The results from equation (2) are therefore conservative estimates. The findings presented below become stronger if the fertility controls are removed.

Table 4 reports Tobit coefficient estimates of equation (2) for men. For each of the four Census, equation (2) is estimated separately by college education and for each of three age groups: ages 25-35, 35-50 and 50-60. The results for men are quite robust and show that men who have larger age differences with their partner have lower earnings. This relationship exists in all four Censuses. Perhaps surprisingly, for prime-aged men (35-50) this relationship is rather symmetric, with similar estimates for men who are older than their partners and men who are younger than their partners, particularly in more recent Censuses. There are asymmetries for the other age groups that suggest different lifecycle patterns for men partnered with older versus younger women.

The results for women are reported in Table 5.[11] For college women ages 35-50 and ages 50-60, larger within-couple age differences are associated with higher earnings. The relationship exists in all four Census years, although the estimates are not always statistically significant. For college women in the younger, 25-35 year old age bracket, age difference is negatively related to earnings. This does not appear to be a cohort effect, as it stable across multiple Censuses. This negative effect for younger women could either reflect differences across the lifecycle or it could reflect compositional changes as later marriages change the composition of differently-aged couples.

The results in the bottom half of Table 5 for women without college degree indicate that women who are older than their husband have higher earnings than women with

[11] Some of the coefficient estimates in Table 5 are from a linear, rather than Tobit, regression model. There were some samples, mostly in the 1970 Census, for which the Tobit model would not converge. A comparison of Tobit and linear regression models in the other samples indicates the results tend to be similar, although the Tobit model, as expected, tends to produce coefficients that are larger in magnitude.

similarly-aged husbands, but that women who are younger than their husband have lower earnings on average than women with similarly aged husbands. These patterns persist across Census years and across age groups.

Because there is selection into childbearing and higher fertility by women with lower earning potential, it is likely that we overestimate the effect of family structure on women's earnings, and, as a result, overcorrect for the differences in family structure between women in differently-aged couples and women in similarly-aged couples. As a result, it is likely that our positive coefficient estimates are actually lower bounds.

1980 is the only Census which reports age of marriage and whether there were previous marriages. Appendix A reports earnings results for both men and women in which these controls are added. While the estimates become less positive for women and less negative for men, the qualitative findings are the same.

The findings from Tables 4 and 5 are that men in differently-aged couples tend to be lower earnings on average and women in differently-aged couples tend to have higher earnings on average. These results are surprisingly persistent across Census years all the way back to 1970, despite large changes in women's labor market outcomes and features of marriage markets over the 40 year time period. It would be very reasonable to expect that preferences regarding within-couple age difference have changed over time as household specialization has declined and, potentially, complementarities in consumption have become more important than complementarities in production (Stevenson and Wolfers, 2007). It is also striking that these patterns exist both for marriages in which the man is older and marriages in which the woman is older.

The explanation offered in this paper for the observed patterns in the earnings analysis is that both men and women who marry very differently-aged spouses tend on average to be negatively selected. We argue and present evidence below that the positive relationship between women's earnings and within-couple age difference is not because women in differently aged couples are positively selected on earnings potential, but that their labor market effort increases in response to the lower earnings of their spouse. Because wife's labor market effort is more responsive to husband's earnings than the reverse, we would expect to see a larger effort response by the women in differently-aged couples than the men (Lundberg, 1988).

Testing for negative selection into differently-aged couples requires attributes that are not endogenously determined by marriage market options or success. Exogenous measures of human capital or other attributes that are valued on the marriage market are necessary to test whether men and women in differently-aged couples tend to be negatively selected. This paper pursues three such measures: average hourly earnings in occupation using the Census data, cognitive skills assessments from the National Longitudinal Survey of Youth 1979 cohort (NLSY79), and measures of physical appearance from the National Longitudinal Study of Adolescent Health (Add Health).

C. Average Earnings per Hour by Occupation

This section uses average earnings per hour in occupation as a measure of earnings potential. Under the assumption that it is more costly to change occupations than it is to adjust effort within an occupation, this measure should be less endogenous to partner's characteristics than last year's earnings. Obviously, individuals can in fact choose occupation

endogenously, and so this measure is the least exogenous of the three measures of quality used in this paper. It is, however, the only one available to us in the Census data.

Samples of full-time workers in the 2000, 1990, 1980 Censuses are used to calculate average hourly earnings by occupation using 3-digit SOC codes. The 1970 Census data do not provide the necessary hours information. Average earnings per hour are calculated separately by sex, college education and 5-year age interval.[12] Average hourly earnings in occupation is merged into the analysis data set based on the individual's report of occupation in more recent job worked in the past five years. One nice feature of this measure is that it provides us with a measure of earnings potential for individuals who are not currently working as long as they have worked in the past five years.

