

# Contents

<b>1</b>	<b>Introduction</b>	<b>2</b>
<b>2</b>	<b>Methodology</b>	<b>3</b>
2.1	Model assumptions and hypothesis . . . . .	3
2.2	Model justification . . . . .	4
2.3	Model specification . . . . .	5
<b>3</b>	<b>Data</b>	<b>5</b>
3.1	Personality Traits . . . . .	6
3.1.1	Big Five personality traits . . . . .	6
3.1.2	Locus of control . . . . .	6
3.1.3	Measurement of parental personality . . . . .	7
3.2	Parental Involvement . . . . .	7
3.3	Measurement of Parental Involvement . . . . .	7
<b>4</b>	<b>Results</b>	<b>8</b>
4.1	Correlation between parental involvement and the children's personality . . . . .	8
4.2	Parental involvement and the personality of the parents . . . . .	9
4.3	Parental roles and relations . . . . .	10
4.4	Parental involvement in earlier childhood . . . . .	10
<b>5</b>	<b>Tables</b>	<b>12</b>
<b>6</b>	<b>Literature</b>	<b>18</b>

# 1 Introduction

Personality of individuals starts developing at an early stage in life. The social environment plays major role shaping individuals and parents, in turn, make up one of the most important elements of the early social environment. (Caspi and Roberts, 2001 and Caspi et al. (2005))<sup>1</sup>. Because of this, many aspects of individuals are transmitted from one generation to next. Furthermore, recent research has shown that attitudes and personality matter for socio-economic outcomes (e. g. Feinstein ,2000 and Heckman et al. 2006). Thus, more research... transmission of personality might have important implications for intergenerational mobility.

We study the development of personality traits in children which are shown by the prior literature to be relevant for later socio-economic outcomes. We assess the role of parents in the formation of the personality of their Kids. Our empirical analysis is line with theoretical frameworks proposed Bisin and Verdier (2001) and Doepke and Zibotti (2017) who highlight the major role of parents in the social environment of children. As proposed by Doepke and Zibotti, we assume that parents choose the parenting style to shape their kids' preferences, such that it maximizes the child's lifetime utility, given the parents' preferences and socio-economic environment.

We follow a similar approach to Zumbuehl et al. (2018) who study the role of parent's involvement in the transmission of risk and trust attitudes<sup>2</sup>. However, our work has a key differentiation, then we do not look specifically to how parental involvement might strengthen similarities in personality between parents and their children . Instead, we focus on how parental involvement is shaping those personality characteristics, such as locus of control, conscientiousness and neuroticism, which are strong predictors of educational and labour market success. We assume that parents know what is best for their children and investigate whether parents are able to shape this traits in their children through more involvement, even without displaying these personality themselves. If true this would be an indication that parents have the ability to shape their children through conscious parenting decisions.

Our results indicate that a stronger involvement of parents in the children's life has a positive effect on the personality traits that predict better outcomes. Our results also suggest that mothers and fathers might have different roles in the formation of the child's personality. We find that the mother's involvement strongly increases the locus of control trait while the involvement of the fathers increases level of conscientiousness, while reducing the neuroticism score. One might suggest that these results could be driven by a similar channel described by Zumbuehl et al. (2018), where parental involvement strenghtens similarities between parents and children. Indeed, we find that parents that are more involved in their children's upbringing also display higher levels of internal locus of control, conscientiousness and lower levels of neuroticism. However, we exploit the extensive information on parents provided by the German Socio-Economic Panel (SOEP) data to control for the effect of the parent's personality on children. Thus, our estimates for the effect of parental involvement in the childrens personality should reflect the ability of the parents to shape the personality of their children through adequate parenting. This paper is structured as follows, Section 2 has a description of our data and the methodology for the analysis. Section 3 discusses the results. Section 4 concludes the paper.

---

<sup>1</sup>See Caspi and Roberts (2001) and and Caspi et al. (2005) for a broad literature review of personality development.

<sup>2</sup> Zumbuehl et al. (2018) find that parents that are more involved with their children are more similar to them. Hence they transfer their own attitudes more strongly.

## 2 Methodology

This work builds on the literature which shows that personality matters for socio-economic outcomes. For instance, Bowles et al. (2001)<sup>3</sup> propose a framework describing the direct channel throughout which personality traits affect productivity in the work environment and Heckman et al. (2006) extend this framework by providing evidence that non-cognitive skills not only affect labor market outcomes directly but also affect schooling decisions, which are well known to determine later earnings. While the theoretical literature exploring the transmission channels might be quite novel, there is an extensive body of empirical studies trying to identify which individual characteristics are better predictors of success. The current state of the research on this topic will be illustrated in our model justification after presenting our model in the following section.

### 2.1 Model assumptions and hypothesis

Our project follows the theoretical approach of Doepke and Zibotti (2017). They assume that parents play a crucial role in the character shaping of their child and can influence the formation of attitudes and preferences via their parenting style. More specifically, they invest in the child in a way which maximizes the child's expected welfare and economic success. So, parents are not just able to influence their children's attitudes and preferences, but also use their impact to shape their children in a beneficial way.

*Assumption 1: Parents can influence their children's attitudes and preferences via their parenting and try to maximize children's expected welfare and economic success.*

The theoretical model on transmission of character traits is supported by findings in the recent literature (see e.g. Zumbuehl et al. (2018), Feinstein (2000)). We assume that parents are aware of which characteristics have a positive or negative effect on outcomes such as educational and economic success and therefore shape their children in a more promising way by influencing the formation of those personality traits.

