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Match Quality and Maternal Investments in Children

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Abstract

Divorce and union dissolution as well as investments in children are associated with significant effects on children's outcomes. Here, I examine factors that might lead to union dissolution and their relationship to investments in children's cognitive skills. Using subjective measures of match quality as reported by mothers in relationships with the childs father, I show that women who report less satisfaction in their relationships spend less time reading with their children. I include baseline measures of relationship quality and various socioeconomic characteristics to control for unobserved heterogeneity. I test various theoretical mechanisms by which we would expect women to decrease their investments in a child using additional information about the match including the couples argument frequency and whether the union dissolves in the future. The anticipation of a unions dissolution decreases investments in children while the relationship is intact, but argument frequency and mothers estimation of the fathers character do not have a measurable effect. The results suggest that subjective measures tell a more complete story about match quality than indicated by future union dissolution, argument frequency or parental quality. Thus the concentration by policymakers on the marginal decision of divorce or dissolution ignores the heterogeneity within relationships and its effects on children.

Keywords: Match Quality, Cognitive Skills, Paternal Investments in Children

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1 Introduction

It is widely believed that parents' early investments in children have a significant effect on their performance in school and on subsequent tests of intelligence. While some of the variation in measures of intelligence like IQ, grades and standardized exams is likely attributable to genetics, parents are encouraged to read to and with their children for the simple reason that such actions are thought to stimulate intellectual curiosity and development.

In turn, parents likely are endowed with a set of characteristics that lead them to invest more or less in their children's cognitive skills. Education, own parents' investments, and cultural background might influence cultural norms and personal preferences that influence time spent with children. Income and work status represent time constraints on such activities as well as differences in willingness to pay for some activities. However, such characteristics do not fully explain variation in parents' time spent with children and there are likely unobservable characteristics that exert an additional influence. In this paper, I examine whether the relationship of a mother's investment in her children is related to the quality of her relationship with her children's father.

This is the first paper, to my knowledge, that empirically links what I term subjective match quality, or the perception of the quality of one's relationship, to the amount of time spent with a child. Herein, I show that women who rate their relationships highly on average report spending more time reading with their child than women who rate their relationship with the child's father poorly. Though the estimates range from .8 days a week to 1.6 days a week extra, the result is highly statistically significant and robust to several different specifications and the inclusion of comprehensive controls for individual characteristics. I explore a number of potential theoretical mechanisms for this difference and test them by exploiting the longitudinal design of the Fragile Families and Child Wellbeing Study.

There is reason to believe that this effect is capturing individual, person-specific characteristics. It may be that bad parents form bad relationships and thus we see that those who rate their relationship lower are the ones who are investing less in their children. I attempt to control for this unobserved heterogeneity by including controls for prenatal investments in the child and a measure of baseline match quality.

The primary implication of this study is that there is a broader range of quality within marriages and other romantic unions that may affect the child's welfare before divorce or union dissolution occurs–if ever. Anticipation of divorce and current match quality can have effects before divorce or separation is imminent.

2 Background

There is a significant literature showing that investments in children such as reading to children or enrolling them in private schools are linked to measures of cognitive ability such as test scores and educational attainment[1]. In addition to these observed characteristics, Fink and Mukherjee (2007) note that unobservable, family- and mother-level characteristics are associated with differences in outcomes for children. Also, it has been shown that stability with regard to parental presence has a significant effect on a child's cognitive outcomes (Craigie 2008). With the assumption that there is a relationship between investments and outcomes, I examine the links between happiness in a marital or non-marital romantic union and investments in children.

This paper is also related to a strand of literature, which unites and pulls from diverse fields such as psychology, psychopathology and biochemistry, that works to link environment to children's outcomes. In particular, marital discord, maltreatment and unloving environ-

[1]Haveman & Wolfe (1995) present a comprehensive review of the literature on this topic.

ments are linked to adverse social and psychological outcomes (Cicchetti & Toh 2005), as well as increased rate of disease (Corso, et. al. 2008)[2]. Recently, some work has been done to try to identify biochemistry as the missing link between chaotic households and adverse outcomes (Miller & Chen 2010). While I do not directly link investments to outcomes in this paper, I do provide an alternative hypothesis that parents' choices given marital or relationship discord affect investments, which might, in turn, affect outcomes.

Other, more closely related, work examines directly the link between match quality and household behaviors. These include investments in children as well as other factors that dictate investment levels in children. These papers define match quality using marital status, with much of the analysis hinging on marginal marriages and divorces. Theoretical models such as Brown and Flinn (2007) show the interdependency of child quality and match quality– or really match survival–and lay out the implications of divorce on investments in children. Chiappori, Fortin and Lacroix (2002) show how the divorce decision affects women's labor supply. Aizer and McLanahan (2006) link monetary investments in children to child support paid. My analysis unites some of the ideas in these papers and adds to them by including unmarried couples with children and allowing for more nuance within the match quality category by employing questions posed to mothers about the quality of their relationship.

The closest paper to mine, Schmierer (2010), presents a theoretical model showing that anticipation of divorce results in fathers decreasing time spent with children. Schmierer also presents some empirical evidence to support his model using different data. My work differs primarily with the addition of the subjective match quality variable, mother-father pairs that are unwed and additional variation in the outcome variables not captured by the dichotomous variables he employs.

[2]Several more papers on this topic can be found on the Center for Disease Control's website http://www.cdc.gov/nccdphp/ace/publications.htm

3 Theoretical Mechanism

There are at least three explanations for why we would expect mothers to decrease the time spent with their children given poor match quality. The first and second are guided by the time constraint and the third is informed by literature in economics about children as a public good.

Firstly, due to natural time constraints, it can be said that couples who argue more have less time to spend with their children because they spend more of their time bargaining among themselves. In the data, I show that couples who argue more rate their relationship lower on average. An alternative explanation is that women who are unhappy in their relationships are acting in anticipation of the end the relationship and thus, the steps that follow that end. Perhaps women who see their relationships as eventually ending are more likely to spend time investing in themselves–taking a class, investing in conspicuous consumptive goods or returning to the workforce, for example. When the relationship appears to be ending, the opportunity cost of not investing in one's future match potential becomes higher. Much of the theoretical work on match quality mentioned above hinges on this idea and thus we see women who are unhappy in their relationships investing more in themselves. With a time constraint, this might result in decreased investment in children.

As a corollary, we can view children as a public good in which both parents invest and receive utility. Union dissolution, in most cases, diminishes the value of the public good through decreased time spent with the child as a result of custody agreements or perhaps by decreasing future returns such as care in old age. As a result, anticipation of the union's dissolution would cause an anticipatory decrease in investment in the child due to a decreased future benefit stream.

While these mechanisms are not mutually exclusive and there are certainly other possibilities by which we might expect a relationship, I can test directly for the time-constraint argument using the Fragile Families data set and questions posed about argument frequency. I also test the anticipation explanation by controlling for the future relationship status of couples. For the 1-year and 3-year follow-up surveys, I can control for whether the parents are still together in subsequent waves. While this does not cover the range of relationships that might eventually end, I at least can observe variation in reading days given the most immediate relationship changes. I am unable to distinguish whether the anticipation effect is a result of the public goods argument or the investing more in one's future match quality argument. Likely, there is some combination of the two mechanisms acting on mothers.

There is the possibility of an effect in the opposite direction, whereby poor match quality results in more time spent with children. One possible mechanism is apparent in the case where you have very high quality parents. In this situation, poor match quality might be perceived as affecting the child and thus parents would strive to spend more time with the child to compensate. If this effect is strong, we would see a downward bias in the coefficient on match quality, perhaps more so from highly educated parents. For this reason, I include parental characteristics as controls to account for education, income and parental quality where possible.