Table 6 reports estimates in which the earnings variable in equation (2) is replaced with average earnings per hour in occupation. To limit the volume of results, and to focus on prime-age workers, we limit our analysis in Table 6 to women and men ages 35-50.[13]

Average hourly earnings in occupation are not available for members of the sample who have not worked in the past five years and therefore do not report an occupation. For comparability to Tables 4 and 5, Table 6 also reports results for individual earnings using this reduced sample. Coefficients for individual earnings are estimated using a Tobit model, while the coefficients for occupational earnings are estimated using standard linear regression.[14]

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[12] Hourly earnings are calculated for each worker by the standard census data convention: multiplying weeks worked last year times usual hours of work per week to obtain annual hours, and dividing total annual earnings by annual hours to obtain earnings per hour.

[13] For men, the pattern of results is very similar across all three age groups (ages 25-35, 35-50, and 50-60). For women, the results for ages 50-60 are similar to those reported in Table 5. The results for younger women indicate that age difference is associated with both lower earnings and lower average earnings in occupation.

[14] As was the case in Tables 4 and 5, the patterns of results are similar if we estimate linear regression using only the sample of workers, whether we use the level of logarithm of the earnings variable. Results for the sample female workers using logged earnings, hours and earnings per hour are reported in Appendix A.

The results for women, which are of the greatest interest, are reported in the top of Table 6. As mentioned, the sample size is reduced from that in Table 5, as roughly half of non-earners do not report on occupation and are therefore dropped from the sample. The results for individual earnings are report in columns 1 and 3 for women with and without college degrees, respectively. Despite the loss of many non-earners, the positive relationship between age difference and individual earnings is still generally observed, although the estimates are not always statistically significant.

The results for average earnings per hour in occupation that are reported in columns 2 and 4, however, give no suggestion of a positive relationship with age difference. All of the coefficients are negative, and almost all are statistically significant. These results indicate that to the extent that women in differently-aged couples have at least modestly higher earnings than women in similarly aged couples, this does not result from the fact that these women are in higher earning occupations. There is little evidence based on occupational earnings to suggest that women who are partnered with younger or older men are positively selected. Appendix B reports additional analysis on wages and hours of work that shows that the higher earnings of women in differently-aged couples are largely generated by higher hours of work, not by higher wages.

The results for men in the bottom half of Table 6 continue to indicate that men in differently-aged couples are negatively selected in terms of both earnings and average earnings per hour in occupation.

Appendix A reports results for average earnings per hour in occupation from the 1980 Census in which controls for age of marriage and previous marriage are included. The results are robust to these controls.

V. AFQT analysis, NLSY79 Data

This section uses data from the NLSY79, a panel data set based on annual surveys of men and women who were 14-21 years old on January 1, 1979. Respondents were first interviewed in 1979, re-interviewed each year through 1994, and have been interviewed every two years since 1994. This analysis uses data from 1979-2006.

There are two key advantages to the NLSY data. The first is that the NLSY administered cognitive skills assessments in 1980. The second advantage is that while the Census only provides a cross-section of current marriages, the NLSY collects a full marital history.

In 1980, NLSY79 respondents took the Armed Services Vocational Aptitude Battery (ASVAB), a battery of tests designed to measure a range of knowledge and skills. The Armed Forces Qualifications Test (AFQT) scores reported in the data are created from the verbal, math and arithmetic reasoning sections of the ASVAB.

The AFQT scores are used to investigate whether men and women in differently aged couples are positively or negatively selected on cognitive ability. Because the NLSY collects full marital history, there is the question of the appropriate sample of marriages for analysis. For this analysis, three samples of marriages are considered. The first sample is simply the sample of first marriages. The other two samples are constructed to capture marriages that exist when the respondents are ages 30-50. The second sample is the earliest marriage that *exists* during this age range, regardless of when the marriage starts. The third sample is the latest marriage that exists during this age range.[15]

[15] Consider as a hypothetical example someone who is in a first marriage from ages 22-26, a second marriage from ages 28-32, a third marriage from ages 35 on. The first marriage will be used in the first sample, the second marriage will be used in the second sample and the third marriage in the third sample.

Table 7 provides some unweighted descriptive statistics.[16] The first three columns report the distribution of within-couple age difference for the three different samples of marriages used in the analysis. Not surprisingly, the samples that include more second and third marriages have greater proportions of marriages in which the woman is older than the man, and also in which the man is much older than the woman.[17] The last two columns of Table 7 report raw means of AFQT scores by within-couple age difference for the sample of first marriage. The means are reported separately for male and female respondents. For both men and women, there is a clear pattern of declining AFQT scores with age difference, regardless if whether the man is older than the woman or the woman is older than the man.

The regression specification that is used to test for differences in AFQT score by within-couple age difference is:

$$AFQT_i = \beta_0 + \beta_1 AgeDiff_i * Pos_i + \beta_2(-AgeDiff_i) * (1 - Pos_i) + \beta_3 Educ_i + \beta_4 AgeofMarr_i + Race_i\beta_5 + YrBirth_i\delta + \varepsilon_i \quad (3)$$

where the age difference variables are the same ones used in equation (2), *Educ* is highest grade completed, *AgeofMarr* is age at time of marriage, *Race* contains indicators for black and Hispanic, and *YrBirth* is a vector of year of birth indicators. The age of marriage variable measures age of marriage for whichever marriage is used in a particular sample.

