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ABSTRACT

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

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 1960, 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, but this is due to the fact that women with differently-aged spouses work more hours not because they command higher wages. 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: J12, J16

Keywords: marriage markets, age difference, selection

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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, 2011). 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 1960, 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. Women in differently-aged couples have higher earnings than women in similarly-aged couples due to higher hours of work, not because they are positively selected on earnings potential.

[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. Later marriage and divorce both might be negatively correlated with 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, 1970 and 1960 Censuses, but the results are robust to those controls. 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.

In fact, our results suggest that the relationship between within-couple age difference and ability is, if anything, stronger for those marrying at younger ages. This is consistent with a model of differential search costs in which higher quality individuals have more age concentrated networks, while lower quality individuals have networks that are more age diverse. This would be true, particularly at the ages at which marriage is more likely to occur, if high quality individuals are more likely to spend time in education and employment settings in which they interact more heavily with similarly aged peers.

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 (2011) 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

[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.

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 (forthcoming) 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 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. 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

[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.

[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.

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

It is important to distinguish between the unconditional relationship between individual quality and within-couple age difference and the relationship conditional on age of marriage and or re-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 age of marriage is correlated with quality due to factors such as career investment, divorce and remarriage, this will generate a relationship between age difference and quality in the absence of controls for age of marriage. The primary interest in this paper is in the relationship between quality and age-difference controlling for age of marriage and number of marriages, and these controls are included in the model whenever they are available.

It is also possible that search costs vary with quality in ways that affect age difference with spouse, a feature that has not been considered in previous models. Higher quality individuals likely spend more of their time in education and employment settings in which they interact most heavily with similarly-aged peers. [5] This is particularly true at the ages at which marriage is most common. They spend more years in formal schooling. They are more likely to attend high-quality post-secondary schools where the student body is fairly age homogenous. When they first enter the workforce, they are more likely to work in jobs with high upward mobility, so that other individuals who share their same job description are likely to be similarly-aged. In contrast, lower quality individuals receive fewer years of educations and are more likely to enroll in post-secondary institutions in which the age mix is

[5] We would like to thank Daniel Hamermesh for first suggesting this mechanism.

more diverse (e.g. community colleges). Additionally, lower quality individuals tend to work in occupations with limited upward mobility. As a result, there is likely greater age variation among co-workers with whom they interact most heavily compared to higher-quality individuals in more upwardly mobile occupations. Therefore, individuals with higher earnings potential interact less with differently-aged peers than those with lower earnings potential. Search costs rise much more steeply across age difference with partner for high-quality individuals than low-quality individuals. We would expect individuals with lower earnings potential to on average have greater age difference with spouse, even conditional on age of marriage.

Most recent empirical work that considers within-couple age difference has focused on the relative earnings of the husband and wife. Coles and Francesconi (2011) 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.

III. Prevalence of Differently-Aged Couples

It is useful to first establish stylized facts regarding within-couple age difference. Samples of married couples ages 25-60 in the 1960, 1970, 1980, 1990 and 2000 Decennial Censuses were obtained from the IPUMS database.[6] Table 1 reports the distribution of within-couple age difference for these samples. 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 1 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.

The most common marriages involve men who are the same age or a few years older than the woman. As expected, the fraction of marriages with the husband older than the wife is much larger than the fraction with the wife older than the husband. 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. While the fraction of women partnered with younger men has increased over time, the increase is not as dramatic as recent popular discussion might lead one to believe.

[6] Couples are excluded if age, sex, education or income is allocated for either member.
[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.

IV. Earnings Analysis, Census Data

The earnings analysis uses the same samples of married couples used in Table 1.[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 2 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:

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

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 1 (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.

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

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 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 (1) is therefore estimated using a standard Tobit model.[9]

The first two columns of Table 2 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.

The next two columns of Table 2 report the results for women. For women with college degrees, the results indicate that within-couple age differences is positively related to earnings. 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 final column of Table 2 replaces the dependent variable in equation (1) with the number of children under 18 in the household. The results indicate that couples with greater age differences have fewer children on average. This lower fertility could be one mechanism by which women in these couples end up with greater earnings.

