# Within-Couple Age Differences and Marital Sorting: Earnings, Ability and Appearance

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## Abstract

This paper analyses how individual characteristics vary with within-couple age differences. 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 while female earnings increase with within-couple age difference. These patterns are true both for marriages between older women and younger men and between older men and younger women. They are also robust across all four Census years.

We offer an explanation for these earnings patterns that assumes that on average people prefer similarly aged spouses. Individuals who search and match outside similarly-aged partners therefore tend to be negatively selected. Women in differently-aged couples have higher earnings not because of positive selection, but because their effort increases in response to partnering with a lower earning man.

We test this explanation using three measures: average earnings in occupation in 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). None of the results provide any support of positive selection into differently-aged couples by either men or women, regardless of whether the older spouse is male or female. The point estimates overwhelmingly suggest negative selection on all of these characteristics, although statistical significance varies by outcome and sample.

## I. Introduction

While there is relatively little research on within-couple age differences, the popular press has focused on this topic recently, with discussion of so-called "Cougars," women partnered with considerably younger men. These discussions tend to suggest 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 discussion parallels popular culture images of couplings between older men and younger women, which likewise suggest that successful men have the advantage of being able to attract and retain younger partners.

This paper analyses how individual characteristics vary with within-couple age differences. 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, and is robust across all four Census years. In direct contrast, female earnings increase with within-couple age difference. For college-educated women this holds true both for women married to younger men and women married to older men. For women without a college degree, it only holds true for women married to younger men. These findings are also robust across all four Census years.

We offer an explanation for these earnings patterns that begins with the assumption that on average people tend to prefer similarly aged spouses. If so, then individuals who search and match outside similarly-aged partners tend on average to be negatively selected. As a result, men in differently-aged couples tend to be negatively

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

selected on earnings potential. A likely explanation for the fact that women in these couples have somewhat higher earnings than women in similarly aged couples is not that they are positively selected on earnings potential, but that their labor market effort increases in response to partnering with a lower earning man. This result is consistent with the finding in the literature that women's labor market effort is more responsive to husband's earnings than the reverse.

To test this explanation we investigate whether selection into marriage with a differently-aged spouse is negative or positive using three measures: average earnings in occupation in 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). None of the results provide any support of 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.

## 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 specialization. Women marry young, but higher quality women marry higher quality

older men who have delayed marriage to reveal their high worth. Lower quality women marry lower quality young men who have no gains from marriage delay.[2]

Alternatively, there is some evidence to suggest that individuals may prefer marriage to similarly aged partners. 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. To the extent that men and women prefer to have children at similar points in their life cycle, they should prefer matches with similarly aged spouses. There is also evidence that that the age difference between spouses is negatively related to marital stability (Cherlin, 1977; Lillard et al, 1995).[3] Preferences with respect to age difference with spouse could be changing over time. Some research suggests that household specialization and complementarities in production are declining in importance, while complementarities in consumption are increasingly important in generating marital surplus (Stevenson and Wolfers, 2007). These trends would likely increase preferences for small age differences between couples.

If couples in general match on some index of quality, such as earnings potential, but differently-aged matches generate disutility for at least one member of the couple, then the implications are similar to those generated by the analysis of smoking in the marriage market by Chiappori, Oreffice and Quintana-Domenque (2010). The model developed by Chiappori et al. predicts that men and women in "mixed" marriages, those with a smoker and non-smoker, will tend to be lower quality than couples that are

[2] All women marry young in the model by Bergstrom and Bagnoli. 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] Although recent analysis of Australian data by Frimmel et al (2009) finds that this relationship is nonlinear and that the optimal age difference is quite large.

matched in their smoking behavior. If individuals prefer similarly aged partners, then individuals who match with differently aged partners will tend to be negatively selected.[4]

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 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 earnings results in the 1980 Census are robust to the inclusion of age of first, the only year in which the information is available. The analysis using the NLSY79 and Add Health data includes controls for age of marriage.