Table 8 reports estimates from equation (3) for each of the three marriage samples, and separately by sex and college education. All but two coefficient estimates are negative. The strongest and most robust result is that for college-educated men who are older than their wives. There is sizeable statistically significant negative effect across all three marriage

[16] The NLSY79 is a stratified sample, that, in particular, oversamples black and Hispanic respondents. Sampling weights are therefore used in the regression analysis. Table 7 provides unweighted statistics to illustrate the distribution of observations in the raw data.

[17] The second sample ("earliest" marriage ages 30-50) is 83.6% first marriages, 14.8% second marriages and 1.6% third marriages. The third sample is 72.6% first marriages, 22.3% second marriages and 5.1% third marriages.

samples. The coefficient estimate for college-educated women married to older men is also statistically significant in all three samples, although only at the 10 percent level in two of the samples.

Overall, the results in Table 8 provide absolutely no evidence of positive selection by either men or women into differently-aged couples, whether they are coupled with an older man or older woman. The results provide strong evidence of negative selection of college-educated men into marriages in which they are much older than their wives, and moderate evidence of negative selection into differently-aged couples for all other groups.

VI. Analysis of Physical Appearance, Add Health Data

The AFQT score results in Table 8 provide evidence of negative selection into differently aged couples with respect to cognitive skills. The evidence of negative selection is stronger for men than for women. Likewise, the analysis of earnings potential by occupation in Table 6 indicated stronger negative selection with respect to earnings potential for men than for women. These results are not surprising to the extent that women weight earnings potential of men more heavily in the marriage decision than men weight the earnings potential of women. It is therefore useful to consider a quality measure, such as physical appearance, that might be of greater importance to men in choosing a marriage partner.[18]

This section uses data from the National Longitudinal Survey of Adolescent Health (Add Health), which is a longitudinal study of a nationally representative sample of adolescents who were in grades 7-12 during the 1994-95 school year. There have been four waves of interviews, the most recent in 2008, when the sample was aged 24-32.

[18] Fisman et al (2006) find that women place greater weight on intelligence and ambition and men place greater weight on appearance in choosing partners in a speed-dating experiment.

The primary advantage of this data is that measures of physical appearance and Body Mass Index (BMI) were recorded in the first round of the data. Not only is it unique to have measures of physical appearance in the same data set that records marital history information, but these measures of appearance predate entry into marriage, and therefore there is no concern about endogenous changes in appearance in response to marriage market outcomes. The main drawback of the Add Health data is that the respondents are still relatively young in the last wave of the data. As a result, in this analysis, we focus exclusively on first marriages.[19]

The measure of physical appearance in the Add Health data is a subjective report by the interviewer, who rates the respondent's appearance on a scale from 1 to 5. A rating of 1 is "very unattractive" and a rating of 5 is "very attractive". Table 9 reports the unweighted distribution of ratings, separately by sex, for our sample of first marriages. [20] The vast majority of respondents are given a rating of 3 or 4. Women receive higher ratings on average than men, and consistent with previous research are both more likely to be rated "very attractive" and "very unattractive" (Hamermesh and Abrevaya, 2011; Hamermesh 2011).

Two measures of appearance are used as dependent variables in the regression analysis. The first is a binary indicator for "Attractive", which equals 1 for those who receive ratings of 4 or 5. Roughly 45% of men and 60% of women in the sample are rated as "Attractive." A logit model is used for this appearance measure. BMI is also used as an

[19] 49.8% of Add Health respondents are ever married by wave 4. When broken down by sex, the percentages are 45.6 for men and 53.5% for women. Of respondents who had ever been married by the wave 4 of the Add Health, 92% had only been married once.

[20] Appearance ratings are also provided in Waves 3 and 4. The earlier measure is used in this analysis because it precedes entry into marriage. French et al (2009) find that the appearance rates are highly stable across the three reports.

appearance measure. High values of BMI correspond to overweight or obese appearance. These are not independent tests, as individuals rated as attractive have lower BMI on average than those not rated attractive, although, not surprisingly, the differences are larger for women than men.

The regression results appear in Table 10. The control variables are the same as those listed in equation (3).[21] The first column reports logit coefficients and marginal effects for the Attractive appearance rating.[22] For both men and women, all of the coefficient estimates are negative, indicating that age difference is negatively related to the probability of being rated as attractive or very attractive, although statistical significance varies.[23] Similar results are obtained if the outcome is changed to an indicator for "Very Attractive" (receiving a rating of 5).

The final column reports the results for BMI. For men, the coefficient on negative age difference is positive and marginally significant, but the coefficient on positive age difference is negative and insignificant. For women, both coefficients are positive, although only the coefficient on negative age difference is marginally significant. These results provide suggestive evidence that higher BMI individuals select into differently-aged couples, but the findings lack statistical significance.