*Assumption 2: Parents know which personality traits are important for future success.*

However, it is not easy to identify parenting styles and it is also not clear whether parents influence their children solely in a conscious way, which could be measured by educational goals and parenting style of the parents, or whether some channels work subconsciously. The SOEP recently implemented a battery of questions which aim to provide data about parenting styles and educational goal, but as the sample size is still very small we will not focus on that part in this project.

Instead, we follow Zumbuehl et al. (2018) and use parental involvement in the children's lives as an instrument. However, while Zumbuehl et al. show that parental involvement shapes the children to be more similar to their parents in terms of trust and risk preferences, we assume that more involved parents have more time or opportunities to educate and impact their children. Parental involvement therefore also is a measure of the extend to which parents can apply parenting styles, pursue parenting goals etc.

---

<sup>3</sup>Bowles et al. (2001) investigate the large income variation between individuals with similar educational levels and cognitive skills and propose a model which attributes part of the income variance to individual sets of personality characteristics which are rewarded or punished in the labor market.

*Assumption 3: Parental involvement is a measure for the intensity of parenting.*

Those three assumptions combined lead to the hypothesis we want to investigate on in our project. If parents know which character traits are important for future success, are able to influence the development of their children's personality and want to maximize their children's expected utility from future success, we would expect that parents influence their children's personality formation in a way which goes further than making them similar to themselves. This means that parents will induce the formation of beneficial traits even though they themselves might not have developed pronounced beneficial characteristics. As we cannot directly investigate the impact of parenting, we need assumption 3 to analyze whether parents are able to shape their children's personality. Given parental involvement is a measure for the intensity of parenting, we expect parental involvement to have a significant effect on the character traits of their children, as it reflects the opportunity to influence the character formation of the child. More precisely, we expect parental involvement to have significant positive effects on those traits which literature shows to be beneficial and significant negative effects for those traits literature found unfavorable effects for, respectively.

*Hypothesis: Parental involvement has a significant beneficial effect on character traits of their children. This also holds after taking the personality of the parents into account.*

Taking the personality of the parents into account is crucial, as it guarantees that the effects for involvement are not driven by parents who make their children similar to themselves.

## **2.2 Model justification**

Our model does not contradict the approach by Zumbuehl et al. but rather supplements their idea. For trust and risk preferences, there is no clear direction on whether high or low levels are more beneficial as this depends on the environment one interacts in. (Zumbuehl et al. (2018), other sources?). In contrast, there is a growing literature which shows that other character traits have distinct effects on educational and economic success. There is for example general consensus in the literature that locus of control has significant effects on the acquisition of skills and labor market success (see e.g. Feinstein (2000), Heckman et al. (2006) or Almund et al (2011)). Feinstein (2000) and Heckman et al. (2006) also find similar effects for self-esteem. Moreover, patience is found to be a strong predictor for educational success (Almund et al. (2011), Dohmen et al. (2016)). There is also evidence from several papers showing that some of the Big Five personality traits influence future performance. Nyphus and Pons (2005) as well as Blanden and Machmillen (2007) find that neuroticism has a negative impact on future outcomes, whilst conscientiousness and openness seem to have positive effects (see e.g. Anger and Heinick (2008) and Almund et al. (2011)). Some papers indicate, that also extraversion (Blanden and Machmillen (2007)), agreeableness (Feinstein (2000)) and depending on the context also positive reciprocity might have an impact. However, while the general direction for those traits is clear, Anger and Heinick (2008) find differences between genders regarding how conscientiousness and openness might exert positive influence on socio-economic outcomes. It would be of interest to analyze whether parents can influence their children's personality in the expected direction for all the character traits mentioned above. Nevertheless, our analysis will only focus on investigating whether parental involvement significantly influences the shaping of locus of control and the Big Five personality traits, namely openness to experience, conscientiousness, extraversion, agreeableness and neuroticism.

We chose those six personality traits for several reasons. First of all, there is striking evidence for the effects of locus of control as well as conscientiousness and neuroticism on educational and economic success. Taking this into account, if parents know what is best for their children and therefore influence their character forming, we would expect to find significant results for the measures chosen. Moreover, the other Big Five personality traits offer different results between genders or limited evidence on their impact, so analyzing all of them and comparing the results is promising. Second, concerning the other traits not part of our analysis, we face at least one of two issues regarding the data provided by SOEP: Either, there is no reliable measure to gather information on the trait we are interested in, which applies for example for self esteem, where there is only one question asked in SOEP. Therefore, we would suffer serious measurement errors when using this measure and the validity of related results would be questionable. Or, there is a validated measure measuring the trait we are interested in, for example the incentivized experiments on time preferences or reciprocity, but the sample size for those individuals where we have the information on those measures does not allow us to use it. This is because there are not enough observations for children and their parents to run meaningful regressions, if there are any. Finally, the Big five personality traits and the locus of control measures provided in SOEP are well-validated, widely used measures (see e.g. Pinger paper for Locus of control, which paper for Big 5?) which were measured for the vast majority of participants. We therefore have information on these traits for parents and there children.

## 2.3 Model specification

To test our hypothesis we run simple OLS regressions on all selected personality traits of individuals of age 17 in the youth sample and individuals of age 10-11 in the child sample. We use a regression model of following form:

$$Y_i = \alpha + \beta_1 * I_i + \beta_2 * P_i + \beta_3 * C_i + u_i \quad (1)$$

where  $Y_i$  equals the observed measure of the personality trait for child  $i$ ,  $I_i$  is a vector containing the maternal and paternal involvement scores,  $P_i$  is a vector containing the measures for the different personality traits of each parent,  $C_i$  is a vector containing a series of socio-economic and family related control measures and  $u_i$  captures unobservables which influence the forming of character traits.

