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# Parents' Ambitions and Children's Competitiveness \*

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## Abstract

Individual competitiveness is a personality trait of high importance. While substantial differences between individuals have been documented, the sources of this heterogeneity are not well understood. To contribute to this issue we conduct an incentivized field study with pre-school children. We assess the children's willingness to compete and relate the inclinations to ambitions and preferences of their parents. Parents' ambitions concerning their children's success in professional life predict their children's competitiveness. In particular, children of highly ambitious parents tend to enter competition even if their chances to win are low. High ambitions are related to a relatively low socioeconomic background.

**Keywords:** *Children, Competition, Field Experiment, Parents, Socialization, Intergenerational Transmission*

**JEL-Classification:** C91, C93, D01

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# 1 Introduction

A key characteristic of most modern societies is their emphasis on competition. Firms compete for customers, employees compete for promotions and bonuses, and politicians compete for voters. Indeed competition increases welfare and productivity in many settings, for instance labor contracts (Lazear and Rosen, 1981), and can result in joy of winning (Dohmen et al., 2011). The ubiquitous emphasis of competition may however also be a burden for those individuals who experience losing frequently, resulting in stress, depression and connected health costs (e.g., Dohmen et al., 2011; Gilbert et al., 2009). Several studies show that competition for school placement and competition in classrooms negatively affects the quality of learning and other social aspects of students (e.g., Belfield and Levin, 2002; Ladd and Fiske, 2003). Consequently, it is crucial to choose one's competitions wisely.

Little is known about the origins of immanent preferences for competition. Our study provides evidence on factors that shape preferences for competition already in their early childhood. Our data suggests that an important factor triggering children's competitiveness are parents' ambitions for their child's later success in professional life. That is, parents' high ambitions are likely to be associated with their children to enter competition regardless of their chances to win.

A number of studies analyze whether gender causes differences in the competitiveness of children: Gneezy and Rustichini (2004) as well as Sutter and Rützler (2014) find greater competitiveness among boys in a running task, particularly for older children. The authors relate this finding to the tremendous degree of overconfidence concerning the rank of their performance of – especially older – boys. Other authors cannot confirm this result for other tasks (Khachatrian, 2012; Dreber et al., 2011; Samak, 2013), or present mixed evidence regarding decisions to compete and the improvement of performance (Cárdenas et al., 2012). One potential reason for this mixed picture may be different cultures in the countries where the children grew up.

Psychologists, and very recently also economists, test another potential origin of preferences for competition: they link different degrees of competitiveness to family factors (e.g., Hupp et al., 2010; McKee and Leader, 1955; Poulin-Dubois et al., 2002; Van Lange et al., 1997).<sup>1</sup> For

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<sup>1</sup>Recent studies by Bauer et al. (2014), Dohmen et al. (2012) and Kosse and Pfeiffer (2012) have taken the same avenue linking other-regarding preferences, risk preferences and patience to their parents' attitudes. All three studies find correlations between parents' and children's preferences suggesting that the transmission of preferences from parents to their children is a key driver for these personality traits. Likewise, Deckers et al. (2015) show that parental socioeconomic status significantly influences patience and risk attitude: children from families with higher socioeconomic status are more patient and are less risk seeking.

instance, McKee and Leader (1955) analyze behavior of 112 three-to-four-year old children in child-care institutions in the Bay Area. They report that children in child-care institutions in low-class residential areas were more inclined towards competition compared to children from middle-class areas. Van Lange et al. (1997) measure competitiveness of 631 Dutch adults with the social value orientation method and relate their data to background information. Notably, they find that subjects with more siblings are more pro-socially oriented, but less competition-oriented compared to those with fewer siblings. Almås et al. (2015) explore the relation between children's willingness to compete and the socio-economic background of their families among Norwegian adolescents, 14 to 15 years old. One of their key findings is that children from families with low income and low education are less willing to compete (even when controlling for performance).

In our study, we provide an investigation on another source of intergenerational socialization: we test whether parents' preferences and ambitions with respect to their children's success associates with children's competitiveness. In order to allow for maximal relevance of the family background on children's decision, we analyze the behavior of very young children. Our investigation comprises an experimental task with 84 pre-school children in Northern Germany. Like other recent studies, we borrow a running task from Gneezy and Rustichini (2004). The design allows us to measure children's willingness to compete in a familiar task which appears to be easily comprehensible for three to six year-old children, and where competing is 'natural'. Prior to the experiment, we sent out consent forms including a short survey to the parents. Importantly, neither the parents nor the kindergarten teachers knew the task and research question. The survey included questions concerning topics which are related and unrelated to competitiveness. We collected information on parents' values and ambitions concerning their children.