VII. Discussion

The results in this paper call into question much of the conventional wisdom regarding differently aged couples. Three key results all run contrary to general

[21] Analysis is weighted using wave 4 grand sample weights.
[22] The reported marginal effects are average derivatives.
[23] The results are not reported separately by college education largely because of sample size constraints. Additionally, there are fewer concerns about pooling the regressions for these outcomes compared to earnings and cognitive ability. Separate analysis by college education produces similar results, but none of the coefficient estimates are statistically significant.

expectations. First, both members of these couples tend to be negatively selected. This is true even for older men married to younger women. Second, that there is a striking degree of symmetry between couples in which the woman is older and couples in which the man is older. Third, despite the changes in societal norms and women's gains in the labor market, our Census results show that the relationship between earnings and within couple age difference has been surprisingly stable over time.

Our results are not inconsistent with papers such as Coles and Francesconi (forthcoming) and Raley, Mattingly and Bianchi (2006), both of which find that women who are several years older than their spouse are more likely to have higher earnings relative to their spouse. Our findings, however, suggest that their results are in large part driven by the fact that the men in these relationships are very negatively selected on earnings, rather than by the financial success of the women. While both men and women negatively select into these pairings, women in these pairings have higher labor supply than women who match with similarly aged partners. This is consistent with previous findings that women's labor market effort is more sensitive to partner's earnings than the reverse. Additionally, because differently-aged couples have lower fertility, the finding that women with younger spouses are more likely to out earn their spouse will be even stronger in any analysis that does not adequately control for differences in number and age of children.

The results on earnings, average earnings in occupation, and AFQT scores indicate stronger negative selection into differently-aged couples by men than women. This is consistent with other research that finds that women weight the earnings potential of men more heavily than the reverse. Given the findings in the same literature that men weight the

appearance of women more heavily than the reverse, we would have expected to find stronger evidence of more negative selection by women with regard to appearance.

The empirical results in this paper are inconsistent with most existing economic models of age of marriage and within-couple age difference. The question therefore is what economic model is consistent with these findings. To our knowledge, the only existing model of marital sorting that produces negative selection of both spouses into couples who are "mixed" on a trait is Chiappori, Oreffice and Quintana-Domeque (2010), who model marital sorting of smokers and non-smokers. Their results, however, hinge on a gender asymmetry in which there is a shortage of smoking women and non-smoking men. It is not clear what model would generate both pairings between older men and younger women and pairings between older women and younger men in which all members are negatively selected. This suggests an avenue of future research.

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Appendix A

The 1980 Census is the only one in which we observe age of first marriage and whether or not the current marriage is the first marriage. In Table A1, we report results for both annual earnings and average hourly earnings in occupation in which we include age of marriage and an indicator for whether this marriage is a 2nd or later marriage. To limit the number of results, we only report estimates ages 35-50. The earnings results in the first column can be compared directly to Table 4 for men (the 1980 results for men ages 35-50) and Table 5 for women (the 1980 results for women ages 35-50). The results for average earnings per hour in occupation can be compared directly to the 1980 results in Table 6.

For the earnings analysis in the first column, adding the controls makes the age difference effects less positive for women and less negative for men, but the findings are qualitatively the same. For hourly earnings in occupation, the point estimates change somewhat, some more negative and some less, but the findings are unchanged.

Table A1: 1980 Census results adding controls for age of marriage and multiple marriages, Ages 35-50

	Earnings	Avg Earnings per Hour in Occupation
Women /w College		
Age Diff, Pos	85.1 (26.1)	-0.007 (0.005)
Age Diff, Neg	225.9 (64.6)	-0.064 (0.012)
N	72,506	58,743
Women w/o College		
Age Diff, Pos	-49.0 (8.2)	-0.012 (0.001)
Age Diff, Neg	99.6 (18.7)	-0.031 (0.003)
N	449,049	320,220
Men /w College		
Age Diff, Pos	-473.4 (36.7)	-0.042 (0.005)
Age Diff, Neg	-1116.1 (89.9)	-0.102 (0.012)
N	131,302	130,933
Men w/o College		
Age Diff, Pos	-408.3 (13.8)	-0.064 (0.003)
Age Diff, Neg	-634.1 (24.5)	-0.068 (0.005)
N	402,200	394,711

Appendix B

Table A2 extends the analysis for women in Table 6 to the subsample of women with positive earnings. For this group, it is possible to decompose differences in earnings into differences in hours and earnings/hour:

Log(Earnings)=log((Earnings/Hours) *(Hours))=log(Earnings/Hours)+log(Hours)

Table A1 reports results for this sample from estimating equation (2) using the dependent variables logged earnings, logged hours, logged earnings per hour, and logged average earnings per hour in occupation.