[9] 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 estimation on the subsample of positive earners, both using linear earnings and using logged earnings as the dependent variable.

B. Earnings Results, 1960-2000 Censuses

Table 3 presents estimates from earnings regressions using the 1960, 1970, 1980, 1990 and 2000 Decennial Censuses. Because of the volume of estimates, the categorical specification of age difference is replaced with a linear one:

$$
\begin{aligned}
Earn_i = {} & \beta_0 + \beta_1 AgeDiff_i * Pos_i + \beta_2(-AgeDiff_i) * (1 - Pos_i) + X_i\alpha \\
& + \sum_{a=1}^{A} \gamma_a * Age_{ia} + \sum_{a=1}^{A} \delta_a * Age_{ia} * Advanced_i \\
& + \sum_{s=1}^{S} \phi_s * State_{is} + \sum_{s=1}^{S} \psi_s * (State_{is} * Urban_i) + \varepsilon_{is}
\end{aligned} \tag{2}
$$

where *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 the number of years the woman is older than the man and equals zero if the man is older. All controls are the same as in equation (1). [10]

Table 3 reports Tobit coefficient estimates from equation (2). The top panel reports the finding for women that larger within-couple age differences are associated with higher earnings. This relationship holds in each of the five Censuses, with the exception of the 2000 Census estimate for women without a college degree married to older men. The results for men in the bottom of Table 3 indicate that men who have larger age differences with their partner have lower earnings. This is true both for men who are older than their spouses and men who are younger than their spouses. This relationship also exists in all five Censuses.

[10] We do not include controls for fertility in our primary regression specification, as this is an outcome of within-couple age differences. It is, however, interesting to ask whether our results are robust to the inclusion of child controls, particularly the positive earnings effects for women. One might be interested in adding these controls out of the concern that individuals with low preferences for children self-select into differently-aged couples, or simply whether fertility differences explain most of the higher earnings for women. When include detailed controls for number and ages of children, the coefficients on age difference remain positive for women but become smaller in magnitude.

The positive coefficients on age difference in the earnings regressions for women are further explored using the sample of women with positive earnings. For this group, earnings can be decomposed into hours of work and earnings per hour. Table A1 in Appendix A reports analysis that shows that the higher earnings of women in differently-aged couples are largely generated by higher hours of work, not by higher wages. These results indicate that the positive relationship between women's earnings and within-couple age difference is not because women in differently aged couples have higher earnings potential, but because they work more hours. Because wife's labor market effort is more responsive to husband's earnings than the reverse, we would expect to see higher hours of work for the women in differently-aged couples given that their spouses are on average lower earning (Lundberg, 1988).

These results in Table 3 are surprisingly persistent across Census years all the way back to 1960, despite large changes in women's labor market outcomes and features of marriage markets over the 40 year time period. 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. Current earnings cannot be used to test for negative selection into differently-aged couples because it is an outcome that is endogenous to marriage market outcomes. Testing for negative selection 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 1960 and 1970 Census data do not provide the necessary hours information. Average earnings per hour are calculated separately by sex, college education and 10-year age interval.[11] Average hourly earnings in occupation are matched to each individual's report of occupation in most 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 4 reports estimates in which the earnings variable in equation (2) is replaced with average earnings per hour in occupation. Average hourly earnings in occupation are not

[11] 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. For cases in which over 90% of workers in the occupation do not have a college degree, we calculate an overall wage rather than a separate wage for college-educated.

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 Table 3, Table 4 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.

The results for women, which are of the greatest interest, are reported in the top of Table 4. 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 remains and is, in most cases, 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 many are statistically significant. These results confirm 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 on earnings potential.