Our results indicate hardly any gender differences in competitiveness at this very young age. Likewise, parents' preferences do not appear to matter directly for children's decision making. Rather, one of the most important factors associated with children's competitiveness is parents' ambitions for their child's later success in professional life. That is, children of parents stressing the importance of their offspring's job success are significantly more likely to compete than children of less ambitious parents: we find a marginal increase (decrease) of about 14 percent in the likelihood to compete for a one point increase (decrease) from the mean choice on a seven-point ambitions scale. Interestingly, when controlling for the individual likelihood of winning a competition, children of highly ambitious parents decide to enter competition even when the prospects of winning are unfavorable. Consequently, relatively slow children with

very ambitious parents enter competitions and, on average, earn fewer rewards than relatively slow children whose parents are less ambitious. Hence, parents’ ambitions are correlated with children ‘overinvesting’ into competition. On average, we find parents with lower income and lower education to be more ambitious than families with high relative income. This effect could strengthen the already existing status and income disadvantages of children from low income and low education households.

The remainder of the article is organized as follows: Section 2 presents the method we use to obtain data on children’s willingness to compete as well as parents’ characteristics and ambitions. Here we also formulate the hypotheses we want to test. In Section 3 we lay out the results of our study with regard to the different possible sources of competitiveness and test our hypotheses. Finally, Section 4 provides a concluding discussion of our results.

## 2 Method

In total, our study includes data from 84 children of ages between almost three and six years.<sup>2</sup> The settings of our study are two kindergartens in Northern Germany. The first kindergarten is located in Hamburg, in the suburb of Heimfeld. This data was collected in March 2012. The second kindergarten is located in Lower Saxony, in Essenrode. Here, we were able to collect the data in May 2012. Notice that both kindergartens are located in German middle class neighborhoods. Further characteristics on the kindergartens are reported in Table 1.

*Table 1 here*

The primary aim of our study is to analyze jointly the effects of a child’s characteristics and her parents’ characteristics and ambitions for her decision concerning competition. First, we describe the elicitation of the competition decision. Then we report the data on parents’ and children’s characteristics.

### 2.1 Eliciting Children’s Willingness to Compete

We elicit children’s willingness to compete by offering competitive and non-competitive reward schemes in a running task. We borrow the idea of a running task from Gneezy and Rustichini

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<sup>2</sup>Overall, 100 children participated in the experiment. However, we had to exclude 13 observations due to some missing data in the parents’ survey. Children were free to choose not to participate in the study at any point in time. This option was used by three very young children.

(2004), who use it to study competition effects among 9-10 years old children in Israel.<sup>3</sup> We employ the specific running task in our design to allow for easy comparison of our data with earlier findings. Moreover, running is one of the few tasks that presumably all children are familiar with already at a very young age. It therefore seems natural to consider competition in a running task for kindergarten children.

The running task was conducted in the respective playgrounds of the two kindergartens in six separate sessions.<sup>4</sup> The kindergarten teachers allocated children into these sessions according to organizational criteria of the kindergartens. In each session, one group of children participated in our study, while all others were looked after by teachers. On average a group consisted of 16 children, while group sizes varied between 12 and 23 children. Both kindergartens offered activities for those children without parents' consent or those who opted out during the sessions.<sup>5</sup>

The children were asked to run as fast as possible from one pair of cones to another pair of cones which were placed at a distance of 30 meters. Each child ran twice (without any other child running at the same time) and we recorded the time with a stop watch. Prior to the first recording, each child was informed that she would receive the reward if she completed the task faster than half of the other children. If she was not faster than half of the other children, then she received no reward for this recording. Notice that we did not elicit the child's subjective expectation concerning the rank or being in the faster half of the group. Sutter and Rützler (2014) report an overwhelming degree of overconfidence among children of that age, so that statement seems to provide little information (they report that on average 91 percent of the children expect to be in the faster group). Nonetheless, we assume that children could assess intuitively their performance within the group based on every-day experience, since they were able to observe each other while running. Information on performance and on earned rewards was not disclosed until the end of the experiment.<sup>6</sup>

After the first recording each child was interviewed in private (a teacher was always present in the background to ensure comfort for the child). We informed each child that there would be

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<sup>3</sup>Recent studies by Cárdenas et al. (2012), Dreber et al. (2011) and Sutter and Rützler (2014) also make use of the task for research with 9-12 years old children in Colombia and Sweden, 7-10 years old children in Sweden, and 3-8 years old children in Austria, respectively.

<sup>4</sup>All sessions were conducted in comparable, sunny weather conditions.