4 Data

The Fragile Families and Child Wellbeing Study (Fragile Families) is a four-wave, longitudinal data set intended to facilitate the study of issues within "non-traditional" families, which includes unmarried parents, blended families and single parents. The total sample consists of a representative sample of women living in 20 large cities in the United States who gave

birth in 1998, 1999 or 2000 and a significant oversample of unwed mothers who gave birth in the same time period. The study follows both parents of a focal child over several years. Follow-up surveys were conducted one year, three years and five years after birth of the child with the mother and father, individually. The baseline surveys take place in the hospital right around the time of birth and provide baseline measurements for characteristics such as parent quality and match quality. Subsequent surveys are given over the phone and ask similar questions about parent and match quality as well as how time is spent with the child. In particular, I am interested in investment in children's cognitive skills as measured by how much time is spent reading with a child on a weekly basis.

For this paper, I employ the baseline and follow-up surveys as administered to the mother of the child when she remains the primary caretaker and so long as she reports some sort of intimate relationship with the child's father. Mothers who work or have someone look after the child are included, though I do control for whether a child is in someone else's care besides the mother's. If the mother is doing something besides spending time with her child–such as working or job-searching–we expect her to spend less time reading with her child. Mothers who report that their child is living with someone other than the mother are excluded from the sample.

I work with multiple samples from the data. In particular, I examine the responses of women who are in romantic relationships with the father of their child born in any given wave conditional on being involved in the waves before it. Women who are involved with the father in the first wave, women who are involved in the first two waves, then the first three waves and finally all four waves. Women who are in a relationship with someone other than the reported father of the child are dropped.

The first sample is called the '1-year sample' and consists of all women in relationships with the father of the focal child at the baseline and at the time of the one-year follow-up survey. For this group, characteristics such as whether the child is ever in someone else's care, earnings, and in particular, subjective match quality are measured as they are reported at the one-year follow-up survey. This sample has 1,902 observations at the mother level.

The second sample is termed the '3-year sample' and is made up of respondents from the 1-year sample minus any respondents who report having separated or divorced her spouse or otherwise dissolved the romantic relationship with the child's father. For this group, characteristics such as whether the child is ever in someone else's care, earnings, and in particular, subjective match quality are measured as they are reported at the three-year follow-up survey. There are 1,384 women in this group.

The final sample is of women who are involved with the father of the child in every wave, from baseline to the five-year follow-up survey. This allows for pooling and fixed effects specifications on a sample of 1088 women. I call this group the '5-year sample' and characteristics not marked as "at birth" come from the five-year follow-up survey and consists of 1,088 mothers.

Summary statistics for the 1-year follow-up respondents in relationships and the longitudinal sample are provided in Table 1. Those who remain in a relationship with the focal child's father tend to be slightly more educated and older. They are more likely to be white and to have sought prenatal care earlier in the pregnancy. They are less likely to have collected unemployment or received public assistance at the time of the birth of the focal child and less likely to have used drugs, cigarettes or alcohol during the pregnancy.

[Table 1 about here]

4.1 Measures of Match Quality

The Fragile Families data include a number of unique measures of match quality, of which I use several. The primary variable of interest is mother's estimation of relationship quality, but I also add controls for a baseline measure of quality measured by whether the couple is married and their reported chances of marrying, frequency of arguments and whether the relationship ends in a future wave.

Mothers' report of relationship quality is measured in the three follow-up surveys with the question: How would you rate your relationship with child's father? The options are "Excellent", "Very Good", "Good", "Fair" and "Poor". For each of the responses, I create a dichotomous variable taking a value of one for the answer which the respondent gave and zero for the others. I exclude "Poor" from the regression specifications as the constant.

The relationship quality question was not asked in the baseline survey, but I do have an alternative measure of baseline match quality. I consider whether a parent is married at the birth of the child and, if unmarried, the mother reports that a marriage to the child's father is "Certain", of "High" probability, "Low" probabiity, or a"50-50" chance. This provides a proxy for match quality before the child is born. For purposes of Table 4, I combine and dichotomize this variable, calling it 0-1 Baseline Match Quality. Respondents who are married at the baseline or report a "Certain" or "High" chance of marriage are given a 1 and others are given a 0.

I also measure argument frequency.. In the follow-up surveys, mothers are asked how often they argue with the focal child's father "about things that are important". Answers are coded "Always", "Often", "Sometimes", "Rarely" and "Never". The questions on argument frequency were also different in the baseline survey. I employ principal components analysis

to combine seven questions related to argument frequency on various topics asked in the baseline survey into a single index of baseline argument frequency.

Finally, I also consider the future status of the couple. For each wave, I determine whether the couple breaks up–separates, divorces, or the mother reports they are no longer intimately involved–and create a dichotomous variable with a value of 1 if the relationship ends and 0 if it continues. In waves where there is at least one wave following available, I can use whether the relationship ends in a subsequent wave as a additional control. Though I don't have information that far into the future regarding the status of these relationships, relationships that end soon after the birth of the child are likely to be different from those that end later. More immediate break-ups may be better anticipated than ones far into the future and thus more likely to exert an effect.

[Table 2 about here]

Measures of match quality are interesting in their own right and are likely affected by cultural norms and individual characteristics. Observable characteristics such as age and education level can be directly controlled for. It is problematic, however, if all good parents, and thus those that read to their children more, are also in good relationships. While what makes a good parent is certainly debatable and generally unobservable. Table 4 presents regression results of each wave's 0-1 measure of match quality on these baseline characteristics as well as education, race, and earnings and welfare information. Though black women rate their relationships more poorly on average, most observable characteristics that we would associate with parental quality are not predictive of match quality. Whether a woman did drugs during pregnancy is predictive, but the number of women is small, around 5.5% of the baseline sample.

[Table 4 about here]

4.2 Measures of Investments in Cognitive Skills

In this paper, I focus here on investments in cognitive skills as measured by reading days per week. Mothers are asked both how many days each week they read to the focal child and how many days per week the father reads to the focal child. Other measures of time investments are asked in a similar manner about activities such as time spent playing inside and watching television. The outcome variable, thus, is measured discretely and takes values between zero and seven. Though one third to one half of the sample reports reading to their child every day of the week (y=7), there is significant variation in the responses and they do vary over time. Table 3 shows the distribution of reading days per week as reported by the mother by wave.

[Table 3 about here]

It is likely that parents' investments in children's cognitive abilities are somewhat endogenous to children's displayed abilities (Brown & Finn 2007). For instance, children that show signs of learning more words might be read to more often, or it may be the case for children who show signs of learning fewer words. The lack of test scores at the young ages available in the Fragile Families mean that most parents do not have an objective measure of their child's cognitive ability. However, this does not mean that they are not aware of it and not reacting to it, only that their measure is not as readily comparable to other children's. Thus, though we expect some endogeneity in the measure of reading days per week, the understanding of a child's abilities is imperfect and thus should not perfectly predict investments.

Figure 1 show graphically that the average number of reading days reported is in fact different for mothers reporting various levels of satisfaction in their relationships. Interestingly, and especially in the first wave, mothers who rate their relationship as excellent report the highest number of reading days, but mothers who rate their relationship as poor report

a higher average number of reading days than those who rate their their relationship as good or fair.

[Figure 1 about here]

4.3 Data and Conceptual Issues

The lack of precision in the measured variables introduces a wide margin for error in this test. Time reading with a child is measured in days per week, for example, and frequency of arguments is coded as often, sometimes or never. Though I do account for the ordered nature of these categorical variables by creating dichotomous variable for each answer, it makes the magnitudes slightly difficult to interpret. In addition, mothers are asked, in hindsight and on average, how many days per week they read with the child as opposed to having some check-off process or time-use survey where we could see actual days or actual hours spent reading. This combined with the discrete nature of the outcome variable indicate some sort of underlying process by which mothers arrive at the number of days they read with their child. Thus, when we do see a significant effect of argument frequency on days spent reading, the magnitudes of the coefficients are somewhat murky, but can at least be interpreted for their sign and significance. These issues make the use of an ordered probit specification more useful. This is discussed at the end of the empirical section and preliminary results are given at the end of the results section.