The results for men in the bottom half of Table 4 continue to indicate that men in differently-aged couples are negatively selected in terms of both earnings and average earnings per hour in occupation. Our estimates of negative selection into differently-aged spouses based on occupational wage are modest in magnitude, particularly in comparison to the estimated relationship between current earnings and age difference. For example, for

college-educated men in 2000, the estimates in the second column of Table 4 indicate that men married to women who are 5 years younger on average are in occupations with hourly wages that are 46 cents lower compared to men with same-aged spouses, and men married to women who are 5 years older are on average in occupations with hourly wages that are 88.5 cents lower compared to men with same-aged spouses. In contrast, the estimates in column 1 indicate that men married to women who are 5 years younger make on average $4,715 less per year than men with same-aged spouses, and men married to women who are 5 years older make on average $8,230 less than men with same-aged spouses.

D. Controls for Age of Marriage and Number of Marriages

Information on age of first marriage and number of marriages is available in 1980, 1970 and 1960 Census data, but not in 1990 or 2000. Table A2 in Appendix B reports the joint distribution of age of first marriage and within-couple age difference for the 1980 Census, confirming that there is a strong relationship between age of marriage and age difference. Because earnings potential certainly affects selection into age of marriage, it is important to control for age of marriage in our analysis.

Table 5 once again estimates equation (2), but limiting the sample to married individuals in their first marriage and adding controls for the age of first (and presumably current) marriage as well as number of marriages of their spouse. Our preferred dependent variable is average earnings per hour in occupation, rather than earnings, as that is the more exogenous (though imperfect) measure of selection. Unfortunately, 1980 is the only year that has both the hours of work information to calculate earnings per hour and the age of marriage information. The results from this specification are reported in the first column of Table 5, and can be compared directly to the 1980 estimates reported in Table 4. Restricting the

sample to individuals in their first marriage and adding these controls for age of marriage and number of marriages of the spouse actually strengthens the magnitude of the negative relationship between age difference with spouse and average occupational wage.

In results not reported here, we also limited the sample to newlyweds, those who had married in the past two years. The negative relationship between age difference and average earnings per hour in occupation was robust to this sample restriction, although the magnitude of the coefficients was diminished.

Because average occupational wage is not available as a dependent variable for 1970 and 1960, the remaining columns of Table 5 report results for 1960-1980 using earnings as the dependent variable. These estimates can be compared directly to those in Table 3. The delayed age of marriage explains part of the higher earnings resulting from greater labor supply for college women with differently-aged partners and most of the higher earnings for non-college women. This is consistent the overall finding of the paper that women in differently-aged couples are negatively, rather than positively, selected on earnings potential. The coefficient estimates for men are only mildly affected by the change in sample and additional 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.[12]

Table 6 provides unweighted descriptive statistics.[13] 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.[14] The last two columns of Table 6

[12] 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.
[13] The NLSY79 is a stratified sample, that, in particular, oversamples black and Hispanic respondents. Sampling weights are therefore used in the regression analysis. Table 6 provides unweighted statistics to illustrate the distribution of observations in the raw data.
[14] 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.

report raw means of AFQT scores by within-couple age difference for the sample of first marriages. 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 7 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 7 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 the strongest 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.

For college educated men in their first marriage, men married to women who are ten years younger are predicted to have AFQT scores that are 10.4 points lower than men married to similarly aged women. Given that among college-educated men in our analysis sample the mean AFQT scores is 66.5 and the standard deviation is 28.0, these are quite sizeable cognitive skills differences. The estimates in Table 7 for other demographic groups suggest more modest cognitive skills differences.

VI. Analysis of Physical Appearance, Add Health Data

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.[15]

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

[15] 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.

is "very unattractive" and a rating of 5 is "very attractive".[16] The vast majority of respondents are given a rating of 3 or 4.[17]

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 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 8. The control variables are the same as those listed in equation (3).[18] The first column reports logit coefficients and marginal effects for the Attractive appearance rating.[19] 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.[20] Similar results are obtained if the outcome is changed to an indicator for "Very Attractive" (receiving a rating of 5).

[16] Appearance ratings are also provided in Waves 3 and 4. The rating from Wave 1 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.
[17] 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)
[18] Analysis is weighted using wave 4 grand sample weights.
[19] The reported marginal effects are average derivatives.
[20] 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 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. Search costs mechanism

This section considers whether there is any evidence that our empirical findings are due at least in part to a search costs mechanism. In particular, is there any evidence that individuals with lower earnings potential are more likely to marry differently-aged spouses because they interact with a more age-diverse set of peers than those with higher earnings potential?