<sup>5</sup>The data collection procedure and the internal handling of the data follows the procedures described in the Respect Code published by the European Commissions Information Society Technologies Program for socio-economics experiments (<http://www.respectproject.org/code/>). Of course, this includes that despite the consent of her parents, a child was free to choose not to participate in the study at any point in time (see footnote 2).

<sup>6</sup>All children finally received at least one reward as a 'show-up fee'.

a second recording and that this time the reward depended on her decision. Again, we told each child that we would record the time. Each child had to decide whether to run against the time of another child (i.e., to compete against another child), or to run in order to improve her own time. If she wins against another child, she receives a large reward plus a small reward. If she loses against another child, she receives no reward. Conversely, if she decides to improve her own time, she receives a large reward if she runs faster than before and a small reward if she does not improve her own time. The two options were illustrated by two large cards showing large and small wrapped rewards for the corresponding case (see Figure 5.3 in Appendix 5.4); children had to point to one of the two options and to declare explicitly their choices in order to make clear decisions.

The interview with each child was conducted by the same experimenter and followed, as closely as possible, a protocol of how to phrase the instructions and questions.<sup>7</sup> The second recording of the running time was also conducted without another child running at the same time (see Figure 5.4 in Appendix 5.4).<sup>8</sup> The matching of competing children was set up by ranking first recording times and ensuring close ranks; no information concerning the matching was provided to the children.<sup>9</sup> Again, this procedure follows closely Gneezy and Rustichini (2004) as well as Sutter and Rützler (2014).

We employ the rewards in order to ensure an adequate incentive structure. While all children are informed about this incentive structure, we deliberately focus the attention of the children on the decision of whether to run *against another child* or to run to improve *one's own* time. Thus, when confronted with the choice situation not only considerations of expected rewards, but also spontaneous inclinations to avoid or enter competition are likely to be present. In the latter case, we are not measuring risk preferences and beliefs about own and others' performance, but rather the direct choice to opt for a competition per se. In either case, it is important to understand which factors shape the decision. Let us now turn to the characteristics and ambitions of the parents.

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<sup>7</sup>See Appendix 5.2 for the protocol.

<sup>8</sup>We decided to have children run without their competitors aside them in order to disentangle the two effects of pressure from having another child next to oneself and being in a competition per se. Otherwise, we would have had the children running next to each other for the first recording as well, which may result in issues of feeling in a competition without being in one.

<sup>9</sup>We did not provide specific description regarding the matching procedure to children as this created a competitive edge for older ones: as they understand the matching procedure more easily, this could cause a systematic age bias.

## 2.2 Parents' Preferences and Ambitions

In addition to children's decisions for or against entering into a competition, we collected data on parents' preferences and ambitions which may allow us to identify parents' influences on a child's willingness to compete. In order to collect our data, we approached the parents by mail (sent via the kindergarten) to ask for their consent (with the permissions of the kindergartens' directions and their administrative institutions). We combined the consent form with a survey part, so that we had the possibility to collect data on children's and parents' characteristics beyond the age and gender of the child. Note that neither parents nor kindergarten teachers were aware of our research question. To rule out obvious clues about our research question, the survey was a mixture of related and unrelated questions.

The main reason for us to study kindergarten children is that they are at the very beginning of their encounter of social norms. Therefore, we expect that parents' influence is fairly undiluted compared to later stages in life. Amongst others, we collected data on parents' age, number and ages of siblings, duration of breast feeding, marital status of the parents, the language that is spoken at home, and the education of the parents. Further, we asked parents to answer questions with regard to trust, competition, risk, importance of athletic and professional success of their child, perceived relative household income and the mother's share of household work on a seven-point scale.<sup>10</sup>

The survey items are guided by a list of hypotheses derived from multiple strands of the literature: Approaches suggesting the transmission of cultural traits argue that children adopt preferences similar to their parents' (e.g., Bisin and Verdier, 2001, or see Bisin and Verdier, 2010, for a survey). In that light, competitive parents are expected to have competitive children.<sup>11</sup> In our data set we measure to which extent parents like competition on a seven-point scale. The corresponding hypothesis is that highly competitive parents tend to have competitive children. If this hypothesis is confirmed, then it is still an open question which mechanism causes the correlation. One the one hand, parents share genes with their children. Cesarini et al. (2009a, 2009b) provide evidence from twin-studies that overconfidence, risk-taking and unconditional giving in dictator games are partly influenced by genetic similarity. On the other hand, they also show that the social environment matters. Parents serve as role models in their

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<sup>10</sup>See Appendix C for an English translation of the survey sheet.