5 Empirical Strategy

5.1 Baseline Specification

The baseline specification is:

$$y_i = \alpha + \Sigma_{j=1}^{4} \beta_j \times MatchQuality_{j,i} + X_i\gamma + \epsilon_i \tag{5.1}$$

where y indicates the number of days per week that a mother reads with her child, MatchQuality is a vector of dichotomous variables for match quality where one of the five entries takes a value of one and the others zero. X is a vector of socio-economic and individual characteristics including race, education, mother's age and immigrant status and child's gender as well as the baseline socio-economic characteristics described above.

This model is estimated separately on each of the three regression samples: the 1-Year Sample, the 3-Year Sample and the 5-Year Sample.

5.2 Prenatal Investments

As the lack of variation over time in the match quality variable does not allow for a traditional fixed effect strategy, I attempt to control for unobserved heterogeneity and mediate omitted variable bias by controlling for the mother's baseline match quality and investment in the children. Baseline match quality as measured by a combination of marital status and unmarried mothers' report of the chances of an eventual marriage is added to control for effects that child quality might have on match quality. Measures of prenatal investment include whether prenatal care was sought, the month in which the first doctor's visit occurred, whether the mother used drugs and alcohol or cigarettes during pregnancy.[3] Additionaly, I control for whether the child was ever breastfed.

At baseline, participants are asked whether they are married, and if they are not married, they are asked what the chances of marrying the child's father is. I use these two measures to control for baseline match quality under the assumption that if a couple married, at some point they would have considered their match high enough to take that step. And similarly, if they intend to marry, there must be some perception of a high quality match. Unfortunately,

[3]I also added a control for whether the child was of low birthweight, but the variable is sparsely populated for the relevant sample. This, combined with lack of significance on the coefficient, led me to exclude it.

the baseline survey does not include the subjective match quality questions asked in future waves.

As the baseline survey takes place at the hospital around the time of birth, there is no measure of reading days. For this, I use measures of prenatal behaviors to control for mothers' initial level of investment in the child.

The measures of mother's prenatal investments in the child including whether prenatal care was received, at what point in the pregnancy prenatal care was sought and behaviors such as alcohol, drug and cigarette use during pregnancy, indicated by the vector Z. I control for baseline match quality as measured by marital status and respondents' report of the chances of imminent marriage. Respondents report a chance of marriage as "Certain", "Good", "50-50", "A Little", or "No Chance".

$$y_i = \alpha + \Sigma_{j=1}^{4} \beta_j \times MatchQuality_{i,j} + \Sigma_{k=5}^{9} \beta_k \times BaselineMatchQuality_{i,k} + X_i\gamma + Z_i\psi + \epsilon_i \quad (5.2)$$

where y_i is reading days again. Here we add Z_i, which is a vector of controls for prenatal investments and $BaselineMatchQuality_i$ which is a vector of dichotomous variables on marital status and chances of marriage reported at the baseline.

5.3 Argument Frequency

Next, I employ a similar strategy controlling for argument to frequency in order to test whether increased argument frequency leads to decreased time spent reading. The Fragile Families Data Set, in addition to this subjective measure of relationship quality, offers a few measures of relationship quality that might be considered more objective. In the first case, mothers are asked in each wave about how often they argue with the child's father. This constitutes a measure of how time may be spent when not with the child as well as a measure of match quality.

In addition to the baseline controls, I control for argument frequency as asked in the wave and baseline argument frequency. As the argument frequency questions are asked differently in the baseline survey, I use principal components analysis to account for the variation in the questions posed on argument frequency at the baseline. The baseline survey asks five separate questions about argument frequency while subsequent surveys ask how often the couple argues about "things that are important" to them. I use principal components analysis on the five questions and retain the first two components to use as regressors in the next specification, named PCArg1 and PCArg2. [4]

$$y_i = \alpha + \Sigma_{j=1}^{4} \beta_j \times MatchQuality_{i,j} + \Sigma_{l=1}^{4} \eta_l \times ArgumentFreq_{i,l} + \phi_1 PCArg1 + \phi_2 PCArg2 + X_i\gamma + Z_i\psi + \epsilon_i \tag{5.3}$$

The specification is similar to those above, but now includes a vector of dichotomous variables for Argument Frequency in the wave being examined and the additional controls for baseline argument frequency as indicated by the principle components, PCArg1 and PCArg2.

5.4 Future Status

Most of the literature on match quality tends to focus on the marginal decision of marriage or divorce. As my sample includes both married and unmarried parents, I focus on the question of union dissolution as reported by the mother. Ideally, I would have the measure for all couples, knowing when and if every relationship ended. However, with the number of surveys, we can only look a few years into the future. Other studies have indicated that the extent to which parents will change their investment behaviors with regards to their future relationship status are limited to a horizon of a few years, so the data should be sufficient to see an effect, if there is one. I cannot ultimately distinguish whether some of the behaviors

[4] A screeplot of the eigenvalues is available in Figure 2.

I see are more attributable to anticipation of union dissolution for mothers who remain in relationships for all four waves due to the limited time horizon.

I perform the first analysis adding measures of the couple's relationship status in the future for the 1-year and 3-year follow-up surveys[5]. In addition, I test whether the dissolution of marriages affects child investments more or less than the dissolution of relationships of unwed couples. I do this by interacting marital status in that wave with future relationship status for each of the waves available. Thus, for the specification on reading days in the one-year follow-up survey, the variable *MarriedbyRelEnd3* indicates that the couple was married during the 1-year follow-up survey, but separated or divorced by the time of the interview for the 3-year follow-up survey.

$$\begin{aligned} y_i &= \alpha + \Sigma_{j=1}^{4} \beta_j I_{i,j} \times MatchQuality_{i,j} + \\ &\quad \theta_1 RelEnd3 + \theta_2 RelEnd5 + \theta_3 MarriedbyRelEnd3 + \theta_4 MarriedbyRelEnd5 + \\ &\quad X_i\gamma + Z_i\psi + \epsilon_i \end{aligned}$$

where RelEnd3 is a dichotomous variable that takes the value of one if the relationship ends by separation, divorce or break-up as reported by the mother in the three-year follow-up survey and zero otherwise. RelEnd5 is a similar indicator, taking a value of one if the relationship ends by the five-year follow-up survey. The preceding specification is for the days per week spent reading as measured in the one-year follow-up survey. The specification for the 3-year Sample is as follows but without variables RelEnd3 and MarriedbyRelEnd3.

[5]Future status information is not currently available for the 5-year follow-up survey, but is slated to be released in late 2012.

5.5 Fixed Effects and Ordered Probit

The panel nature of the data naturally leads to a fixed effects specification. I measure the change in reading days over the change in relationship status over time for each individual.

$$y_i = \alpha + \Sigma_{j=1}^{4} \beta_j \times MatchQuality_{j,i,t} + X_{i,t}\gamma + \rho_i + \epsilon_{i,t} \tag{5.4}$$