While there is no way to formally test this mechanism, there are two forms of evidence that can be examined for whether they are consistent with the proposed mechanism. The first is that we would expect these differences in age heterogeneity of peers to be strongest at earlier ages in the lifecycle, and to weaken at later ages. In this case, the relationship between earnings potential and age-difference with spouse should be weaker for those who marry later in the lifecycle. The second is that given data on individual networks, we should find a relationship between years of education and the age diversity of the network.

A. Interaction effects with age of marriage

The analysis of AFQT scores reported in Table 7 includes controls for age of marriage. Table 9 allows the coefficients on the age difference variables to vary by age of marriage. For college-educated individuals, age difference variables interacted with indicators

for marriage by or after age 27 are added to equation (3).[21] In the NLSY79 sample, 33% of first marriages by college-educated individuals occur after age 27. For those with less than a college degree, very few marriages occur after age 27, so the age difference variables are instead interacted with indicators for marriage by or after age 23. 25% of first-marriages for those without a college degree occur after age 23.

In Table 9, the coefficient estimates on the age difference variables in most cases are larger for earlier marriages than later marriages. The estimates are imprecise and so the differences in the coefficients are not statistically significant, but nevertheless they do suggest that the negative relationship between age difference and AFQT score exists among individuals who did not delay marriage, and the results are not driven by individuals who marry late. While these results should not be considered a formal test of any model, they are consistent with a differential search cost story. If, at these earlier ages when marriages are most likely to occur, individuals with lower ability typically interact with a wider age distribution than those with higher ability, then we will observe a correlation between ability and within-couple age difference for marriages that occur at earlier ages. Because it is likely that the networks of higher ability individuals become more diverse in age over time, we would expect the relationship between age difference and ability to become weaker, rather than stronger, at later ages of marriage.

Appendix C reports estimates from a similar model with age of marriage interactions for the analysis of average earnings per hour in occupation using the 1980 Census.[22] The

[21] The main effects of the age of marriage indicators are included as well, while still retaining the linear age of marriage control.

[22] Because we consider, for women, average earnings per hour in occupation to be a far superior measure of selection compared to annual earnings, and because we only have occupational wage information and age of marriage information in the 1980 Census, we can only perform this analysis in this one census year.

results are reported in Table A3 and the coefficients on the age difference variables again tend to be larger for those with earlier marriages.

B. Age diversity of social networks

It is difficult to obtain data on the age diversity of individuals' social networks. The 1985 and the 2004 General Social Survey (GSS) data, however, contain a topical module on in which the respondent is asked: "From time to time, most people discuss important matters with other people. Looking back over the last six months, who are the people with whom you discussed matters important to you?" Information on age, sex, education and family relationship are recorded for up to five members of the respondent's "discussion network."

Many members of the respondents' discussion networks are spouses, parents, siblings and children. We calculate age dispersion measures for members of the discussion network that do not fall into one of these family categories, to get a measure of age dispersion for a respondent's non-family network.[23] Two measures are used. For the first measure, the first listed non-family member of the discussion network is used to calculate the age difference between the respondent and that network member. The second measure uses all respondents who have at least two non-family members of their discussion network to calculate the standard deviation of age of non-family discussion network members.

These age dispersion measures are regressed on years of education with controls for sex, race, age and age-squared, and the number of people listed in the discussion network. The results are reported in Table 10. In all cases, there is a negative relationship between education and age-dispersion of the network, indicating that individuals with higher levels of education have non-family networks that are less age diverse than those with lower levels of

[23] Marsden (1987) uses the 1985 GSS data to analyze the age, race and education heterogeneity of discussion networks, but does not calculate these measures separately for non-family members of the network.

education. The coefficient estimates are, however, only statistically significant in the 2004 data.

VIII. Conclusions

The results in this paper call into question much of the conventional wisdom regarding differently aged couples. Our results indicate that both members of these couples tend to be negatively selected. This is true even for older men married to younger women. While in many cases the estimated magnitude of the negative selection is modest, this still contrasts starkly with the expectation of positive selection, at least on the part of the older partner, into marriage with differently-aged spouses.