## 3 Data

This empirical analysis uses data provided by the German Socio-Economic Panel (SOEP), a representative panel study of households in Germany conducted since 1984. The SOEP collects yearly socio-economic information on all members of over 12.000 households. The questionnaires given to the adult members of the sampled households cover a wide range of topics going from biography, family life to personality, preferences and happiness. Since the year 2000 every child in the household turning 18 the following year enters the survey filling the Youth Questionnaire. Subsequently, if remaining in the household, the youth individual takes part in the yearly surveys as an adult of the household.

To analyse the effects of parental involvement on children's personality traits, we use the data available in the Youth Questionnaire which provides information on parental involvement in the child's life and the personality of the children. We have a starting sample of around 3900 individuals who filled the questionnaire at the age of 17 and provided information on their personality and parental involvement. In the second part, we take into account that the personality development of children is a lengthy process.

We therefore investigate at which age parental involvement might start influencing personality formation. To do so, we use data provided for children age ten to eleven in the Pre-Teen Questionnaire, a recently introduced study from SOEP which is filled in by the children themselves. It provides information on the Big Five personality items as measured in the Youth Questionnaire, which allows to compare children age ten to eleven with those at age 17. Due to the recent implementation of the module, our sample for this part is relatively small with about 390 individuals.

### **3.1 Personality Traits**

To illustrate, openness in experience refers to individual intellectual curiosity and whether someone is eager to learn. A conscientious individual is more likely to achieve due to strong work ethic and a focused learning strategy. Agreeableness is an attitude associated with compassion and willingness to cooperate. Neurotic individuals experience anxiety and negative emotionality. Extraversion indicates how social and outgoing an individual is (Komarraju et al, 2011). Locus of control measures the level by which an individual believes she has control over the outcome of events in life which can be divided into internal locus of control which displays the grade to which the individual believes herself can impact outcomes and external locus of control indicating to which extent the individual believes external factors influence her success in life.(see appendix for detailed item overview)

In the Youth, the Pre-teen and some waves of the adults questionnaire<sup>4</sup>, SOEP provided specific items which measured the interviewee's Big Five personality traits (openness to experience, conscientiousness, extraversion, agreeableness, neuroticism) and locus of control.

#### **3.1.1 Big Five personality traits**

In the questionnaire, Big Five Personality trait is measured by a 15-item questionnaire (3 items for each trait). The respondents were required to determine the extent they agreed on certain statements related to their character based on a 7-point scale ranging from 1 ("Does Not Apply at All") to 7 ("Applies Completely"). For example, item "Considerate, friendly" is referring to the trait Agreeableness and "Often worry" is referring to the trait Neuroticism. For some items, we inverted the score due to the inverted statement. As a result, we can obtain a score of the specific trait of a respondent by averaging the scores from the statements referring to the trait. The scores are standardized by subtracting mean of variables and divided by its standard deviation. The details of grouping and inverting the personality items is included in Appendix Table A.

#### **3.1.2 Locus of control**

In the questionnaire, the locus of control is measured by 10 items, including 5 for external LoC and 5 for internal LoC. The respondents were required to determine the extent they agreed on certain statements related to their character based on a 4-point scale ranging from 1 ("disagree completely") to 4 ("agree completely"). We create the locus of control score of an individual, following the approach from Pinger et al. 2010. We conduct a principal component analysis for dimensionality reduction. Note that in order to create the index from proxies measuring internal and external we invert the value of some of the 10 proxies. The generated index shall be interpreted as follows. Higher scores are an indication for

---

<sup>4</sup>Measurements for adult's internal and external locus of control are found in the waves 2005,2010 and 2015. Measurements for openness, conscientiousness, extraversion, agreeableness and neuroticism are found in the waves of 2005,2009 and 2013.

an individual displaying greater internal locus while low scores indicate someone who displays external locus. As in all the measured personality traits in this work, the final scores are standardized by subtracting mean of variables and dividing by its standard deviation. The details of grouping, inverting and the loadings of items that generate the index are included in Appendix Table A and Table B. It is worth mentioning that the validity of reducing the 10 SOEP items into one index is discussed in detail by Pinger et al.. The factor loadings obtained for our sample are similar to those obtained by Pinger et al. as an indication that our samples have a similar data structure and that this method can be applied without major information loss.

### **3.1.3 Measurement of parental personality**

The measure for the parent's personality is assessed in the adult's survey identically as in the youth questionnaire. However, the items on Locus of control and Big Five have been each asked in three different waves of the survey. This means that there are parents with multiple answers for the same item on personality. One could make use of the multiple observations on each individual trait and compute the average score reported. However, we do not discard the possibility that the individual's personality might change slightly overtime. Additionally, some of these measurements have been taken 10 years apart from each other. For the purpose of this work we are primarily interested in a measurement that reflects the parent's personality during the child's childhood and early youth. Given the time differences the questionnaires were filled by the parents and later by their children we find that earlier measurements for the personality traits of the parents overlap the most with the children's childhood and early youth period. Thus, instead of taking the average score for each trait, we will be using the first reported score found for each adult individual.

## **3.2 Parental Involvement**

The SOEP included specific parental involvement questionnaires in the Youth Questionnaire. It is; however, the pre-teen questionnaire does not cover parenting involvement information. To be able to carry out this analysis we assume that the parent's involvement remains relatively similar over time for all the children in the household. This allows us to take the parental involvement variable for the kids' age 10-11 from older siblings who took part in the Youth Questionnaire at some point.