Due to the nature of the left-hand side variable, a discrete variable that takes on values zero to seven, I also use an ordered probit model to estimate the model. While the measure of days per week surely indicates the need for estimation with a count or probit model, the best model is not immediately apparent. Count models, such as the Poisson or Negative binomial, are likely more appropriate in situations where the count is very clearly taken for each observation. If mothers were asked to keep track of the days of the week that they read to their children each week, a count model might be appropriate. However, the survey design, which asks respondents to estimate the number of the days per week they read with the child implies some underlying process by which respondents claim the number of days. This may be related to a preference for reading with a child or an averaging of time over several days or weeks. The ordered probit model is useful for ordered, discrete outcomes, such as reading days per week, where it is assumed that there is some underlying cut-off

which moves responses from one discrete outcome to each higher one. The ordered probit model is:

$$
\begin{aligned}
S_i &= \alpha + \Sigma_{j=1}^{4} \beta_j \times MatchQuality_{j,i} + X_i\gamma + \epsilon_i && (5.5)\\
y_i &= 0 \text{ if } S_i \leq \mu_0; \text{ Prob}[y_i = 0] = \Phi[\mu_0 - X'_{it}\beta] && (5.6)\\
y_i &= 1 \text{ if } 0 \leq S_i \leq \mu_1; \text{ Prob}[y_i = 1] = \Phi[\mu_1 - X'_{it}\beta] - \Phi[\mu_0 - X'_{it}\beta] && (5.7)\\
y_i &= 2 \text{ if } \mu_1 \leq S_i \leq \mu_2; \text{ Prob}[y_i = 2] = \Phi[\mu_2 - X'_{it}\beta] - \Phi[\mu_1 - X'_{it}\beta] && (5.8)\\
&... && (5.9)\\
y_i &= 7 \text{ if } S_i > \mu_6; \text{ Prob}[y_i = 7] = 1 - \Phi[\mu_1 - X'_{it}\beta] && (5.10)\\
& && (5.11)
\end{aligned}
$$

where y_i is the number of reading days predicted by the model and S_i is the predicted index from the ordered probit model. The μ_j are unknown parameters or cut-offs that reflect some ordered, underlying probability of a mother to read to her child on a weekly basis.

6 Results

Table 5 shows results from regression analysis of mother's reading days per week on subjective match quality variables and displays a persistent, positive link between happiness in a relationship and child investment. Though much of the results seem to be driven by individuals who rate their relationships as excellent, it is apparent that individuals who rate their relationship as better read more, on average, to their children on a weekly basis than those who report dissatisfaction in their relationship. These findings are in accordance with theoretical predictions made in this paper as well as in the match quality literature. In the 1-year follow-up survey, women who describe their relationship with their child's father as "Excellent" spend about 1 day more per week reading with their child and those who

describe it as "Poor". Effects for smaller jumps, from Poor to Fair, say, are not generally distinguishable from zero. Table 5 shows results for each sample. The relevant sample in each wave consists of the women who have remained in a romantic relationship with the focal child's father up to and including that wave.

[Table 5 about here]

These results show the robustness of the results to the inclusion of controls for individual characteristics, socio-economic status, race and prenatal investments. Controlling for whether the child is ever in someone's care besides the mother's, though exerting a significant effect, does not seem to detract from the strength of the results. Characteristics of the mother at the baseline, including her own reports of prenatal care, economic status and prenatal behaviors do not affect the strength of the results though individual coefficients occasionally come in as significant.[6]

Controlling for baseline match quality also does change slightly the magnitude and strength of the results. We expect some endogeneity in match quality and child quality, particularly as the child ages. Baseline match quality, in most cases, comes in as very significant, indicating that there is some inherent level of quality in the relationship that persists from the beginning of the relationship through the child's first few years, affecting household and parental behaviors. Baseline match quality was determined by the couple's marital status and, if they were unmarried at the time of the first interview, the mother's expressed chances for marriage.

Interestingly, the strength of the results seems to fade in subsequent waves. By the 5-year follow-up survey, there is no statistically significant difference in reading days per week by

[6]These controls are jointly significant for the 1-yr and 3-yr follow-up surveys with F stats of 2.65 and 2.04 for the respective regressions shown in Table 6. For the 5-yr follow-up survey, they lose significance, with an F stat of .87 for the regressions shown in Table 5.

mother's report of subjective match quality. In fact, virtually all variables of interest lose their significance, with much of the results being driven by differences in race and education. As relationships end and the pool of women in relationships with the father dwindles, we may see a convergence on similar investment behaviors and similar subjective match quality. Because in earlier waves we see that conflict drives investment, it follows that relationships that persist match better on investment behavior as well as other characteristics.

6.1 Results on Argument Frequency

In this section, I directly test one of the possible theoretical mechanisms for how perception of match quality relates to investments in children's cognitive abilities. In particular, I test whether there is a trade-off between arguing or bargaining and time spent with children. In the baseline survey, a series of questions are posed about how often the mother argues with the child's father about a number of different subjects including drugs, money and the pregnancy. In the two subsequent waves, respondents are only asked about general argument frequency. The question does not appear in the 5-year follow-up survey, so only two surveys are examined here.

In order to have a baseline measure that reflects overall argument frequency, I calculate and retain two principle components from the various measures of argument frequency and supplant the many measures in the regressions. In general, this measure does not predict argument frequencies reported in subsequent follow-up surveys, but is included as a control of prenatal or baseline argument frequency.

In accordance with a theory of time constraints and opportunity costs, I would expect that mothers who report arguing about things that are important with their spouse "Often" or "Sometimes" would spend less time reading with their children than mothers who report arguing "Never" ("Always" is the excluded category). The results, however, are inconclu-

sive, varying greatly in magnitude when included in these specifications. The signs are as expected for some answers, but most responses are not significant. In the 3-year sample, the variable "Argue Never" is dropped for collinearity. This may mean that argument frequency and subjective match quality are measuring different unobservable characteristics that are correlated. In any case, I cannot use this test to show that mothers who argue more with their child's father spend more or less time reading with their child. Match quality variables, however, retain some of the significance displayed in Table 5. Table 6 shows ordinary least squares results on argument frequency.

[Table 6 about here]

6.2 Results on Future Status

I use the variables related to future status of the relationship which indicate whether the intimate relationship ends in a future wave either by separation, divorce or break up. I am able to use the panel nature of the data set to perform analysis on two waves, the second and third, using these variables, the results of which are displayed in Tables 6. As theorized above and by Brown and Flinn (2007), the future status of the parents' relationship does exert a measurable effect on mother's reading days with the child. The effect, unlike shown in Schmrier (2010), is significant for mothers' investments, and is associated with large deviation from the mean. Mothers who divorce in a future wave spend on average about one day per week fewer reading with their child.

[Table 7 about here]

Interestingly, this effect is jointly significant with the coefficients on subjective match quality. When controlling for future relationship status, the coefficients on match quality are close in magnitude to the baseline estimates. Future relationship status, then, does not fully account

for differences in investments in children The match quality coefficient, in this case, could be proxying for couples who divorce even later than observed in the data set, allowing for the all coefficients to be significant. This result is extremely important as it shows that we can account for much of the difference in investments in children by posing questions about subjective match quality.

There may be some confounding effects here because the sample consists of both couples that are married and unmarried. It is likely that the costs of ending a marriage are different than the costs of ending a relationship that may or may not have legal ties, which may, in turn, affect investments. Thus, I also allow for marital status to be interacted with the future relationship status. This coefficient is small in magnitude and not statistically significant for married couples that divorce before the 3-year follow-up survey. There is a differential effect, however, for married respondents whose relationships end by the 5-year follow-up survey. These results, when combined, show a positive overall effect on reading days for married parents whose relationship ends. This suggests there may be something different about married respondents who eventually divorce and speaks to the effect in the opposite direction I predicted for high-quality parents. Though I cannot attribute it to only high-quality parents, there is some evidence of an effect in the other direction.

6.3 Pooling and Fixed Effects Results

Despite the emphasis that the survey puts on unmarried mothers, it is interesting to find that there is a large sample, of about 1100 women, that reports some sort of intimate relationship with the father of the focal child for all four surveys. This sample allows for pooling and fixed effects specifications; the fixed effects specifications are reported in Table 8. In the pooled specifications, the coefficient estimates, are, as expected, similar to the cross-sectional estimates and highly significant.

When individual fixed effects are added, the coefficient estimates are still within the range of estimates from cross-sectional results, but lose significance. Though most of the women do vary their report of relationship quality and the number of days spent reading with their child, the variation is not enough to allow for a traditional fixed effects strategy. The strong association of the baseline match quality variable and subsequent match quality variables reflects the lack of variation over time in the measure.