The results for logged earnings in the first column confirm previous estimates of a positive relationship with age difference. The next two columns report results for logged hours and logged earnings per hour. When the earnings effect in the first column is decomposed into the hours and earnings per hour effect, it is clear that the higher earnings for women in differently-aged couples are overwhelmingly the result of higher hours. The results for logged average earnings per hour in the final column confirm the earlier findings that within-couple age difference is negatively related to average hourly earnings in occupation.

Table A2- Earnings, Hours and Earnings per Hour for Women with Positive Earnings

	Log(Earnings)	Log(Hours)	Log(Earnings per Hour)	Log(Avg Earnings per Hour in Occupation)
Women /w College				
2000				
Age Diff, Pos	0.0061 (0.0013)	0.0050 (0.0005)	0.0011 (0.0005)	-0.0007 (0.0002)
Age Diff, Neg	-0.0014 (0.0013)	0.0075 (0.0009)	-0.0089 (0.0009)	-0.0048 (0.0004)
N	177,202	177,202	177,202	177,202
1990				
Age Diff, Pos	0.0057 (0.0010)	0.0044 (0.0007)	0.0013 (0.0006)	-0.0006 (0.0002)
Age Diff, Neg	0.0046 (0.0018)	0.0105 (0.0013)	-0.0059 (0.0011)	-0.0036 (0.0005)
N	118,843	118,843	118,843	118,843
1980				
Age Diff, Pos	0.0101 (0.0016)	0.0079 (0.0013)	0.0024 (0.0010)	-0.0003 (0.0004)
Age Diff, Neg	0.0212 (0.0034)	0.0261 (0.0027)	-0.0045 (0.0020)	-0.0052 (0.0009)
N	48,260	48,260	48,260	48,260
Women w/o College				
2000				
Age Diff, Pos	0.0007 (0.0004)	0.0007 (0.0003)	-0.0000 (0.0003)	0.0002 (0.0003)
Age Diff, Neg	0.0013 (0.0007)	0.0058 (0.0005)	-0.0045 (0.0004)	-0.0022 (0.0004)
N	397,361	397,361	397,361	397,361
1990				
Age Diff, Pos	0.0010 (0.0005)	0.0008 (0.0004)	0.0002 (0.0003)	-0.0011 (0.0002)
Age Diff, Neg	0.0051 (0.0009)	0.0070 (0.0070)	-0.0019 (0.0005)	-0.0025 (0.0002)
N	341,555	341,555	341,555	341,555
1980				
Age Diff, Pos	0.0045 (0.0006)	0.0036 (0.0005)	0.0009 (0.0004)	-0.0010 (0.0001)
Age Diff, Neg	0.0012 (0.0013)	0.0122 (0.0011)	-0.0002 (0.0008)	-0.0014 (0.0003)
N	257,117	257,117	257,117	257,117

Table 1- Share of Women Partnered with Differently-Aged Men

	Women Ages:				
	30-34	35-39	40-44	45-49	50-55
Man is:					
5+ Older					
2000	19.45	19.20	18.51	17.29	16.84
1990	18.91	18.06	17.88	20.21	22.64
1980	17.43	20.82	23.90	24.21	23.63
1970	25.64	26.00	26.19	25.25	25.44
10+ Older					
2000	5.83	6.12	5.97	5.36	5.32
1990	6.01	5.71	5.94	6.57	6.73
1980	5.21	6.46	7.05	6.81	6.63
1970	7.04	7.18	7.62	7.43	7.60
5+ Younger					
2000	2.29	3.80	4.99	5.62	5.15
1990	2.38	4.05	4.39	4.27	3.77
1980	1.98	2.80	3.00	2.96	2.95
1970	1.38	2.32	2.67	3.47	3.75
10+ Younger					
2000	0.18	0.60	1.12	1.57	1.67
1990	0.21	0.73	1.23	1.30	1.39
1980	0.22	0.58	0.82	0.92	0.89
1970	0.14	0.46	0.77	0.97	1.00

Notes: Calculations with the 1970, 1980, 1990 and 2000 IPUMS data. Partnered women include all married women, all women with opposite-sex unmarried partners in 1990 and 2000 and all women with opposite-sex roommates in 1970 and 1980.

Table 2: Distribution of Within-Couple Age Difference, 2000 Census

	Married Couples	Cohabiting Couples
Age Difference:		
+10 or more	0.052	0.105
+7 to 9	0.069	0.090
+4 to 6	0.170	0.151
+1 to 3	0.368	0.232
0	0.129	0.087
-1 to 3	0.144	0.161
- 4 to 6	0.041	0.084
- 7 to 9	0.016	0.045
- 10 or more	0.010	0.045
N	1,470,414	103,613

Notes: Samples of all married couples and all cohabiting couples (unmarried partners) ages 25-60 in the 2000 IPUMS data. Age difference is man's age minus the woman's age.