### **3.3 Measurement of Parental Involvement**

We selected five proxies of attitude from both parents on the respondents' school performances and in total fourteen proxies of mother/ father's extent of involvement to the respondents' life respectively, included questionnaire, for instance, "Mother/ Father talks about things that worry you" and "Parents take part in parents-evening". All the items are measured either as binary variables or on a 4- or 5-point scale. Also, the variables are standardized by the method stated above. We assume parents can choose to participate in their children's life if they want such that parental involvement is a kind of general parental investment. By applying the principal component analysis on the parental involvement variables, we constructed two involvement indexes of mothers and fathers to each youth separately. The factor loadings of each proxy are included in Appendix Table 2.

## 4 Results

As presented by Bisin and Verdier (2001) and Doepke and Zibotti (2017) parents play a major role molding preferences, attitudes and personality of their children, so it should be no surprise to observe a relation between the degree of involvement of parents with their children and the development of certain personality traits. This section analyzes in more detail the empirical relation between parental involvement and personality of their children. We begin by identifying the correlation between involvement of each parent and the children's scores for locus of control, openness, conscientiousness, extraversion, agreeableness and neuroticism for the youth sample. Following, we introduce other socio-economic variables which can affect the development of the children's personality. Our work innovates in the sense that we include measurements of the parent's personality. This is meant to capture other possible channels leading to our results, such as more involvement strengthening similarities between children and their parents. We split our sample in male and female adolescents in order to investigate potential differences in sexes and special mother/father daughter/son relations. Finally we extend our analysis to the kids sample to find out whether the effects of more parental involvement are already present at an early stage in childhood. We provide results on all character traits mentioned above, however we are mostly interested in knowing whether parental involvement is helping develop those traits that matter for success. As showed by Feinstein, (2000) Heckman et al. (2006) and Anger and Heineck (2008) individuals displaying higher levels of internal locus of control achieve better educational and labor market outcomes. Similar evidence for higher levels of conscientiousness is found by Judge et al. (1999) and for the males sample in Anger and Heineck (2008). The last trait we cover in more detail is neuroticism. Nyhus and Pons (2005) and Judge et al (1999) find that individuals displaying higher levels of neuroticism achieve in average lower earnings and have fewer chances of career promotion.-

### 4.1 Correlation between parental involvement and the children's personality

Table 1 reports the results of regressing the generated scores for locus of control and the Big Five traits of children in the youth sample on the generated scores for maternal and paternal involvement. The results indicate a relation between the involvement of the parents and the personality of the children for all measured traits. As for the traits which are better predictors of success one can observe that the involvement of the parent seems to be shaping these in the correct direction. We observe that maternal and paternal involvement affect positively the locus of control and conscientiousness scores. As for neuroticism, we observe that only paternal involvement seems to be reducing the scores of the children.

However, the involvement of the parents differs a lot depending on the family and socio-economic background. Table 2 reports the correlation coefficients between maternal and paternal involvement and some control variables which might affect significantly parental involvement and the development of the children's personality. We find that parents with higher education and those with higher income are significantly more involved with their children's upbringing. Thus, we control for these by including the per capita household income<sup>5</sup>, and years of education of each parent.<sup>6</sup> We also check whether a parent has left the house as Table 2 shows that parents (specially the father) who no longer live with the family are significantly less involved. We control for possible effects of the age difference between child and parent, as we find that it is affecting involvement, specially for the fathers. The correlation table also shows that

---

<sup>5</sup>We generate this variable by taking the logarithms of the net household income divided by the amount of persons in the household

<sup>6</sup>Education in years is variable generated by the SOEP conveying information about the type of education pursuit by the individual and the degree obtained.



the number of siblings is negatively correlated with parental involvement score, reflecting possibly that the more children in the household, the less time a parents might be investing in each child. Finally, we include migration background in our controls as prior literature (Bisin and Verdier, 2001) indicates that this might play a role in the transmission of culture and as Zumbuehl et al. (2018) find this control to have effects on the transmission of attitudes such as risk.<sup>7</sup>

Table 3 presents the regression results after controlling for socio-economic and household related variables. For all traits we find that the involvement of at least one of the parents remains significant. Maternal and paternal involvement are significantly increasing the scores for locus of control, openness and extraversion. However, the coefficients for the mother on these traits have greater statistical significance. A one standard deviation increase in maternal involvement is increasing the score for locus of control by 0.11 at a 1 percent significance level. The results also put in evidence asymmetries between maternal and paternal involvement. Only the paternal involvement seems to have effects on consciousness. A one standard deviation increase in paternal involvement is increasing the score for conscientiousness by 0.15 at a 1 percent significance level. We also observe that only the mother's involvement has an effect on agreeableness. At last, we observe that while a one standard deviation increase in paternal involvement is significantly reducing the score of neuroticism by 0.12 at the 1 percent level, some undesire effects are coming through more maternal involvement, which increases the coefficient by 0.07 at a 5 percent level.

## 4.2 Parental involvement and the personality of the parents

Our results indicate that parental involvement is affecting the personality traits of the children in the expected direction. This provides evidence for our first assumption, which states that parents can influence their children's attitudes and preferences via their parenting. However, we are interested to see if parental involvement is shaping those traits for a given set of parental personality. For example, as showed by Zumbuehl et al. (2018), strong parental involvement could be strenghtening similirities between parents and children. This raises questions about the ability of the parents to develop those personality traits in their children which they (the parents) don't necessarily display.