[Table8 about here]

6.4 Ordered Probit Results

The ordered probit specifications yield coefficients that are similar in significance levels to the OLS results. The ordered probit results that mirror Table 5 are in Table 9. In order to calculate the marginal effects, I create two representative mothers from my sample, one married and one unmarried.[7] The representative respondents are defined by the average values for a married and unmarried respondent and the most probable of those values when the value is categorical or dichotomous. Table 10 shows, how for each of these woman, changing their answer to the relationship question changes the index, S_i and how that subsequently changes their answer to the number of days spent reading to their child per week (y_i). The predicted values reported in Table 10 reflect the coefficients calculated for the regression specifications labeled (2) and (4) in Table 9.

[Table 9 and 10 about here]

[7]Given the heterogeneity of the sample and the large oversampling of non-marital births, it did not seem useful to calculate the marginal effects at the average. Average marginal effects for the same regressions can be found in Appendix I.

7 Robustness Checks and Extensions

7.1 Investments in Cognitive Skills versus Time Spent with Children

Despite the strong results on days spent reading with a child, it is still unclear whether there is something particular about investments in cognitive skills that makes them especially affected by match quality or if parents who are happier with their partners are more likely to report higher averages of any time activity their child does.

In order to test this, I run similar regressions to those on reading days per week, but using alternate variables of interest of days per week that a child watches television and days per week that mothers play inside with their children. While these activities are time investments, they are not necessarily investments in children's cognitive abilities, as reading is. In this case, the specifications are identical to Equations 6.1 and 6.2, except that the left-hand side variable measured is days per week that the child watches television or days per week that the child spends playing inside. Television days are only available for the five-year follow-up survey and days playing inside is available for each of the samples.

Television viewing time is an area where we might expect to see the opposite effect, that couples unhappier in their relationships are more likely to set their child in front of the TV while they attend to other matters. Television viewing is limited to the final wave of the analysis and thus I only have results for the 5-year Sample, but match quality is insignificant in all specifications. It seems that better or worse match quality does not induce or relate to increased or decreased average TV watching. There is no statistically significant coefficient on the individual dummy variables for match quality.

In the case of days spent playing, there is some statistical significance in the most parsimonious of regressions. When we add controls for baseline maternal investments and socio-

economic status, the results become insignificant for measures of subjective match quality. These results on time spent playing inside and television viewing indicate that subjective match quality is associated with changes in investment-heavy activities, but not necessarily all time spent with children. In addition, there does not appear to be an 'opposite' to investments in cognitive skills, at least as measured by television viewing time.

7.2 Direction of causation between parenting and relationship

Finally, I add various measures of estimation of the parents' personalities by the mother. Though these are not necessarily indicative of parenting quality, I control for whether a mother sees her child's father as a good or bad person. This is an attempt to control for omitted variable bias arising from the possibility that bad people or bad parents get into bad relationships.

While the results on match quality are significant and strongly correlated with the baseline match quality, I still have not effectively ruled out the possibility that people who are inherently bad parents are necessarily those who get into bad relationships. Interestingly, the addition of controls for mother's estimation of the father's character does not necessarily have an effect on the number of reading days in the same way that estimation of the relationship quality does. Mothers who report that their partner is "often" or "sometimes" "fair and willing to compromise" do not report significantly different reading frequencies than those who report that their partner is "never" "fair and willing to compromise".

This could be interpreted as the inability to reject the hypothesis that bad parents are necessarily those who get into bad relationships. Mothers seem to invest less in their children if they see the relationship as ending or if they are unhappy in the relationship, but not necessarily if they see their partner as a bad person.

8 Conclusions

In this paper, I show that mother's subjective assessment of the quality of her relationship with a child's father is an important predictor of how much time she will invest in her children's cognitive abilities. These results are robust to the addition of control for a bevy of individual characteristics that account for parental quality, cultural norms and socio-economic status. Mothers who report an excellent relationship with the father of their child spend up to 1.2 days more per week reading with the child than a mother who reports a poor relationship with the father. Importantly, these results show that relationship discord can have an indirect impact on children through how it affects their parents' investment decisions.

In addition, I test some of the theoretical mechanisms by which we hypothesize that match quality could affect parental investment decisions. In particular, I find that argument frequency does not have a significant direct impact. Though we might expect relationship discord to have a directly measurable opportunity cost, we cannot measure it with reported argument frequency. The correlation of argument frequency and subjective match quality likely affects these specifications.

The inclusion of future relationship status in part of the analysis shows that while an upcoming divorce does significantly affect time spent reading with children, it is over and above the effect of a mother's estimation of the match quality. This result is important as researchers can use subjective match quality as a proxy for future relationship status in assessing investments in children, but should not necessarily use it to predict future relationships status. The union dissolution decision, while important, does not fully encompass the range of satisfaction or happiness in an intimate relationship and those gradations can exert an important effect on parents' behaviors, investments in children and otherwise, within the

relationship. Likely, this relationship could be explored more to examine the link between match quality and other behaviors such as health or education monetary outlays as related to children or investments in oneself.

Further research is needed to examine a link, if any exists, between match quality and children's cognitive abilities as well as a link between match quality and time spent on other activities and monetary investments. The difference between effects on time investments in cognitive ability and time spent on other activities is also an area for further examination.

References

[1] Aizer, Anna and Sara McLanahan. 2006. "The Impact of Child Support on Fertility, Parental Investments and Child Well-being". *Journal of Human Resources.*

[2] Brown, Meta and Christopher J Flinn. 2007 "Investment in Child Quality Over Marital Status". Institute for Research on Poverty. Discussion Paper no. 1320-07.

[3] Cicchetti, D., and Toth, S.L. 2005. Child maltreatment and its Impact on Psychosocial Child Development. *Annual Review of Clinical Psychology*, 1.

[4] Chiappori, Pierre-Andre, Bernard Fortin and Guy Lacroix. 2002. "Marriage Market, Divorce Legislation, and Household Labor Supply." *The Journal of Political Economy.* Vol. 110. No. 1.

[5] Corso, PS, Edwards, VJ, Fang, X, Mercy, JA. (2008). "Health-related quality of life among adults who experienced maltreatment during childhood." *American Journal of Public Health.* 98:1094-1100.

[6] Craigie, Terry-Ann. 2008. "Effects of Paternal Presence and Family Instability on Children's Cognitive Performance." Center for Research on Child Wellbeing Working Paper 2008-03-FF.

[7] Fink, Gunther and Sumanta Mukherjee. 2007 "The Impact of Maternal Employment on Child's Mental Health: Evidence from the NLSY." *Mimeo.* November 2007.

[8] Fragile Families and Child Wellbeing Study. The Center for Research on Child Wellbeing.

[9] Haveman, Robert and Barbara Wolfe, 1995. "The Determinants of Children's Attainments: A Review of Methods and Findings," *Journal of Economic Literature*, American Economic Association, vol. 33(4), pages 1829-1878, December

[10] Miller. G.E., and Chen, E. April 2010. "Harsh family climate in early life presages the emergence of a proinflammatory phenotype in adolescence." *Psychological Science.*

[11] Schmierer, Daniel. May 2010. "Home Investments in Children in Anticipation of Divorce." *Unpublished Manuscript.*

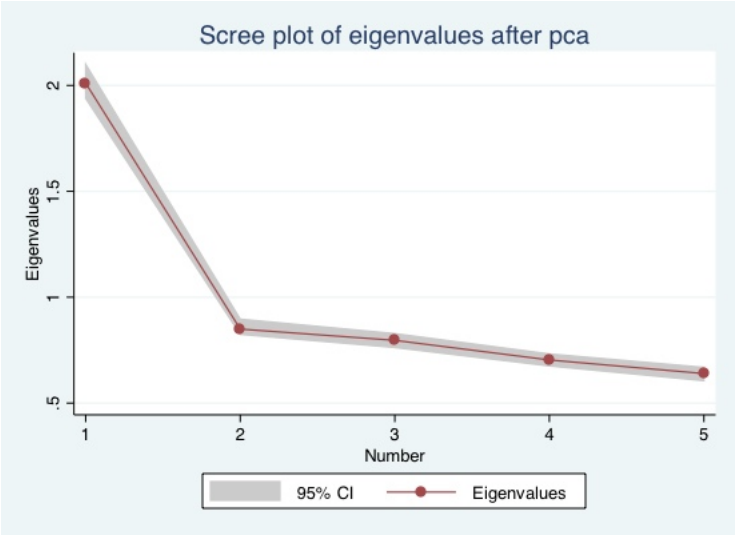
9 Figures

9.1 Figures 1a,b,c

[8]

[8]The above boxplots represent the distribution of days per week spent reading with the focal child, delineated by the mother's report of relationship quality in that wave. The ends of the plot (or the 'whiskers')

9.2 Figure 2



9

represent the maximum and minimum responses. The top and bottom of the box represent the first and third quartile and the line in the middle of the box represents the median.