Our results are not inconsistent with papers such as Coles and Francesconi (2011) 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 tend to have much lower earnings, rather than by the financial success of the women.

The empirical results in this paper are inconsistent with most existing economic models of age of marriage and within-couple age difference. It may be the case that these models lack an important feature of marriage markets for the purposes of this empirical relationship, specifically, that search costs by age difference with partner may differ between higher quality and lower quality individuals.

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Appendix A

Table A1 extends the analysis for women in Table 3 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, and logged earnings per hour.

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.

Table A1: Earnings, Hours and Earnings per Hour for Women with Positive Earnings

	Log(Earnings)	Log(Hours)	Log(Earnings per Hour)
Women w/ College			
2000			
Age Diff, Pos	0.0060 (0.0006)	0.0065 (0.0004)	-0.0005 (0.0004)
Age Diff, Neg	0.0047 (0.0011)	0.0106 (0.0007)	-0.0059 (0.0007)
N=313,017			
1990			
Age Diff, Pos	0.0099 (0.0007)	0.0087 (0.0005)	0.0012 (0.0004)
Age Diff, Neg	0.0159 (0.0014)	0.0178 (0.0010)	-0.0018 (0.0008)
N=220,157			
1980			
Age Diff, Pos	0.0159 (0.0010)	0.0128 (0.0008)	0.0030 (0.0006)
Age Diff, Neg	0.0316 (0.0025)	0.0356 (0.0020)	-0.0035 (0.0015)
N=126,613			
Women w/o College			
2000			
Age Diff, Pos	0.0023 (0.0004)	0.0027 (0.0003)	-0.0005 (0.0002)
Age Diff, Neg	0.0022 (0.0006)	0.0050 (0.0005)	-0.0028 (0.0004)
N=641,807			
1990			
Age Diff, Pos	0.0050 (0.0004)	0.0041 (0.0003)	0.0009 (0.0002)
Age Diff, Neg	0.0077 (0.0007)	0.0081 (0.0006)	-0.0003 (0.0004)
N=666,055			
1980			
Age Diff, Pos	0.0086 (0.0004)	0.0077 (0.0004)	0.0010 (0.0003)
Age Diff, Neg	0.0106 (0.0010)	0.0111 (0.0008)	-0.0002 (0.0006)
N=550,915			

Appendix B

Table A2 below is produced using the sample of men and women in their first marriages in the 1980 Census. The first column reports the breakdown of the sample by age of marriage separately for men and women. Columns 2-6 provide the breakdown of within-couple age difference separately for each age of marriage category. This analysis was replicated on the 1960 and 1970 Censuses, not reported here, with very similar patterns.

Table A2: Age Difference by Age of Marriage, First Marriages Only, 1980 Census

	Age of Marriage: (column %ages)	Age Difference by Age of Marriage: (row percentages)				
		5 or more	4 to 2	1 to -1	-2 to -4	-5 or more
Women						
<20	35.4%	25.4	45.8	28.0	0.7	0.1
20-22	35.8	17.8	36.0	42.9	3.1	0.2
23-25	17.1	18.8	28.9	42.3	9.1	0.8
26-29	7.7	20.9	22.8	34.8	16.6	5.0
30+	4.0	23.3	17.9	24.8	17.3	16.6
	100.0%					
Men						
<20	12.6%	0.9	24.8	63.3	8.6	2.4
20-22	34.8	5.2	40.9	47.0	5.5	1.5
23-25	27.9	18.6	42.8	30.9	5.4	2.2
26-29	16.2	38.2	33.0	20.2	5.6	2.9
30+	8.6	55.7	20.4	14.4	5.6	3.9
	100.0%					

Notes: There are 991,081 women in the 1980 Census who are ages 25-60 and in their first marriage. There are 988,079 men in the 1980 Census who are ages 25-70 and in their first marriage.

Appendix C

Table A3 below re-estimates the model in the first column of Table 5, adding the same interactions with age of marriage indicators used in Table 9. In most cases, the coefficients on the age-difference variables are larger for those who married at earlier ages.