Two observations leads us to believe that the personality of the parents does indeed affect how involvement shapes traits of the children. First off, heterogeneous results between maternal and paternal involvement might indicate that the mother's involvement is shaping those traits that female display the most while the father's involvement is shaping those which the male display the most. Several studies show differences between genders on the Big Five. Schmitt et al. (2008) find that women score higher on average on neuroticism, extraversion, agreeableness, and conscientiousness. Our sample also displays significant gender differences for some of the personality traits of the parents (see appendix), with major differences in the distribution of agreeableness and neuroticism, consistent with the findings of Schmitt et al.. Furthermore, our regression results find maternal and paternal investment to be the most asymmetric within those traits. This might be an indication that parents might be rather transmitting their own traits to the children.

The second observation makes the effect even more plausible. Table 4 displays the correlation coefficients between the involvement each parent and her/his score for the different personality traits. We find significant correlations between involvement and all traits for mothers and fathers. Moreover we find

---

<sup>7</sup>The migration variable used in the next regression takes the value of one if the child or at least one of the parents has a migration background.

that parents who score higher on locus of control, conscientiousness and lower on neuroticism are more participative in the upbringing of their children. This indicates that parents who already display the set of personality traits which matter for success spend on average more time with their children.

To account for the possibility that parental involvement rather shapes those traits that parents already display we control for the parents personality characteristics. This absorbs the effect the parents personality might have in the personality of their children. Table 5 shows the effects of parental involvement after controlling for all socio-economic and background variables as well as the parents personality. The results reveal two major effects. We observe that the parents personality does matter significantly for the development of the children's personality. Children develop traits that have stronger presence in their parents. For example, parents with higher scores for locus of control have children scoring significantly higher for locus of control. The same effect is observed for all the other traits, and specially, conscientiousness, openness and neuroticism. Excluding genetical factors, as this only matter to certain extent (Caspi et al. 2001), this in line with what Zumbuehl et al. propose. Nevertheless, the results also evidence the correctness of our hypothesis. The coefficients for parental involvement remain significant. Given a certain set of personality of the parents, paternal involvement significantly improves conscientiousness scores and reduces neuroticism scores. A lower positive impact is observed for locus of control. As for the maternal involvement, it significantly increments the scores for locus of control, openness and agreeableness, while we still observe some undesirable effects on the neuroticism scores.

### **4.3 Parental roles and relations**

As discussed in the previous section, mothers and fathers might differ significantly regarding some of the traits we study. Furthermore, the asymmetry between the coefficients for maternal and paternal involvement reveal specific roles for mothers and fathers in the development of the child's personality. By splitting the youth sample by gender we are able to find stronger evidence for mother and father roles as well as for specific mother-daughter and father-son relationships. Figure 1 displays effects of maternal and paternal involvement on personality for the entire sample and each subsample, as well as the difference between coefficients. (see appendix for regression tables). Our results indicate that fathers have a notable role in the development of conscientiousness for daughters and sons, while maternal involvement has almost no effect on this traits. This results even more impressive considering the fact that in our sample, mother's scores for conscientiousness are on average slightly higher than father's. On the other hand, mothers have a notable role in development of agreeableness.

Regarding the specific mother-daughter and father-sons relations, we find that for the son's locus of control it is the paternal involvement the one that matters the most while for the daughters only the mother's involvement matters at all. As for neuroticism, involvement of the mother still increases the score for both, but the coefficient loses any statistical significance. The fathers involvement does significantly decreases the neuroticism scores for the sons.

### **4.4 Parental involvement in earlier childhood**

Unlike the previous analysis, we could not find the same significant results of the impact of parental involvement on children of age ten to eleven. Our initial regression already indicates that maternal involvement has no significant effect whatsoever on any of the traits we have measures for. Although pa-

ternal involvement appears to have some importance, the statistical significance of the results is reduced considerably comparing to the same regression for the youth sample(see appendix for initial regression). Moreover, as control variables are introduced, any statistical significance of the coefficients disappears, except for extraversion.

This results suggest that more parental involvement does not to shape those traits in the pre adolescence. A possible explanation for this could be that most of the Big Five traits might start developing in individuals at some later point in life. We find some evidence for this in the psychology literature. For example, Soto et al. 2011 find that openness to experience and neuroticism only start developing at the adolescence. Furthermore, agreeableness and conscientiousness even show negative trend during childhood. However, our results should not be interpreted as an indication that parental involvement does not matter during childhood. There might be many other aspects of personality which start developing earlier in life, for which we do not account, and which could have significant impact for the development of personality later on. Besides that, our parental involvement measure might have some limitations and might not properly reflect parental involvement at the early childhood, being rather appropriate to reflect involvement during adolescence. Furthermore, there are several limitations for our research on this topic due to the novelty of the pre-teen questionnaires. First, we do not have sizable sample. In the simple regression without including any control variables, we have only 389 observations. When control variables such as parent's education level and household's income are included, the observations dropped to 265. As a result, the regression model cannot include other important variables such as the personality of the parents. Secondly, we do not have measurements for the locus of control (the strongest predictor of socio-economic success) on children of age ten and eleven. Thus, we cannot make a valid conclusion for this trait. Finally, the pre-teen questionnaire does not cover any parenting involvement information. Thus, we had to make the strong assumption that the parent's involvement remains the same over time for all the children in a household. However, this might create a measurement error because parental involvement can be different due to, for example, gender differences (Muller et al, 1998) even in the same household.