[9]The scree plot of the eigenvalues for the principle components analysis is intended to visually assist in selecting how many components to retain for the analysis. I retained the first two components as the marginal value of additional components drops significantly after the second component as seen in the leveling of the screeplot after the second point.

10 Tables

Table 1
Baseline Characteristics
All Mothers and those Always with Father
Total Sample

	Baseline	1-Year	3-Year	5-Year
Mother's Age	25.52	26.07	26.74	27.20
%Female Child	51.99	52.71	52.13	52.13
Low Birthweight?	9.60	8.12	7.61	6.75
%Married	30.47	38.10	44.18	49.24
% Cohabiting	42.90	43.09	41.20	38.32
% In Public Housing	8.58	7.58	7.20	6.80
% Mother US Born	81.13	82.81	81.38	8.026
Earnings ($1000s)	5.86	6.47	6.76	7.04
Public Asst ($1000s)	0.58	0.56	0.50	0.43
Unemployment($1000s)	0.28	0.28	0.28	0.27
Num Other Kids	1.12	1.10	1.10	1.07
% Prenatal Care	98.08	0.99	0.99	0.99
Month of First Prenatal Visit	2.52	2.35	2.27	2.20
% Alcohol Used During Preg	1.99	1.75	1.64	1.69
%Drugs Used During Preg	4.40	2.41	2.63	2.37
% Cigarettes Used During Preg	17.73	15.60	14.64	13.69
%White	33.78	38.17	41.86	44.42
% Black	45.67	42.07	37.63	35.60
%Asian	3.21	3.35	4.00	4.37
%Native American	4.61	1.65	1.79	1.56
%Other	12.67	14.64	14.67	13.97
% Latina	28.59	26.57	27.07	26.25
% Less than 8th Grade	5.02	3.24	3.10	2.44
% Some High School	27.38	22.59	20.70	19.02
% HS Diploma	25	25.13	24.21	23.99
%GED	4.81	4.55	4.27	4.05
% Some College	21.84	0.25	25.38	25.06
% Tech or Trade School	3.16	2.93	2.57	2.98
% BA/BS	8.54	10.99	12.92	14.90
%Graduate School	4.24	5.56	6.84	7.56
N	3836	1902	1384	1088

Table 2
Mother's Relationship Rating by Wave

	1-yr Follow-Up		3-yr Follow-Up		5-yr Follow-Up	
	Number	%	Number	%	Number	%
1 Excellent	906	26.77	715	23.15	595	22.09
2 Very Good	1,033	30.52	870	28.17	733	27.21
3 Good	664	19.62	598	19.37	513	19.04
4 Fair	413	12.2	421	13.63	418	15.52
5 Poor	369	10.9	484	15.67	435	16.15
Total	3,385	100	3,088	100	2,694	100

Table 3
Mother's Reading Days per Week by Wave

	1-yr Follow-Up		3-yr Follow-Up		5-yr Follow-Up	
	Number	%	Number	%	Number	%
0 None —	223	6.62	73	2.38	63	2.37
.5 d/wk —	25	0.74	–	–	–	–
1 d/wk —	189	5.61	81	2.64	112	4.21
2 d/wk —	375	11.12	218	7.1	244	9.18
3 d/wk —	618	18.33	337	10.98	409	15.39
4 d/wk —	352	10.44	308	10.04	316	11.89
5 d/wk —	400	11.87	352	11.47	433	16.29
6 d/wk —	71	2.11	82	2.67	90	3.39
7 d/wk —	1,118	33.17	1,618	52.72	991	37.28
Total —	3,371	100	3,069	100	2,658	100

Table 4
Baseline Characteristics on Good-Bad Relationship Indicator by Wave

0-1 Indicator of Quality	Baseline	1-yr	3-yr	5-yr
Mother's Age	0.00552***	-0.00763***	-0.00427**	-0.00254
	(0.00156)	(0.00204)	(0.00209)	(0.00234)
Female Child	0.00172	0.0225	0.00662	0.00217
	(0.0143)	(0.0183)	(0.0191)	(0.0212)
Mother Born in US	-0.0742***	-0.0192	0.0412	0.0194
	(0.0237)	(0.0303)	(0.0303)	(0.0331)
Log of Income	0.0718***	0.0226*	0.0168	0.0284**
	(0.00869)	(0.0117)	(0.0126)	(0.0140)
Total Num Kids	0.0195***	0.0146*	0.00375	0.00641
	(0.00653)	(0.00880)	(0.00911)	(0.0104)
Black	-0.147***	-0.118***	-0.111***	-0.0897***
	(0.0174)	(0.0223)	(0.0235)	(0.0264)
Asian	-0.0620	0.0156	0.0327	0.0236
	(0.0484)	(0.0605)	(0.0573)	(0.0642)
American Indian	-0.0640	0.0247	-0.0212	-0.0675
	(0.0402)	(0.0723)	(0.0526)	(0.0568)
Other	-0.103***	-0.0658**	-0.0420	-0.136***
	(0.0251)	(0.0306)	(0.0323)	(0.0353)
Hispanic	-0.261	-0.155	-0.658	-0.719
	(0.266)	(0.309)	(0.439)	(0.440)
Some High School	0.0835**	0.0132	0.0598	-0.0640
	(0.0376)	(0.0583)	(0.0554)	(0.0616)
HS Diploma	0.121***	0.128**	0.142**	0.0178
	(0.0387)	(0.0589)	(0.0564)	(0.0625)
GED	0.160***	0.0636	0.134*	0.0122
	(0.0485)	(0.0699)	(0.0705)	(0.0794)
Some College	0.184***	0.142**	0.104*	0.00236
	(0.0396)	(0.0594)	(0.0570)	(0.0635)
Tech or Trade School	0.134**	0.0927	0.227***	0.00974
	(0.0537)	(0.0778)	(0.0798)	(0.0849)
BA or BS	0.305***	0.223***	0.152**	0.0171
	(0.0471)	(0.0665)	(0.0639)	(0.0701)
Graduate School	0.329***	0.211***	0.189***	0.0176
	(0.0550)	(0.0733)	(0.0699)	(0.0769)
$ Public Assistance	-0.0202***	0.00721	0.0108	0.00347
	(0.00519)	(0.00698)	(0.00791)	(0.00937)
Unemployment Collected?	-0.00633	0.00331	-0.0215	-0.0607
	(0.0246)	(0.0316)	(0.0334)	(0.0371)

Continued on next page

Table 4, Continued
Baseline Characteristics on Good-Bad Relationship Indicator by Wave