Table 3: Annual Earnings and Number of Children by Within-Couple Age Difference, Married Couples, 2000 Census

	Annual Earnings			
	Men		Women	
	College	Less than College	College	Less Than College
Age Difference:				
+10 or more	-8874.7	-4453.4	2537.2	51.43
	(545.3)	(168.8)	(288.0)	(93.31)
+7 to 9	-9763.5	-3939.1	2390.5	327.5
	(484.6)	(153.4)	(253.1)	(85.39)
+4 to 6	-8090.0	-3068.4	1188.8	45.05
	(368.6)	(122.0)	(190.4)	(68.16)
+1 to 3	-2908.6	-1013.4	757.7	-3.251
	(309.2)	(108.1)	(158.4)	(60.52)
-1 to 3	-3243.4	-1265.4	413.1	192.0
	(371.3)	(126.7)	(187.4)	(71.62)
- 4 to 6	-9502.8	-3815.6	2304.7	896.2
	(617.2)	(178.3)	(305.6)	(101.6)
- 7 to 9	-12808.5	-5407.8	2366.1	934.5
	(1023.1)	(256.6)	(501.4)	(146.7)
- 10 or more	-17073.4	-7509.8	1308.6	682.5
	(1442.1)	(301.6)	(686.8)	(173.4)
N	469,484	1,000,930	434,011	1,036,403

Notes: Sample is all married couples with both members ages 25-60 in the 2000 Decennial Census. Age difference is man's age minus woman's age. Table reports coefficient estimates from equation (1). Robust standard errors in parentheses.

Table 4- Male Earnings by Age Difference with Spouse

	2000 Census	1990 Census	1980 Census	1970 Census
Men /w College				
Ages 25-35				
Age Diff, Positive	-1950.2 (106.3)	-1225.7 (74.6)	-907.2 (49.7)	-1018.9 (180.2)
Age Diff, Negative	-819.0 (93.8)	-397.4 (76.9)	-532.9 (60.6)	-454.1 (175.5)
N	89,773	94,776	103,662	12,261
Ages 35-50				
Age Diff, Positive	-1394.3 (54.04)	-822.9 (39.6)	-644.4 (34.88)	-834.3 (103.4)
Age Diff, Negative	-1454.4 (97.92)	-1115.3 (85.6)	-1271.0 (88.14)	-1727.7 (248.6)
N	252,390	225,787	131,302	23,276
Ages 50-60				
Age Diff, Positive	-492.0 (68.8)	-199.2 (60.8)	-265.8 (48.5)	-579.2 (180.1)
Age Diff, Negative	-2298.1 (318.8)	-3217.1 (358.7)	-1232.9 (228.9)	-1620.8 (792.3)
N	127,321	68,612	54,380	7,531
Men w/o College				
Ages 25-35				
Age Diff, Positive	-976.4 (35.5)	-895.8 (24.8)	-777.8 (23.8)	-532.7 (54.9)
Age Diff, Negative	-464.7 (20.9)	-323.8 (19.6)	-345.0 (21.6)	-317.0 (40.9)
N	206,252	275,728	242,815	49,541
Ages 35-50				
Age Diff, Positive	-642.0 (16.8)	-696.6 (13.7)	-515.4 (12.6)	-408.4 (25.2)
Age Diff, Negative	-703.3 (26.1)	-599.1 (25.7)	-751.5 (23.8)	-475.8 (47.0)
N	544,038	488,042	402,200	111,713
Ages 50-60				
Age Diff, Positive	-228.8 (24.98)	-161.3 (19.7)	-249.3 (14.2)	-182.1 (31.93)
Age Diff, Negative	-1160.1 (111.0)	-907.4 (96.8)	-794.4 (64.6)	-397.0 (131.8)
N	250,640	213,662	243,961	60,913

Notes: Sample is married men ages 25-60 with spouses ages 25-60 in the 1970, 1980, 1990 and 2000 Decennial Censuses. Dependent variable is annual earnings in 2000 dollars. Age Diff, Positive is the number of years the man is older than the woman, and equals zero if the woman is older. Age Diff, Negative is the number of years the woman is older than the man, and equals zero if the man is older. Table reports coefficient estimates from equation (2), estimated by a Tobit model. Robust standard errors in parentheses.