Ideally, to understand at which point parental involvement starts shaping personality of children (regarding the traits covered in this work) one would need to have personality and parental involvement measurements of the same child at many time points. In this manner one would be able to follow the development of a child starting from early years and going through the adolescence. Nevertheless, the respondents who filled in the pre-teen questionnaire will also be the respondents of youth questionnaire in the coming years. This means that most of the limitations stated above might be solved in the near future.

## 5 Tables

Table 1: Parental involvement and the children's personality

	LoC	O	C	E	A	N
Constant	0.00 (0.02)	-0.00 (0.02)	0.01 (0.02)	0.01 (0.02)	-0.01 (0.02)	0.00 (0.02)
Maternal Involvement	0.10*** (0.02)	0.10*** (0.02)	0.10*** (0.02)	0.09*** (0.02)	0.14*** (0.02)	0.01 (0.02)
Paternal Involvement	0.14*** (0.02)	0.05*** (0.02)	0.06*** (0.02)	0.06*** (0.02)	0.08*** (0.02)	-0.08*** (0.02)
R-squared	0.04	0.02	0.02	0.02	0.03	0.01
No. Obs.	3798	3798	3798	3798	3798	3798

Note: the data, including whatever notes are needed.

Table 2: Correlation Coefficients between Involvement and Controls

	Mother		Father	
	Involvement	p-value	Involvement	p-value
Education in Years	0.2099	0.0000	0.2178	0.0000
Age Difference with Child	0.0647	0.0026	0.1200	0.0000
Migration Background	0.0396	0.0648	0.0227	0.3254
HH Income	0.1617	0.0000	0.2011	0.0000
Parents in the HH	0.1501	0.0000	0.3240	0.0000
Number of Siblings	-0.0445	0.0379	-0.0373	0.1064
No. Obs.	2173		1876	

Note: the data, including whatever notes are needed.

Table 3: Parental involvement and the children's personality, controls

	LoC	O	C	E	A	N
Constant	-1.42*** (0.37)	-1.01*** (0.39)	1.06*** (0.36)	0.16 (0.36)	0.66* (0.38)	0.42 (0.38)
Involvement <sub>m</sub>	0.10*** (0.04)	0.08** (0.03)	0.05 (0.03)	0.07** (0.04)	0.15*** (0.03)	0.06* (0.04)
Involvement <sub>f</sub>	0.08* (0.04)	0.07* (0.04)	0.16*** (0.04)	0.08* (0.04)	0.05 (0.04)	-0.11** (0.04)
Years of Education <sub>m</sub>	0.01 (0.01)	0.02* (0.01)	-0.02 (0.01)	-0.01 (0.01)	-0.02 (0.01)	-0.02 (0.01)
Years of Education <sub>f</sub>	0.01 (0.01)	0.02* (0.01)	-0.02* (0.01)	-0.01 (0.01)	0.02 (0.01)	-0.01 (0.01)
Number of Siblings	0.03 (0.02)	-0.04* (0.02)	0.02 (0.02)	0.02 (0.02)	0.01 (0.02)	-0.03 (0.02)
P\C Net Income	0.17*** (0.06)	0.03 (0.06)	-0.14*** (0.05)	-0.00 (0.05)	-0.09 (0.06)	0.02 (0.06)
Migration Background	-0.14* (0.07)	0.30*** (0.07)	0.00 (0.07)	0.03 (0.07)	-0.04 (0.07)	0.13* (0.07)
Mother in HH	-0.15 (0.12)	0.04 (0.13)	0.17 (0.13)	0.02 (0.14)	-0.02 (0.14)	-0.15 (0.15)
Father in HH	0.07 (0.08)	-0.09 (0.07)	0.12 (0.08)	0.07 (0.08)	-0.01 (0.07)	-0.07 (0.07)
ΔAge <sub>m</sub>	-0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	-0.01 (0.01)	-0.00 (0.01)
ΔAge <sub>f</sub>	0.00 (0.01)	0.01 (0.01)	-0.00 (0.01)	-0.00 (0.01)	0.01 (0.01)	0.00 (0.01)
R-squared	0.05	0.05	0.04	0.02	0.03	0.01
No. Obs.	1775	1775	1775	1775	1775	1775

Note: the data, including whatever notes are needed.

Table 4: Involvement and parent's personality

	Mother		Father	
	Involvement	p-value	Involvement	p-value
LoC	0.1055	0.0000	0.1069	0.0000
O	0.1158	0.0000	0.0881	0.0000
C	0.0862	0.0000	0.0512	0.0024
E	0.0889	0.0000	0.0335	0.0471
A	0.1058	0.0000	0.1137	0.0000
N	-0.0554	0.0005	-0.0629	0.0002
No. Obs.	3938		3509	

Note: the data, including whatever notes are needed.