0-1 Indicator of Quality	Baseline	1-yr	3-yr	5-yr
Living in Public Housing	0.00586	0.0540	0.00878	0.0307
	(0.0248)	(0.0347)	(0.0373)	(0.0431)
Any prenatal care?	-0.0680	-0.0660	-0.0932	-0.0394
	(0.0588)	(0.0884)	(0.0916)	(0.105)
First prenatal visit month	-0.0113**	-0.00962	-0.00963	-0.00453
	(0.00511)	(0.00715)	(0.00764)	(0.00865)
Parents Married at Birth?		0.0911***	0.0913***	0.0782***
		(0.0244)	(0.0247)	(0.0274)
Mother drank alcohol during pregnancy	0.0351	-0.0103	0.0517	0.0342
	(0.0501)	(0.0722)	(0.0765)	(0.0819)
Mother used drugs during pregnancy	-0.0932***	-0.124**	-0.100*	-0.177**
	(0.0361)	(0.0563)	(0.0577)	(0.0687)
Mother smoked cigarettes during pregnancy	-0.0965***	-0.00686	-0.0624**	-0.0390
	(0.0201)	(0.0267)	(0.0292)	(0.0330)
Constant	-0.257**	0.676***	0.644***	0.563***
	(0.120)	(0.168)	(0.176)	(0.201)
Observations	4,174	2,304	2,114	1,731
R-squared	0.162	0.073	0.060	0.062

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5 – Reading Days on Subjective Match Quality

	Days per Week that Mother reads with Child					
	(1)	(2)	(3)	(4)	(5)	(6)
	1-Year	1-Year	3-Year	3-Year	5-Year	5-Year
Subjective Match Quality						
Excellent	0.711*	0.568	1.174**	1.153**	0.532	0.544
	(0.430)	(0.436)	(0.531)	(0.531)	(0.595)	(0.598)
Very Good	0.340	0.200	0.850	0.830	-0.00900	0.000561
	(0.428)	(0.434)	(0.530)	(0.529)	(0.594)	(0.597)
Good	-0.0834	-0.231	0.627	0.636	-0.564	-0.530
	(0.434)	(0.438)	(0.536)	(0.535)	(0.602)	(0.605)
Fair	-0.243	-0.365	0.627	0.636	-0.228	-0.180
	(0.458)	(0.458)	(0.559)	(0.559)	(0.637)	(0.642)
Married or Chances of Marriage at Birth						
Married at Birth		0.703		1.072**		0.321
		(0.727)		(0.460)		(0.455)
Certain Chance		0.924**		1.034**		0.512
		(0.369)		(0.427)		(0.435)
Good Chance		1.011***		0.689		0.282
		(0.375)		(0.436)		(0.447)
Fifty Fifty Chance		0.786**		0.662		0.335
		(0.372)		(0.441)		(0.456)
A Little Chance		1.717***		0.928*		0.0265
		(0.452)		(0.562)		(0.641)
Male Child	-0.163	-0.160	-0.0321	-0.0217	-0.297**	-0.300**
	(0.0998)	(0.0997)	(0.101)	(0.101)	(0.118)	(0.119)
Married (in wave)	0.0737	0.287	-0.0768	-0.259	0.211	0.197
	(0.134)	(0.659)	(0.127)	(0.196)	(0.142)	(0.189)
Mother's Age	-0.00309	-0.00267	-0.0171*	-0.0165	-0.0236**	-0.0203*
	(0.0102)	(0.0102)	(0.00954)	(0.0101)	(0.0112)	(0.0116)
Number of Kids in HH	-0.114***	-0.109**	-0.103**	-0.0991**	-0.0600	-0.0625
	(0.0432)	(0.0432)	(0.0440)	(0.0440)	(0.0517)	(0.0519)

Continued on next page

Table 5– Continued

	(1) 1-Year	(2) 1-Year	(3) 3-Year	(4) 3-Year	(5) 5-Year	(6) 5-Year
Any Prenatal Care?	-0.978**	-1.004**	-0.713	-0.790	-0.457	-0.542
	(0.481)	(0.481)	(0.543)	(0.545)	(0.163)	(0.164)
Month of First Prenatal Visit	-0.118***	-0.124***	-0.0988**	-0.106**	-0.116**	-0.123**
	(0.0401)	(0.0401)	(0.0422)	(0.0424)	(0.0529)	(0.0532)
Child Ever in Other Care	-0.328***	-0.340***	-0.226**	-0.151	-0.203	-0.186
	(0.104)	(0.104)	(0.101)	(0.107)	(0.153)	(0.164)
Public Asst Receipts at birth	-0.00650	-0.00236	-0.0558	-0.0567	-0.0176	-0.0168
	(0.0405)	(0.0405)	(0.0412)	(0.0411)	(0.0552)	(0.0557)
Unemployment at birth	-0.0299	-0.0287	-0.00723	-0.0110	-0.0284	-0.0275
	(0.0396)	(0.0395)	(0.0421)	(0.0421)	(0.0471)	(0.0472)
In Public Housing at birth	-0.280	-0.300	-0.615***	-0.618***	-0.364	-0.348
	(0.190)	(0.189)	(0.199)	(0.200)	(0.236)	(0.238)
Mother US-born?	0.489***	0.507***	0.131	0.145	0.201	0.197
	(0.173)	(0.173)	(0.173)	(0.173)	(0.198)	(0.199)
Child disabled	-0.157	-0.162	0.461	0.509	0.351	0.369
	(0.371)	(0.370)	(0.426)	(0.426)	(0.589)	(0.590)
Ever Breastfed	0.0323	0.0175	0.0120	-0.00132	0.116	0.115
	(0.111)	(0.111)	(0.116)	(0.116)	(0.137)	(0.138)
Alcohol Use during Preg.	0.00868	0.00851	-0.168	-0.210	0.548	0.517
	(0.387)	(0.387)	(0.405)	(0.405)	(0.449)	(0.450)
Drug Use during Preg.	-0.599*	-0.645**	-0.654**	-0.627*	0.417	0.417
	(0.310)	(0.309)	(0.331)	(0.331)	(0.389)	(0.391)
Cigarette Use during Preg.	0.0639	0.0734	0.272*	0.288*	-0.342*	-0.348*
	(0.147)	(0.147)	(0.158)	(0.158)	(0.188)	(0.190)
Constant	5.168***	4.475***	5.889***	5.334***	6.335***	5.966***
Observations	1,902	1,902	1,384	1,384	1,088	1,088
R-squared	0.102	0.109	0.098	0.105	0.117	0.119

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

All specifications include controls for race, education and earnings, and whether prenatal care was sought.

Table 6–Reading Days on Argument Frequency						
	Days per Week that Mother reads with Child					
	(a)	(1)	(2)	(b)	(3)	(4)
	1-Year	1-Year	1-Year	3-Year	3-Year	3-Year
Argument Frequency						
Argue Never	0.584	0.124	0.178			
	(0.408)	(0.421)	(0.421)			
Argue Rarely	0.236	-0.173	-0.132	(0.292)	(0.310)	(0.310)
	(0.307)	(0.323)	(0.324)	0.569*	0.267	0.271
Argue Sometimes	-0.137	-0.366	-0.320	0.121	-0.0766	-0.0643
	(0.301)	(0.313)	(0.313)	(0.288)	(0.303)	(0.303)
Argue Often	-0.411	-0.506	-0.471	0.228	0.0791	0.0785
	(0.332)	(0.334)	(0.334)	(0.312)	(0.319)	(0.319)
Subjective Match Quality						
Excellent		0.773*	0.623		1.098**	1.074*
		(0.462)	(0.469)		(0.549)	(0.548)
Very Good		0.411	0.263		0.838	0.813
		(0.456)	(0.462)		(0.547)	(0.546)
Good		0.0327	-0.134		0.647	0.650
		(0.461)	(0.466)		(0.550)	(0.549)
Fair		0.0169	-0.138		0.407	0.399
		(0.478)	(0.479)		(0.564)	(0.563)
Married or Chances of Marriage at Birth						
Married at Birth			0.629			1.078**
			(0.791)			(0.459)
Certain Chance			0.900**			1.028**
			(0.386)			(0.427)
Good Chance			1.034***			0.697
			(0.392)			(0.435)
Fifty Fifty Chance			0.816**			0.678
			(0.392)			(0.441)
A Little Chance			1.734***			0.953*
			(0.470)			(0.561)
Controls for Investment	No	Yes	Yes	No	Yes	Yes
Constant	4.615***	5.315***	4.606***	5.286***	5.862***	5.299***
	(0.610)	(0.936)	(0.969)	(0.642)	(1.010)	(1.061)
Observations	1,636	1,636	1,636	1,384	1,384	1,384
R-squared	0.076	0.100	0.109	0.077	0.104	0.111