<sup>11</sup>Similar correlations between children's and parents' preferences are found recently for risk preferences and trust (Dohmen et al., 2012), for time preferences such as impatience (Kosse and Pfeiffer, 2012), and for attitudes concerning female labor force participation (Fernandez et al., 2004).



children's socialization so that the characteristic may be very different for different family histories. To approach this question empirically, we asked parents to state their agreement with the statement that "success is based on hard work" in the questionnaire. Moreover, the analysis of Almås et al. (2015) shows that the economic underpinning of the preference formation process is the socio-economic standing of the parents. Therefore, we will relate the parents' values that turn out to be crucial for a child's formation of competition preferences to socio-economic background variables such as parent's age, marital status, education, relative income, and division of homework among parents.

The next type of hypothesis relates children's competitiveness to their parents' educational goals. It seems problematic to ask someone directly for her desire to have competitive children because competitiveness is not a typical dimension of educational goals. Moreover, we would reveal too much about the purpose of this study if we ask this question directly. Therefore, we ask the following questions: "As how important do you regard your child's future professional success?" In a market economy, job success seems strongly related to competitive behavior. Moreover, we include a highly similar variable where professional success is replaced by athletic success to control for level effects in the sense that the interpretation of 'very important' might be quite different across respondents. Thus, we can use the difference of the answers to job success and sports success to construct a relative measure of job success (see footnote 14).

Another related aspect for children's competitiveness may be social preferences. Balafoutas et al. (2012) show the relationship between distributional preferences and competitive behavior for adults: when choosing between a tournament and a piece rate, efficiency seeking subjects prefer the former more often than spiteful and inequality averse subjects. In our study, we try to test parents' educational goals with regards to social preferences on children's competitiveness by asking the following questions: "As how important do you regard it that your child is careful with weaker children?"

On the level of the child we consider these characteristics: gender, age, and number of siblings. One reason to include age is the amount of experience with competition while the psychological work by Van Lange et al. (1997) suggests that the number of siblings might matter. Of course, age is also a control for several other aspects of a child's development. Similarly, for the number of siblings there might be mechanisms beyond experience with competition which shape the socialization process. For example, it could be the case that a singleton is raised differently by the parents than a child with (many) siblings, since, for instance, parents have more attention for their only child. Empirical evidence on the impact of age on competitiveness is

unclear. In the study of Sutter and Rützler (2014), age is used as a control in several models where the probability to choose competition is estimated. In some of them it appears to have a significant positive effect, in some it is insignificant. To avoid potential age effects, we always control for age in our estimations such as Sutter and Rützler (2014) do.

Concerning gender differences among very young children, Sutter and Rützler (2014) provide evidence for a gender gap in the sense that even young boys are more likely to enter competition than young girls, while other studies find emerging gender differences starting with puberty in non-western societies (Andersen et al., 2013), or cannot confirm this result (Dreber et al., 2011; Samak, 2013). Although this question is not the main focus of our paper, the literature suggests that we should control for gender.<sup>12</sup>

Finally, risk preferences may play a significant role: the decision to compete is less attractive the more risk averse a person is. That is, since competition mostly involves the risk of losing and the probability of winning, risk is an essential element of competition, and could be reflected in the preference for or against competition. Cárdenas et al. (2012) employ six lottery choices between a coin-flip lottery and a safe option to measure risk preferences of 9-12 years old children. While Cárdenas et al. (2012) are able to provide interesting insights into gender differences with regard to risk taking, in our study with 3 to 6 years old children, we doubt the applicability of these measures. For this reason, we abstain from investigating the children's risk preferences. Nevertheless, we include an item on risk preferences into the parents' survey. Thus, in our analysis, we will employ parents' risk preferences as an additional variable of parents' preferences to potentially explain children's competitiveness. Following the literature on the cultural transmission of risk, stating that risk averse parents have risk averse children (see Dohmen et al., 2012), we hypothesize that children of risk averse parents are reluctant to enter competition. Table 2 provides a summary of these control variables.

*Table 2 here*

### **3 Results**

Our data analysis consists of three parts: in part one, we analyze children's performance and the decision to compete in the running task solely on the basis of children's data. Part two combines children's behavior with parents' preferences and ambitions, while part three addresses the sources and consequences of parent's ambitions.

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<sup>12</sup>To our knowledge our study is also the first to report data on this matter from Germany.

### 3.1 Children’s Performance and Competition Decisions

In the following we present the results of children’s performance in the running task and the frequencies of decision for and against competition. Table 3 reports means and standard deviations of children’s performance in the running task in seconds, where time 1 (time 2) stands for the recording in the first (second) round. In addition, we report the differences time 1 – time 2 ( $\Delta$  time). We thereby distinguish between children opting for or against competition.