Table 5: Involvement and parent's personality

	LoC	O	C	E	A	N
Constant	-0.92** (0.54)	-0.76*** (0.56)	1.15*** (0.51)	0.35 (0.53)	0.67 (0.58)	0.36 (0.55)
Involvement <sub>m</sub>	0.09** (0.04)	0.09** (0.04)	0.04 (0.04)	0.06 (0.04)	0.13*** (0.04)	0.06 (0.04)
Involvement <sub>f</sub>	0.08* (0.04)	0.05 (0.05)	0.16*** (0.04)	0.07 (0.05)	0.05 (0.04)	-0.09** (0.05)
LoC <sub>m</sub>	0.11*** (0.03)	-0.00 (0.03)	-0.03 (0.03)	-0.02 (0.03)	0.01 (0.03)	0.02 (0.03)
LoC <sub>f</sub>	0.07** (0.03)	0.03 (0.03)	0.03 (0.03)	0.06** (0.03)	0.03 (0.03)	0.02 (0.03)
Openness <sub>m</sub>	0.04 (0.03)	0.09*** (0.03)	0.03 (0.03)	0.02 (0.03)	-0.02 (0.03)	-0.00 (0.03)
Openness <sub>f</sub>	-0.03 (0.03)	0.10*** (0.03)	-0.01 (0.03)	0.02 (0.03)	-0.02 (0.03)	0.00 (0.03)
Conscientiousness <sub>m</sub>	-0.09*** (0.03)	0.01 (0.03)	0.10*** (0.04)	0.04 (0.04)	0.04 (0.04)	-0.02 (0.04)
Conscientiousness <sub>f</sub>	-0.03 (0.04)	-0.07* (0.04)	0.10*** (0.04)	0.06 (0.04)	-0.02 (0.04)	-0.12*** (0.04)
Extraversion <sub>m</sub>	0.04 (0.03)	-0.02 (0.03)	-0.03 (0.03)	0.05 (0.03)	-0.00 (0.04)	0.03 (0.03)
Extraversion <sub>f</sub>	0.02 (0.03)	0.01 (0.03)	-0.01 (0.03)	0.06* (0.03)	-0.00 (0.03)	0.06* (0.04)
Agreeableness <sub>m</sub>	0.01 (0.03)	0.03 (0.03)	-0.02 (0.03)	-0.05* (0.03)	0.11*** (0.03)	0.05* (0.03)
Agreeableness <sub>f</sub>	0.03 (0.03)	0.01 (0.03)	0.00 (0.03)	-0.02 (0.03)	0.05* (0.03)	0.02 (0.03)
Neuroticism <sub>m</sub>	0.03 (0.03)	0.03 (0.03)	-0.03 (0.03)	-0.00 (0.03)	-0.01 (0.03)	0.06** (0.03)
Neuroticism <sub>f</sub>	-0.00 (0.03)	0.01 (0.03)	0.01 (0.03)	0.02 (0.03)	-0.00 (0.03)	0.06** (0.03)
R-squared	0.08	0.07	0.07	0.04	0.05	0.03
No. Obs	1641	1641	1641	1641	1641	1641

Note: the data, including whatever notes are needed.

Table 6: Female Sample

	LoC	O	C	E	A	N
const	-0.31 (0.58)	-0.65 (0.62)	1.46*** (0.53)	0.59 (0.60)	1.14* (0.60)	0.21 (0.65)
Involvement <sub>m</sub>	0.11** (0.05)	0.06 (0.05)	0.04 (0.05)	0.03 (0.05)	0.11** (0.05)	0.06 (0.05)
Involvement <sub>f</sub>	0.02 (0.05)	0.09 (0.06)	0.15** (0.06)	0.04 (0.07)	0.06 (0.06)	-0.13** (0.06)
R-squared	0.07	0.11	0.06	0.05	0.05	0.05
No. Obs.	792	792	792	792	792	792

Note: the data, including whatever notes are needed.

Table 7: Male Sample

	LoC	O	C	E	A	N
const	-1.41** (0.56)	-0.88 (0.59)	1.17** (0.53)	0.21 (0.52)	0.25 (0.58)	0.54 (0.54)
Involvement <sub>m</sub>	0.07 (0.06)	0.06 (0.05)	0.00 (0.05)	0.05 (0.05)	0.11** (0.05)	0.01 (0.05)
Involvement <sub>f</sub>	0.14* (0.07)	0.06 (0.06)	0.23*** (0.06)	0.14** (0.07)	0.10 (0.06)	0.00 (0.07)
R-squared	0.12	0.07	0.10	0.06	0.06	0.03
No. Obs.	849	849	849	849	849	849

Note: the data, including whatever notes are needed.

Table 8: Kids Sample

	O	C	E	A	N
const	-0.03 (0.05)	-0.08* (0.05)	-0.12** (0.05)	-0.03 (0.05)	0.11** (0.05)
Involvement <sub>m</sub>	0.02 (0.06)	-0.05 (0.05)	0.01 (0.06)	-0.05 (0.06)	0.09 (0.06)
Involvement <sub>f</sub>	0.08 (0.06)	0.13** (0.06)	0.14** (0.06)	0.10* (0.06)	-0.10* (0.05)
R-squared	0.01	0.02	0.02	0.01	0.01
No. Obs.	388	388	388	388	388

Note: the data, including whatever notes are needed.

Table 9: Parental involvement and the kids' personality, controls

	O	C	E	A	N
const	-1.47 (1.07)	0.05 (1.02)	0.31 (1.22)	0.06 (1.59)	0.31 (1.24)
Involvement <sub>m</sub>	-0.06 (0.08)	-0.08 (0.07)	0.02 (0.08)	-0.07 (0.08)	-0.01 (0.08)
Involvement <sub>f</sub>	0.02 (0.09)	0.06 (0.08)	0.15 (0.09)	0.08 (0.08)	0.02 (0.08)
Year of Education <sub>m</sub>	0.03 (0.03)	-0.01 (0.03)	-0.02 (0.03)	0.05* (0.03)	0.05 (0.04)
Year of Education <sub>f</sub>	-0.00 (0.04)	0.08*** (0.03)	0.00 (0.03)	-0.01 (0.03)	-0.03 (0.04)
Migration Background	-0.30 (0.20)	0.39** (0.16)	0.03 (0.17)	0.00 (0.23)	0.11 (0.18)
Mother in HH	0.72** (0.30)	-0.83 (0.81)	-0.50 (0.93)	-0.03 (1.31)	-0.77 (0.99)
Father in HH	-0.22 (0.19)	-0.08 (0.17)	0.35* (0.19)	-0.27 (0.19)	-0.39** (0.19)
P\C Net Income	0.11 (0.15)	-0.01 (0.09)	0.00 (0.11)	-0.06 (0.13)	0.10 (0.11)
R-squared	0.03	0.06	0.05	0.02	0.04
No. Obs.	248	248	248	248	248

Note: the data, including whatever notes are needed.