There is surprisingly little research on the relationship between individual characteristics or labor market outcomes and couple age difference. A rare example of related literature is Grossbard-Shechtman and Newman (1988) who examine the relationship between wife's labor force participation and husband's characteristics using 1974 Census data from Israel. They find that marriage to a husband who is more than

[4] Chiappori et al. use a frictionless search model, so that if equal numbers of men and women smoke, they will match on the quality index within two separate markets: smokers and non-smokers. In their model, "mixed" couples arise out of an imbalance between the numbers of male and female smokers. In our case, if the two groups are older and younger individuals, then there is less likely to be an imbalance in numbers. Mixed-aged couples can still arise in a model with search frictions, which will cause some individuals to go ahead and match with a partner from the other group, rather than wait.

three years older is associated with lower labor force participation, even conditional on husband's income.

## 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. 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 women 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.

[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, in order for 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.

The results for women partnered with younger men have a few interesting features. First, while the fraction of women partnered with older 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.[7] The peak in 1990 likely results from the fact that 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 likely 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

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

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.[8] 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 some 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:

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

where *Earn* is annual earnings, 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 $\gamma_a$ therefore trace out a flexible age-earnings profile for college graduates

[8] The results in the paper are highly robust, and even stronger, when we include the cohabiting 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.

without an advanced degree. The $\delta_a$'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.

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.

The findings from the first four columns of Table 3 are that within-couple age difference is positively related to earnings for women and negatively related to earnings for men. The final column of Table 3 offers one potential omitted variable, and that is differences in household composition. The final column replaces the dependent variable in equation (1) with number of children in the household. This regression, estimated on the full sample of married couples, indicates that differently-aged couples on average have fewer children than similarly-aged couples. To the extent that this generates increased labor market effort for women and reduced labor market effort for men, this could potentially explain some of the earnings patterns in the first four columns of the table, and is an important control in the subsequent regression analysis.

*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. When the regression is estimated on the sample of men, $\beta_1$ therefore estimates the differences in

earnings for men married to younger women compared to men married to similarly aged women. $\beta_2$ likewise estimates the differences in earnings for men married to much older women compared to men married to similarly aged women.

Because similarly aged couples have higher fertility than differently aged couples, it is important to 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-efffects 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.[9]

Observations with zero earnings are included in the sample. Equation (2) is therefore estimated using a standard Tobit model.[10]

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

[9] An important control, age of marriage, is only available in the 1980 Census. The results reported here using the 1980 Census are robust to the inclusion of age of marriage.

[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.

(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 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.

The results in Table 5 indicate in most cases women in differently-aged couples have higher earnings than women in similarly aged couples, even when we add very detailed controls for number and age of children. Because there is selection into childbearing and higher fertility by women with lower earning potential, it is likely that

[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 suggests the results tend to be similar, although the Tobit mode, as expected, tends to produce coefficients that are larger in magnitude.

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.

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 individuals who marry very differently-aged spouses tend on average to be negatively selected. This would occur if individuals typically prefer similarly aged spouses. Those with favorable marriage market characteristics will tend to match with similarly aged spouses. Those with poorer marriage market options are forced to search more broadly and are more likely to match with differently-aged spouses. As a result, men in differently-aged couples tend to be negatively selected on earnings. In this case, a likely explanation for the positive relationship between women's earnings and within-couple age difference is not that women in differently aged couples are positively

selected on earnings potential, but that their labor market effort and career investment 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 this theory 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 could be used to test whether men and women in differently-aged couples tend to be negatively selected.

This paper pursues three such measures: average earnings in occupation in 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 by Occupation*

This section uses average earnings 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 than last year's earnings. Labor market effort includes both hours of work and intensity of effort (working for raises and promotion within occupation).[12] 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.

[12] Analysis of annual hours of work confirms that hours of work are negatively related to age difference for men and positively related to age difference for women.

Samples of full-time workers in the 2000, 1990, 1980 and 1970 Censuses are used to calculate average earnings by occupation using 3-digit SOC codes. Average earnings are calculated separately by sex, college education and 5-year age interval. Average 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 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 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, Table 6 also reports results using individual earnings on 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]

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 on average, 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

[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.

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 in occupation that are reported in columns 2 and 4, however, give no suggestion of a positive relationship with age difference. Most of the coefficients are negative, and the ones that are positive are mostly very small and statistically insignificant. 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. Based on these results, there is little evidence on occupational earnings, to suggest that women who are partnered with younger or older men are positively selected.