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
All specifications include controls for race, education and earnings

Table 7 – Reading Days on Future Relationship Status

	Days per Week that Mother reads with Child					
	(a)	(1)	(2)	(b)	(3)	(4)
	1-Year	1-Year	1-Year	3-Year	3-Year	3-Year
Relationship End 3-yr	-0.0800	0.0312	0.0196			
	(0.134)	(0.145)	(0.145)			
Relationship End 5-yr	-0.204	-1.144**	-1.166**	-0.934***	-0.901*	-0.932*
	(0.331)	(0.460)	(0.460)	(0.307)	(0.502)	(0.501)
Married x Rel Ends at 3-yr		-0.0202	-0.0259			
		(0.355)	(0.357)			
Married x Rel Ends at 5-yr		2.217***	2.233***		0.280	0.277
		(0.651)	(0.650)		(0.627)	(0.626)
Subjective Match Quality						
Excellent		0.942***	0.915***		0.714***	0.692***
		(0.209)	(0.223)		(0.226)	(0.225)
Very Good		0.565***	0.543**		0.399*	0.377*
		(0.203)	(0.216)		(0.226)	(0.225)
Good		0.124	0.0951		0.187	0.197
		(0.214)	(0.220)		-0.324	-0.323
Poor		0.184	0.311		-0.324	-0.323
		(0.461)	(0.461)		(0.561)	(0.560)
Married or Chances of Marriage at Birth						
Married at Birth			0.798			1.110**
			(0.727)			(0.459)
Certain Chance			0.945**			1.069**
			(0.369)			(0.427)
Good Chance			1.034***			0.712
			(0.375)			(0.435)
Fifty Fifty Chance			0.810**			0.700
			(0.372)			(0.441)
A Little Chance			1.730***			0.934*
			(0.452)			(0.561)
Constant	5.687***	4.870***	4.047***	6.913***	6.413***	5.844***
	(0.775)	(0.789)	(0.833)	(0.843)	(0.870)	(0.925)
Observations	1,902	1,902	1,902	1,384	1,384	1,384
R-squared	0.083	0.107	0.115	0.088	0.102	0.109

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8 – Fixed Effects
Reading Days on Subjective Match Quality

Days per Week that Mother reads with Child				
Subjective Match Quality				
Excellent	0.153	0.157	0.159	0.218
	(0.371)	(0.372)	(0.372)	(0.394)
Very Good	0.121	0.124	0.125	0.156
	(0.367)	(0.367)	(0.367)	(0.389)
Good	-0.0297	-0.0242	-0.0223	-0.0343
	(0.369)	(0.369)	(0.369)	(0.392)
Fair	0.000440	-0.00476	-0.00131	0.0648
	(0.373)	(0.374)	(0.374)	(0.393)
Married	0.306**	0.305**	0.316**	0.0910
	(0.140)	(0.141)	(0.142)	(0.150)
Mother's Age				0.135***
				(0.0204)
Log of Earnings				0.00251
				(0.0371)
Num of Kids		0.00438	0.00746	-0.0919
		(0.0524)	(0.0528)	(0.0573)
Child Ever in Other Care?			-0.0624	0.227*
			(0.127)	(0.134)
Hours Child in other care			0.00327	0.00247
			(0.00386)	(0.00394)
Constant	4.636***	4.624***	4.597***	0.777
	(0.372)	(0.394)	(0.397)	(0.782)
Observations	4,106	4,102	4,102	3,807
R-squared	0.003	0.003	0.003	0.021
Number of newid	1,374	1,374	1,374	1,361

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9- Ordered Probit Reading Days on Match Quality

	Days per Week that Mother reads with Child					
	(1)	(2)	(3)	(4)	(5)	(6)
	1-Year	1-Year	3-Year	3-Year	5-Year	5-Year
Subjective Match Quality						
Excellent	0.364*	0.299	0.645**	0.638**	0.327	0.331
	(0.211)	(0.214)	(0.300)	(0.301)	(0.323)	(0.324)
Very Good	0.167	0.104	0.449	0.442	-0.00206	4.38e-05
	(0.210)	(0.213)	(0.299)	(0.300)	(0.322)	(0.323)
Good	0.167	0.104	0.291	0.298	-0.306	-0.292
	(0.213)	(0.215)	(0.302)	(0.303)	(0.326)	(0.328)
Fair	-0.128	-0.186	0.183	0.185	-0.132	-0.114
	(0.224)	(0.225)	(0.316)	(0.317)	(0.345)	(0.348)
Baseline Married or Chances of Marriage						
Married at Birth		0.340		0.602**		0.150
		(0.354)		(0.264)		(0.250)
Certain Chance		0.464**		0.561**		0.242
		(0.181)		(0.244)		(0.239)
Good Chance		0.506***		0.367		0.143
		(0.185)		(0.248)		(0.245)
50/50 Chance		0.402**		0.348		0.152
		(0.183)		(0.251)		(0.250)
A Little Chance		0.856***		0.462		0.00668
		(0.223)		(0.325)		(0.350)
Observations	1,902	1,902	1,382	1,382	1,087	1,087

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

All include controls for race, education, baseline socio-economics and investments

Table 10–Effect on S_i and y_i of Varying Subjective Match Quality

	Days per Week that Mother reads with Child			
	Married	Unmarried	Married	Unmarried
	1 yr Sample		3 yr Sample	
	(2)		(4)	
	Excellent			
predicted S	0.18	0.11	0.15	-0.38
predicted y	5 days	5 days	7 days	5 days
	Very Good			
predicted S	-0.017	-0.09	-0.04	-0.57
predicted y	5 Days	5 days	7 Days	5 days
	Good			
predicted S	-0.23	-0.30	-0.19	-0.72
predicted y	4 days	3 days	6 days	4 days
	Fair			
predicted S	-0.31	-0.38	-0.30	-0.83
predicted y	3 days	3 days	5 days	4 days
	Poor			
predicted S	-0.12	-0.19	-0.49	-1.01
predicted y	4 days	4 days	5 days	3 days

11 Appendix I

Table I1- Marginal Effects for Ordered Probit Estimation using 'meoprobit'

	c1	c2	c3	c4	c5	c6	c7	c8
Sample Freq	0.064	0.545	0.102	0.176	0.106	0.133	0.0266	0.338
Prob at mean	s .054	0.052	0.10	0.18	0.11	0.14	0.028	0.33
Average Marginal Effects at the mean for each cutoff point								
Excellent	-0.051	-0.036	-0.053	-0.056	-0.012	0.007	0.005	0.196
	(0.016)	(0.0121)	(0.018)	(0.021)	(0.006)	(0.002)	(0.001)	(0.071)
Very Good	-0.040	-0.028	-0.040	-0.03995838	-0.00775309	0.00754201	0.00387032	0.14401513
	(0.018)	(0.013)	(0.019)	(0.020)	(0.005)	(0.003)	(0.002)	(0.070)
Good	-0.017	-0.012	-0.017	-0.017	-0.003	0.003	0.002	0.062
	(0.018)	(0.013)	(0.020)	(0.021)	(0.005)	(0.002)	(0.002)	(0.072)
Fair	-0.012	-0.008	-0.012	-0.0124	-0.002	0.002	0.001	0.0440
	(0.017)	(0.014)	(0.021)	(0.022)	(0.005)	(0.003)	(0.002)	(0.076)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Includes controls for race, education, baseline socio-economics