Table A3: Average Earnings per Hour in Occupation by Age Difference with Spouse and Age of Marriage Interactions, 1980 Census

	Men	Women
W/ College		
AgeDiffPos*AgeMarr ≤ 27	-0.091 (0.007)	-0.008 (0.003)
AgeDiffPos*AgeMarr>27	-0.040 (0.007)	0.005(0.007)
AgeDiffNeg*AgeMarr ≤ 27	-0.097 (0.011)	-0.103 (0.016)
AgeDiffNeg*AgeMarr>27	-0.010 (0.020)	-0.048 (0.016)
N	256,330	142,664
W/O College		
AgeDiffPos*AgeMarr ≤ 23	-0.080 (0.004)	-0.011 (0.001)
AgeDiffPos*AgeMarr>23	-0.065 (0.002)	-0.008 (0.002)
AgeDiffNeg*AgeMarr ≤ 23	-0.061 (0.005)	-0.059 (0.007)
AgeDiffNeg*AgeMarr>23	-0.076 (0.005)	-0.061 (0.003)
N	711,694	575,170

Notes: Sample is the same as used in the first column of Table 5. Dependent variable is average earnings per hour in occupation. Controls for individual's age of first marriage, number of marriages of the spouse, and interactions of age difference with age of marriage indicators are added to equation (2). Robust standard errors in parentheses.

Table 1: Distribution of Within-Couple Age Difference, 2000 Census

	2000	1990	1980	1970	1960
Age Difference:					
+10 or more	0.052	0.054	0.050	0.057	0.074
+7 to 9	0.069	0.068	0.069	0.083	0.094
+4 to 6	0.170	0.179	0.194	0.213	0.216
+1 to 3	0.368	0.390	0.405	0.379	0.344
0	0.129	0.130	0.127	0.112	0.110
-1 to -3	0.144	0.126	0.116	0.111	0.113
- 4 to -6	0.041	0.032	0.025	0.028	0.031
- 7 to -9	0.016	0.012	0.009	0.009	0.011
- 10 or more	0.010	0.008	0.006	0.007	0.008
N	1,470,414	1,366,607	1,178,320	270,325	270,546

Notes: Samples of all married couples ages 25-60 in the 2000, 1990, 1980, 1970 and 1960 Census IPUMS data. Age difference is man's age minus the woman's age.

Table 2: Annual Earnings and Number of Children by Age Difference with Spouse, 2000 Census

	Annual Earnings				# Children
	Men		Women		
	College	Less than College	College	Less Than College	Full Sample
Age Difference:					
+10 or more	-9344.9 (645.7)	-4823.0 (216.9)	3015.7 (375.9)	-349.8 (131.3)	-0.305 (0.005)
+7 to 9	-10120.5 (540.6)	-4054.9 (184.1)	2814.5 319.8)	173.5 (120.4)	-0.131 (0.009)
+4 to 6	-8112.3 (401.7)	-2970.9 (143.2)	1276.4 (230.2)	58.4 (93.6)	-0.061 (0.003)
+1 to 3	-2647.3 (337.7)	-844.2 (126.8)	896.9 (189.7)	71.4 (82.9)	-0.016 (0.003)
-1 to 3	-3428.4 (394.9)	-1374.3 (145.4)	746.6 (225.1)	315.0 (99.4)	-0.020 (0.003)
- 4 to 6	-10037.3 (603.0)	-4125.3 (190.7)	3534.6 (385.3)	1397.9 (141.6)	-0.065 (0.005)
- 7 to 9	-13754.9 (965.6)	-5689.4 (256.5)	3549.0 (647.6)	1610.0 (211.1)	-0.085 (0.007)
- 10 or more	-17811.4 (1316.9)	-8167.3 (292.4)	2216.7 (848.6)	1501.8 (246.9)	-0.078 (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 3: Earnings by Age Difference with Spouse, Census Data