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 in occupation.

## 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 mean 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]

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

[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.
[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.

marriage variable measures age of marriage for whichever marriage is used in a particular sample. Because the NLSY79 is a stratified sample, the regression is weighted using the initial weights reported for the 1979 survey.

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 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 7 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.

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.

[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.

[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.

The vast majority of respondents are given a rating of 3 or 4. Women receive higher ratings on average than men.[20]

Three 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". The second is a binary indicator for "Very Attractive," which equals 1 for those who receive a rating of 5. Roughly 11% of men and 21% of women in the sample are rates as "Very Attractive." A logit model is used for both of these dependent variables. The final appearance measure used is BMI. High values of BMI correspond to overweight or obese appearance.

The regression results appear in Table 10. The control variables are the same as those listed in equation (3). Analysis is weighted using wave 4 grand sample weights. The first two columns report logit coefficients and marginal effects for the Attractive and Very Attractive appearance ratings. 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.[21]

For the Attractive outcome, only the results for negative age difference, for both women and men, are statistically significant. For the very attractive outcome, neither estimate is statistically significant for men, but both are for women.

[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.

[21] 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.

The final column reports the results for BMI. For men, the coefficient on positive age difference is positive and marginally significant, but the coefficient on negative age difference is negative. 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 popular perceptions. First, both members of these couples tend to be negatively selected. This is true even for older men married to younger women. Despite the fact that this contradicts the conventional wisdom that higher status allows men to partner with younger women, it is consistent with recent research that suggests that men and women generally prefer similarly aged partners. 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 fact that much of the discussion of these pairings have focused on changes in societal norms and women's gains in the labor market, our Census results indicate that the characteristics of these pairings have remained rather stable over time.

While men and women negatively select into these pairings, women in these pairings produce greater labor market earnings that 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, to the extent

that these are lower quality matches, it would be rational for women to respond with less household specialization, lower fertility and higher investment in the market.

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. While the results are not inconsistent with this expectation, we would only describe them as suggestive. The relatively young age of the sample is likely a factor.

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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 | | | | Number of children |
|---|---|---|---|---|---|
| | Men | | Women | | |
| | College | Less than College | College | Less Than College | Full Sample |
| Age Difference: | | | | | |
| +10 or more | -8874.7 | -4453.4 | 2537.2 | 51.43 | -0.309 |
| | (545.3) | (168.8) | (288.0) | (93.31) | (0.004) |
| +7 to 9 | -9763.5 | -3939.1 | 2390.5 | 327.5 | -0.134 |
| | (484.6) | (153.4) | (253.1) | (85.39) | (0.004) |
| +4 to 6 | -8090.0 | -3068.4 | 1188.8 | 45.05 | -0.062 |
| | (368.6) | (122.0) | (190.4) | (68.16) | (0.003) |
| +1 to 3 | -2908.6 | -1013.4 | 757.7 | -3.251 | -0.016 |
| | (309.2) | (108.1) | (158.4) | (60.52) | (0.003) |
| -1 to 3 | -3243.4 | -1265.4 | 413.1 | 192.0 | -0.021 |
| | (371.3) | (126.7) | (187.4) | (71.62) | (0.003) |
| - 4 to 6 | -9502.8 | -3815.6 | 2304.7 | 896.2 | -0.068 |
| | (617.2) | (178.3) | (305.6) | (101.6) | (0.005) |
| - 7 to 9 | -12808.5 | -5407.8 | 2366.1 | 934.5 | -0.089 |
| | (1023.1) | (256.6) | (501.4) | (146.7) | (0.007) |
| - 10 or more | -17073.4 | -7509.8 | 1308.6 | 682.5 | -0.083 |
| | (1442.1) | (301.6) | (686.8) | (173.4) | (0.008) |
| N | 469,484 | 1,000,930 | 434,011 | 1,036,403 | 1,470,414 |