Table 5- Female Earnings by Age Difference with Spouse

	2000 Census	1990 Census	1980 Census	1970 Census
Women /w College				
Ages 25-35				
Age Diff, Positive	-320.8 (28.3)	-96.8 (22.3)	-37.8 (20.5)	-21.22 (66.5)
Age Diff, Negative	-607.6 (108.7)	-220.8 (81.6)	142.3 (75.8)	1118.4 (350.4)
N	124,680	109,840	90,897	9,543
Ages 35-50				
Age Diff, Positive	154.5 (30.3)	122.5 (23.7)	147.9 (25.7)	106.9 (44.4)[a]
Age Diff, Negative	109.2 (58.6)	189.0 (46.4)	434.2 (60.8)	278.9 (108.4)[a]
N	239,524	167,199	72,506	10,873
Ages 50-60				
Age Diff, Positive	162.3 (95.8)	114.1 (98.7)	286.5 (86.7)[a]	80.51 (233.9)[a]
Age Diff, Negative	410.8 (75.6)	447.2 (73.8)	173.6 (71.4)[a]	215.7 (252.2)[a]
N	69,807	28,148	20,331	3,303
Women w/o College				
Ages 25-35				
Age Diff, Positive	-213.2 (10.9)	-136.1 (7.8)	-96.7 (7.5)	-94.9 (17.5)
Age Diff, Negative	29.5 (44.9)	57.2 (30.0)	427.7 (33.1)	932.9 (99.7)
N	263,299	373,225	356,957	76,242
Ages 35-50				
Age Diff, Positive	-90.9 (10.3)	-74.8 (8.5)	-0.581 (8.1)	37.2 (12.1)[a]
Age Diff, Negative	153.4 (17.4)	262.0 (15.2)	338.6 (17.5)	145.4 (25.5)[a]
N	572,639	527,812	449,049	123,535
Ages 50-60				
Age Diff, Positive	-146.1 (38.7)	-41.4 (33.3)	-121.3 (24.0)	69.7 (33.3)[a]
Age Diff, Negative	272.6 (26.6)	301.7 (23.0)	259.2 (24.2)	87.3 (27.3)[a]
N	200,465	160,383	188,580	41,729

Notes: Sample is married men ages 25-60 with spouses ages 25-60 in the 1970, 1980, 1990 and 2000 Decennial Censuses. Dependent variable is annual earnings in 2000 dollars. Age Diff, Positive is the number of years the man is older than the woman, and equals zero if the woman is older. Age Diff, Negative is the number of years the woman is older than the man, and equals zero if the man is older. Table reports coefficient estimates from equation (2), estimated by a Tobit model. Robust standard errors in parentheses.

[a]Estimates marked with an [a] are obtained with a linear regression. The Tobit model failed to converge.

Table 6-Earnings and Average Earnings in Occupation by Age Difference with Spouse

	With College		W/o College	
	Earnings	Avg Earnings/Hr in Occupation	Earnings	Avg Earnings/Hr in Occupation
Women				
2000				
Age Diff, Positive	153.4 (33.2)	-0.008 (0.0004)	-12.8 (9.6)	-0.001 (0.002)
Age Diff, Negative	-156.2 (45.9)	-0.080 (0.008)	14.0 (14.4)	-0.025 (0.003)
N	223,978	223,978	522,832	522,832
1990				
Age Diff, Positive	141.5 (24.3)	-0.012 (0.004)	0.01 (8.5)	-0.014 (0.002)
Age Diff, Negative	63.3 (43.0)	-0.049 (0.007)	85.7 (14.5)	-0.034 (0.003)
N	151,078	151,078	438,062	438,062
1980				
Age Diff, Positive	170.6 (25.8)	-0.009 (0.005)	36.7 (7.6)	-0.009 (0.001)
Age Diff, Negative	219.8 (58.1)	-0.073 (0.012)	111.3 (16.3)	-0.015 (0.003)
N	58,743	58,743	325,134	325,134
Men				
2000				
Age Diff, Positive	-1384.4 (53.3)	-0.141 (0.008)	-604.9 (16.9)	-0.103 (0.003)
Age Diff, Negative	-1409.6 (89.5)	-0.123 (0.013)	-625.0 (23.6)	-0.087 (0.005)
N	250,830	250,830	527,995	527,995
1990				
Age Diff, Positive	-910.8 (39.1)	-0.067 (0.006)	-587.7 (13.5)	-0.082 (0.003)
Age Diff, Negative	-1071.3 (79.2)	-0.084 (0.011))	-716.3 (23.5)	-0.115 (0.005)
N	225,054	225,054	477,999	477,999
1980				
Age Diff, Positive	-715.0 (34.8)	-0.028 (0.005)	-450.5 (12.2)	-0.053 (0.002)
Age Diff, Negative	-1257.0 (81.2)	-0.096 (0.012)	-758.3 (21.8)	-0.087 (0.004)
N	130,933	130,933	394,711	394,711

Notes: Sample is married men and women ages 35-50 with spouses ages 25-60 in the 1980, 1990 and 2000 Decennial Censuses who report an occupation for most recent job in the past 5 years. Age Diff, Positive is the number of years the man is older than the woman, and equals zero if the woman is older. Age Diff, Negative is the number of years the woman is older than the man, and equals zero if the man is older. Columns 1 and 3 report coefficient estimates from equation (2), estimated by a Tobit model. Columns 2 and 4 report coefficient estimates from equation (3). Robust standard errors in parentheses.