Table 10: Factor loadings for locus of control measures

Items in Questionnaires	Factor Loadings			
	Youth	Parents (2005)	Parents (2010)	Parents (2015)
Internal Locus of Control				
Success Through Working Hard	-0.034	0.065	0.031	-0.013
Control Over My Own Destiny	0.146	0.289	0.289	0.257
Soc., Pol. Activity Can Makes A Difference	-0.075	-0.016	0.025	0.013
Doubt Myself When Faced Difficulties	0.379	0.374	0.381	0.392
Have Little Control Over My Life	0.422	0.464	0.459	0.460
External Locus of Control				
In Comparison Do Not Have What I Deserve	0.393	0.379	0.384	0.385
What You Achieve Is A Question Of Luck	0.386	0.360	0.351	0.354
Others Have Often Controlled My Life	0.438	0.425	0.426	0.428
Opportunities Depend On Soc. Circumstance	0.351	0.314	0.312	0.318
Talents You Have At Birth Are V. Import.	0.175	0.061	0.099	0.102

Note: the data, including whatever notes are needed.

Table 11: Descriptive statistics of the measure of personality traits and parental involvement

Measure	Descriptive Statistics			
	Mean	Std	Min	Max
Personality Traits				
Openness to experiences	4.694	1.111	1.000	7.000
Extraversion	4.900	0.915	1.000	7.000
Conscientiousness	4.846	1.121	1.000	7.000
Agreeableness	5.339	0.924	1.000	7.000
Neuroticism	3.963	1.156	1.000	7.000
Locus of control	0.013	1.542	1.103	3.809
Parental Involvement				
Paternal Involvement	0.047	2.242	-5.313	4.287
Maternal Involvement	0.090	1.869	-8.100	3.946

Note: the data, including whatever notes are needed.

Table 12: Descriptive statistics of the measure of personality traits of adult

Measure	Descriptive Statistics			
	Mean	Std	Min	Max
Openness to experiences <sub>m</sub>	4.587	1.203	1.000	7.000
Openness to experiences <sub>f</sub>	4.371	1.165	1.000	7.000
Extraversion <sub>m</sub>	5.397	0.791	1.000	7.000
Extraversion <sub>f</sub>	5.354	0.772	1.000	7.000
Conscientiousness <sub>m</sub>	6.050	0.846	1.000	7.000
Conscientiousness <sub>f</sub>	5.979	0.879	1.000	7.000
Agreeableness <sub>m</sub>	5.627	0.922	1.000	7.000
Agreeableness <sub>f</sub>	5.252	1.010	1.000	7.000
Neuroticism <sub>m</sub>	4.121	1.209	1.000	7.000
Neuroticism <sub>f</sub>	3.745	1.168	1.000	7.000
Locus of control <sub>m</sub>	-0.083	1.596	-5.297	3.758
Locus of control <sub>f</sub>	0.124	1.570	-6.048	3.934

Note: the data, including whatever notes are needed.

Table 13: Factor loadings parental involvement measures

Item in the Questionnaire	Involvement Mother	Involvement Father
Parents show interest in performance	0.211	0.100
Parents take part in parents-evening	0.147	0.091
Parents come to teacher office hours	0.113	0.047
Parents visit teacher outside office hours	0.084	0.009
Parents involved in at least one school activity	0.162	0.093
Mother talks about things you do	0.339	
Mother asks you prior to making decision	0.358	
Mother expresses opinion on something you do	0.378	
Mother is able to solve problems with you	0.364	
Mother asks your opinion on family matters	0.389	
Mother gives reason for making decision	0.392	
Mother talks about things that worry you	0.183	
Mother helps with studying	0.162	
Father talks about things you do		0.378
Father asks you prior to making decision		0.368
Father expresses opinion on something you do		0.367
Father is able to solve problems with you		0.387
Father asks your opinion on family matters		0.373
Father gives reason for making decision		0.380
Father talks about things that worry you		0.276
Father helps with study		0.231

Note: the data, including whatever notes are needed.



Table 14: Personality items in the SOEP questionnaires

Personality trait	Question in the SOEP
Big-5 Personality Traits	Personal Characteristic
Openness	Lively imagination Introduce new ideas Importance of esthetics
Extraversion	Communicative Am outgoing/sociable Reserved (inverted)
Conscientiousness	Carryout duties efficiently Work carefully Am lazy (inverted)
Agreeableness	Can forgive others Considerate, friendly Abrasive towards others (inverted)
Neuroticism	Often worry Am nervous Be relaxed, no stress (inverted)
Locus of Control	Opinion
Internal Locus of Control	Success Through Working Hard Control Over My Own Destiny Soc., Pol. Activity Makes A Difference Doubt Myself Faced Difficulties (inverted) Have Little Control Over My Life (inverted)
External Locus of Control	In Comparison Do Not Have What I Deserve What You Achieve Is A Question Of Luck Others Have Often Controlled My Life Opportunities Depend On Soc. Circumstance Talents You Have At Birth Are V. Import.

Note: the data, including whatever notes are needed.

## 6 Literature