	2000	1990	1980	1970	1960
Women w/ College					
Age Diff, Positive	217.8	294.5	266.8	409.8	282.0
	(22.1)	(17.1)	(17.5)	(57.4)	(60.2)
Age Diff, Negative	366.0	557.3	747.2	639.9	530.5
	(41.9)	(34.2)	(44.7)	(140.6)	(133.7)
N	434,011	305,187	183,734	25,260	16,685
Women w/o College					
Age Diff, Positive	-36.7	18.7	70.3	162.1	109.6
	(7.7)	(6.0)	(5.7)	(13.1)	(10.7)
Age Diff, Negative	154.2	282.5	272.6	209.8	350.6
	(13.3)	(11.4)	(12.9)	(27.4)	(23.4)
N	1,036,403	1,061,420	994,586	245,065	253,681
Men w/ College					
Age Diff, Positive	-942.9	-675.8	-648.7	-765.1	-519.7
	(39.1)	(30.4)	(25.0)	(77.2)	(79.4)
Age Diff, Negative	-1645.7	-978.2	-1033.0	-969.3	-363.9
	(65.9)	(54.9)	(49.9)	(158.7)	(139.6)
N	469,484	389,175	289,344	45,001	31,012
Men w/o College					
Age Diff, Positive	-411.5	-428.7	-393.7	-310.5	-192.0
	(12.9)	(9.9)	(8.5)	(17.2)	(12.9)
Age Diff, Negative	-686.2	-615.7	-690.0	-506.9	-304.8
	(16.3)	(14.6)	(14.8)	(31.0)	(23.5)
N	1,000,930	977,432	888,976	225,324	239,534

Notes: Sample is all married couples with both spouses ages 25-60 in the 1960, 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 4: Earnings and Average Earnings in Occupation by Age Difference with Spouse, Census Data

	With College		W/o College	
	Earnings	Avg Earnings/Hr in Occupation	Earnings	Avg Earnings/Hr in Occupation
Women				
2000				
Age Diff, Positive	186.3 (21.5)	-0.003 (0.003)	13.5 (7.4)	-0.002 (0.001)
Age Diff, Negative	65.5 (40.8)	-0.048 (0.007)	0.30 (12.8)	-0.011 (0.002)
N	396,779	396,779	867,931	867,931
1990				
Age Diff, Positive	254.0 (16.5)	-0.002 (0.003)	63.6 (5.7)	-0.002 (0.001)
Age Diff, Negative	292.0 (32.5)	-0.031 (0.006)	99.3 (10.9)	-0.008 (0.002)
N	279,537	279,537	874,588	874,588
1980				
Age Diff, Positive	248.1 (16.4)	-0.001 (0.003)	88.6 (5.2)	-0.004 (0.001)
Age Diff, Negative	418.4 (41.8)	-0.058 (0.008)	72.1 (12.0)	-0.006 (0.002)
N	156,910	156,910	710,090	710,090
Men				
2000				
Age Diff, Positive	-933.3 (39.0)	-0.092 (0.006)	-385.0 (12.8)	-0.047 (0.002)
Age Diff, Negative	-1595.6 (65.5)	-0.177 (0.010)	-600.9 (15.9)	-0.048 (0.002)
N	464,445	464,445	959,741	959,741
1990				
Age Diff, Positive	-669.1 (30.2)	-0.037 (0.005)	-401.1 (9.7)	-0.044 (0.001)
Age Diff, Negative	-940.1 (54.6)	-0.090 (0.007)	-550.9 (14.2)	-0.055 (0.002)
N	387,071	387,071	951,279	951,279
1980				
Age Diff, Positive	-642.2 (24.8)	-0.035 (0.004)	-374.2 (8.3)	-0.040 (0.001)
Age Diff, Negative	-988.8 (49.2)	-0.079 (0.008)	-621.9 (14.3)	-0.055 (0.002)
N	287,831	287,831	864,938	864,938

Notes: Sample is married couples with both 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 in which the dependent variable in equation (2) is replaced with average earnings in occupation. Robust standard errors in parentheses.