Table 7- Descriptive Statistics, Within-Couple Age Differences and AFQT Scores, NLSY Data

	Distribution of Within-Couple Age Difference			Mean AFQT Scores 1st Marriage	
		Ages 30-50			
	1st Marriage	Earliest Marriage	Latest Marriage	Men	Women
Age Difference:					
+10 or more	437	486	564	32.14	34.57
	[4.66]	[5.65]	[6.69]	(27.79)	(28.79)
+7 to 9	1474	1453	1480	38.62	39.03
	[15.70]	[16.90]	[17.55]	(29.94)	(28.68)
+4 to 6	1699	1451	1337	40.73	38.90
	[18.10]	[16.88]	[15.86]	(30.87)	(27.66)
+1 to 3	2658	2178	1996	41.07	40.66
	[28.32]	[25.34]	[23.67]	(30.48)	(28.72)
0	1247	1091	1034	44.83	44.36
	[13.28]	[12.69]	[12.26]	(31.83)	(30.11)
-1 to 3	1319	1310	1297	40.70	40.58
	[14.05]	[15.24]	[15.38]	(31.60)	(29.97)
- 4 to 6	344	385	421	34.68	37.18
	[3.66]	[4.48]	[4.99]	(30.00)	(29.20)
- 7 to 9	129	146	180	29.72	35.71
	[1.37]	[1.70]	[2.13]	(28.54)	(26.26)
- 10 or more	80	96	122	29.94	36.67
	[0.85]	[1.12]	[1.45]	(26.37)	(31.08)
N	9,387	8,596	8,431	4,502	4,885

Notes: Samples of marriages from the NLSY79 data. First column uses the sample of first marriages, second column uses the sample of earliest marriages which existed during the time respodent was ages 30-50 and third column uses sample of latest marriages which existed during the time respondent was ages 30-50. Age difference is man's age minus woman's age. First 3 columns report distribution of observations by age difference category for each of the three marriage samples, with column percentages in brackets. Final 2 columns report mean AFQT scores by age difference category, with standard deviations in parentheses. All statistics are unweighted.

Table 8- AFQT Scores by Age Difference with Spouse, NLSY79

	1st Marriages	Ages 30-50	
		Earliest Marriage	Latest Marriage
Men w/ College			
Age Diff, Positive	-1.04 (0.486)*	-1.31 (0.485)**	-1.14 (0.427) **
Age Diff, Negative	-0.464 (0.661)	-0.291 (0.610)	-0.364 (0.650)
N	981	959	944
Men w/o College			
Age Diff, Positive	-0.592 (0.222)**	-0.182 (0.205)	-0.055 (0.177)
Age Diff, Negative	-0.615 (0.232) **	-0.326 (0.210)	-0.340 (0.153) *
N	3521	3236	3154
Women w/ College			
Age Diff, Positive	0.043 (0.580)	-0.273 (0.545)	-0.378 (0.544)
Age Diff, Negative	-0.323 (0.195)+	-0.502 (0.200)*	-0.409 (0.222)+
N	1141	1104	1091
Women w/o College			
Age Diff, Positive	-0.147 (0.132)	-0.154 (0.123)	-0.210 (0.123)+
Age Diff, Negative	-0.242 (0.429)	0.198 (0.352)	-0.302 (0.277)
N	3744	3297	3242

Notes: Marriage samples are described in notes of Table 7. Dependent variable is AFQT score. Age Diff, Positive is the number of years the man is older than the woman, and equals zero if the woman is older. Age Diff, Negative is the number of years the woman is older than the man, and equals zero if the man is older. Table reports coefficient estimates from equation (2), estimated by a Tobit model. 1979 Sampling weights are used. Robust standard errors in parentheses.

+ p-value<0.10 *p-value<0.05 ** p-value<0.01 ***p-value<0.001

Table 9- Distribution of Appearance Ratings, Add Health

	Men		Women	
Appearance Rating				
1 "Very Unattractive"	42	[1.71]	75	[2.25]
2	118	[4.80]	99	[2.97]
3	1180	[48.05]	1133	[33.96]
4	834	[33.96]	1332	[39.93]
5 "Very Attractive"	282	[11.48]	697	[20.89]
N	1,470,414		103,613	

Notes: Sample of first marriages using Waves 1-4 of Add Health Data. Appearance rating is interviewer's rating in Wave 1 of data. Table reports unweighted distribution of observations across appearance categories, column percentages in brackets.

Table 10: Physical Appearance by Age Difference with Spouse, Add Health Data

	Attractive	BMI
Men		
Age Diff, Positive	-0.109*** (0.033) [-0.025]	-0.097 (0.079)
Age Diff, Negative	-0.004 (0.015) [-0.001]	0.056+ (0.033)
N	2376	2360
Women		
Age Diff, Positive	-0.081 (0.053) [-0.019]	0.152 (0.139)
Age Diff, Negative	-0.028* (0.013) [-0.006]	0.049+ (0.028)
N	3247	3154

Notes: Sample of first marriages from first four waves of Add Health data. Column 1 is a logit model with Attractive indicator that equals 1 for appearance rat of 4 or 5. Column 3 is a linear regression model with BMI as the dependent variable. Controls are described in equation (3). Wave 4 grand sample weights used. Robust standard errors in parentheses and average derivatives reported in brackets
+ p-value<0.10 *p-value<0.05 ** p-value<0.01 ***p-value<0.001