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 in Occupation | Earnings | Avg Earnings in Occupation |
| **Women** | | | | |
| 2000 | | | | |
| Age Diff, Positive | 153.4 (33.2) | 14.9 (10.2) | -12.8 (9.6) | 4.8 (4.6) |
| Age Diff, Negative | -156.2 (45.9) | -130.2 (18.4) | 14.0 (14.65) | -50.9 (7.1) |
| N | 223,978 | 223,978 | 522,832 | 522,832 |
| 1990 | | | | |
| Age Diff, Positive | 141.5 (24.3) | 23.3 (7.9) | 0.01 (8.5) | -26.3 (3.8) |
| Age Diff, Negative | 63.3 (43.0) | -20.4 (15.5) | 85.7 (14.5) | -63.6 (6.6) |
| N | 151,078 | 151,078 | 438,062 | 438,062 |
| 1980 | | | ] | |
| Age Diff, Positive | 171.9 (25.5) | 22.21 (8.58) | 35.6 (7.5) | -18.6 (2.9) |
| Age Diff, Negative | 192.3 (54.2) | -47.7 (20.3) | 124.7 (15.3) | -22.9 (5.7) |
| N | 59,579 | 59,579 | 325,134 | 325,134 |
| 1970 | | | | |
| Age Diff, Positive | 123.8 (64.0)[a] | 1.7 (25.4) | 35.4 (11.7)[a] | -35.9 (5.7) |
| Age Diff, Negative | 65.4 (142.0)[a] | -21.0 (56.3) | 4.2(25.5)[a] | -68.7 (11.6) |
| N | 8,006 | 8,006 | 80,738 | 80,738 |
| | | | | |
| **Men** | | | | |
| 2000 | | | | |
| Age Diff, Positive | -1384.4 (53.3) | -367.9 (20.5) | -604.9 (16.9) | -604.9 (16.9) |
| Age Diff, Negative | -1409.6 (89.5) | -333.5 (33.7) | -625.0 (23.6) | -234.4 (11.5) |
| N | 250,830 | 250,830 | 527,995 | 527,995 |
| 1990 | | | | |
| Age Diff, Positive | -910.8 (39.1) | -173.4 (15.3) | -587.7 (13.5) | -222.3 (6.6) |
| Age Diff, Negative | -1071.3 (79.2) | -242.6 (30.0) | -716.3 (23.5) | -295.1 (11.6) |
| N | 225,054 | 220,054 | 477,999 | 477,999 |
| 1980 | | | | |
| Age Diff, Positive | -715.0 (34.8) | -85.8 (12.5) | -450.5 (12.2) | -151.3 (5.9) |
| Age Diff, Negative | -1257.0 (81.2) | -265.2 (29.7) | -758.3 (21.8) | -245.9 (10.5) |
| | 130,933 | 130,933 | 394,711 | 394,711 |
| 1970 | | | | |
| Age Diff, Positive | -858.3 (106.7) | -87.5 (28.7) | -354.9 (24.4) | -170.8 (11.4) |
| Age Diff, Negative | -1289.8 (222.2) | -132.8 (74.9) | -509.6 (42.5) | -230.2 (20.3) |
| N | 22,851 | 22,851 | 109,421 | 111,236 |

Notes: Sample is married men and women ages 35-50 with spouses ages 25-60 in the 1970, 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.
[a]Estimates marked with an [a] are obtained with a linear regression. The Tobit model failed to converge.

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 distribution of observations across appearance categories, column percentages in brackets.

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

| | Attractive | Very Attractive | BMI |
|---|---|---|---|
| Men | | | |
| Age Diff, Positive | -0.109*** | -0.080 | -0.097 |
| | (0.033) | (0.059) | (0.079) |
| | [-0.025] | [-0.009] | |
| Age Diff, Negative | -0.004 | -0.011 | 0.056+ |
| | (0.015) | (0.025) | (0.033) |
| | [-0.001] | [-0.001] | |
| N | 2376 | 2376 | 2360 |
| Women | | | |
| Age Diff, Positive | -0.081 | -0.123+ | 0.152 |
| | (0.053) | (0.069) | (0.139) |
| | [-0.019] | [-0.020] | |
| Age Diff, Negative | -0.028* | -0.045* | 0.049+ |
| | (0.013) | (0.021) | (0.028) |
| | [-0.006] | [-0.007] | |
| N | 3247 | 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 rates of 4 or 5. Column 2 is a logit model with Very Attractive indicator that equals 1 for appearance rates of 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