Table 5: Earnings Analysis with Age of Marriage and Number of Marriage Controls, Census Data

	1980 Avg Earnings per Hour in Occupation	1980 Earnings	1970 Earnings	1960 Earnings
Women w/ College				
Age Diff, Pos	-0.004 (0.003)	29.7 (20.4)	202.4 (64.3)	189.6 (64.3)
Age Diff, Neg	-0.067 (0.012)	290.7 (60.2)	556.6 (173.3)	134.3 (161.7)
N	142,664	168,239	23,764	15,685
Women w/o College				
Age Diff, Pos	-0.010 (0.001)	-46.8 (7.2)	83.6 (15.4)	89.3 (12.5)
Age Diff, Neg	-0.061 (0.003)	-129.9 (21.9)	-61.3 (42.4)	84.4 (34.9)
N	575,170	822,842	210,280	219,714
Men w/ College				
Age Diff, Pos	-0.065 (0.005)	-608.4 (34.9)	-374.9 (97.3)	-722.8 (85.9)
Age Diff, Neg	-0.096 (0.010)	-930.1 (57.5)	-705.3 (172.6)	-22.1 (159.4)
N	256,330	257,587	41,688	28,858
Men w/o College				
Age Diff, Pos	-0.068 (0.002)	-470.0 (12.5)	-359.5(22.7)	-270.8 (15.4)
Age Diff, Neg	-0.067 (0.003)	-643.6 (18.7)	-433.2 (37.8)	-335.0 (29.7)
N	711,694	730,492	193,905	208,389

Notes: Sample is restricted to married individuals in their first marriage from the 1980, 1970 and 1960 samples used in Tables 3 and 4. Controls for individual's age of first marriage and the number of marriages of the spouse are added to equation (2). Samples from the 2000 and 1990 Censuses are not included because age of marriage and number of marriages are not available in those years. Robust standard errors in parentheses

Table 6: 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 respondent 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 7: 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	-0.323 (0.195)+	-0.502 (0.200)*	-0.409 (0.222)+
Age Diff, Negative	0.043 (0.580)	-0.273 (0.545)	-0.378 (0.544)
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 6. 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 (3). 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 8: 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

Table 9: AFQT Scores by Age Difference with Spouse and Age of Marriage Interactions, NLSY79

	Men	Women
W/ College		
AgeDiffPos*AgeMarr ≤ 27	-1.382 (0.920)	-0.390 (0.278)
AgeDiffPos*AgeMarr>27	-0.905 (0.559)	-0.192 (0.248)
AgeDiffNeg*AgeMarr ≤ 27	-0.513 (0.817)	0.685 (1.320)
AgeDiffNeg*AgeMarr>27	-0.428 (1.02)	-0.033 (0.646)
N	981	1141
W/O College		
AgeDiffPos*AgeMarr ≤ 23	-1.019 (0.473)	-0.085 (0.188)
AgeDiffPos*AgeMarr>23	-0.477 (0.251)	-0.223 (0.176)
AgeDiffNeg*AgeMarr ≤ 23	-1.024(0.398)	-2.42 (1.07)
AgeDiffNeg*AgeMarr>23	-0.438 (0.248)	-0.30 (0.467)
N	3521	3744

Notes: Sample of first marriages in NLSY79. Dependent variable is AFQT score. AgeDiffPos is the number of years the man is older than the woman, and equals zero if the woman is older. AgeDiffNeg is the number of years the woman is older than the man, and equals zero if the man is older. 1979 Sampling weights are used. Robust standard errors in parentheses.

Table 10: Age Dispersion of Discussion Network by Education, GSS 2004 and 1985 data

	Absolute Age Difference	Age Standard Deviation
2004		
Years of Education	-0.426 (0.002) ***	-0.233 (0.117)*
N	732	419
1985		
Years of Education	-0.158 (0.101)	-0.040 (0.075)
N	1060	755

Notes: The samples in the first column contain all those who report at least one non-family member of their discussion network, the second column samples are those who report at least two non-family members of their discussion network. The dependent variable in column 1 is the absolute value of the age difference between the respondent and the first listed non-family member of the discussion network. The dependent variable in column 2 is the standard deviation of age for non-family members of the discussion network. All regressions control for sex, race, age, age-squared, and number of members of the discussion network.