*Table 3 here*

The reported numbers show that children on average, and, particularly, opting against competition, have significantly improved by approximately half a second from the first to the second round (testing  $\Delta$  time to be different from zero yields  $p = 0.001$  for all children, and  $p = 0.006$  for children deciding against competition, using a Wilcoxon Mann-Whitney Rank Sum Test, two-sided; we use this test for all other pairwise comparisons throughout this section), while the  $\Delta$  time differs insignificantly for children deciding for competition ( $p = 0.08$ ); about fifty percent of the children opted for competition. The differences between mean times of competitive and non-competitive children are not significant, neither in time 1 ( $p = 0.27$ ), nor in time 2 ( $p = 0.17$ ). This is also true for the comparison of the median times which are 11.4 and 11.3 for the non-competitive children and 9.75 and 9.7 for the competitive children in the two recordings. This is a puzzling observation since theory suggests that the faster a child can run, the higher the expected utility from competition and thus the more likely she should be to compete.

To elaborate further on the puzzling relation between performance and competitive choice, let us examine how three basic demographic characteristics (age, gender and number of siblings) influence these two variables. Overall, age and time are very related: time 1 (time 2) and age – measured exactly in days – are significantly correlated at  $-0.60$  ( $-0.61$ ;  $p < 0.001$  in both cases, Pearson’s product-moment correlation test, two-sided). Interestingly, this observation holds true for both genders: the correlation between time 1 and age for girls (boys) is  $-0.66$  ( $-0.64$ ), while the correlation between time 2 and age for girls (boys) is  $-0.63$  ( $-0.66$ ;  $p < 0.001$  in all cases, Pearson’s product-moment correlation test, two-sided). In addition to age and gender, we also consider the number of siblings as a potential predictor of fast running times and decisions to compete. For this purpose, we compute the correlation between the running times and the number of siblings. The pairwise correlation of  $-0.24$  and  $-0.26$  for time 1 and

time 2 is significant ( $p = 0.028$  and  $p = 0.016$ , Pearson’s product-moment correlation test, two-sided) such that indeed children with more siblings were faster.

To have the exact partial effects we regress the running time in the first round as model (o) on the variables age, boy, and number of siblings, where we cluster the error term at the level of groups. The results, which are reported in Table 4, suggesting that performance in the running task is increasing in age and in the number of siblings, and it is higher for boys than for girls.

*Table 4 here*

Let us now proceed by analyzing how the three demographic factors that determine performance are related to competitive choices. Again, we differentiate between girls’ and boys’ decisions on competition. It turns out that 19 out of 41 girls compete, while 19 out of 43 boys compete. Thus, confirming Samak (2013) study with US-American pre-schoolers, we do not find any significant difference between girls’ and boys’ choice for competition ( $p = 0.920$ ). This holds despite the fact that boys ran faster on average than girls. Next, as we have seen that running times decrease substantially with age, we examine the influence of age on the tendency to compete. There is an insignificant, though positive correlation between the two variables of 0.17 ( $p = 0.12$ , Pearson’s product-moment correlation test, two-sided).

Finally, we explore the number of siblings. Since it affects performance, it should also affect decisions for or against competition. Yet, a correlation test shows only an insignificant negative correlation of  $-0.10$  between the choice in favor of competition and the number of siblings ( $p = 0.36$ , Pearson’s product-moment correlation test, two-sided). Thus, there is no evidence showing that age, gender, and number of siblings influence the decision to compete.

To examine the interference between these factors in further detail, we analyze the decision for or against competition in the probit regression (i) in Table 5. The dependent variable is one if the child opts for competition and zero otherwise. We test the independent variables ‘age’, ‘male’, ‘number of siblings’, and the dummy variable ‘fast’, which is one if the child performs better than the median child in its group with respect to time 1, and zero otherwise. We opted for this binary way to control for relative performance as we can employ it for interaction terms in our analysis later on. We cluster the error term at the level of groups and report mean marginal effects along robust standard errors in parentheses; as measures for the goodness of regressions’ fit we report the pseudo r-square and likelihood ratio tests (test statistics are  $\chi^2(k)$  distributed with  $k$  being the number of estimated coefficients) comparing the fit of the models with the fit of a baseline model with a constant term only.

The results of our probit estimation suggest that neither ‘age’ nor ‘fast’ nor ‘male’ nor ‘number of siblings’ significantly influence children’s choice for competition. This is still true when using different controls for performance (e.g., continuous measures of relative performance). Those results add to the ongoing quest in the socio-economic literature (e.g., Andersen et al., 2013; Sutter and Rützler, 2014; Samak, 2013) about gender and tendency to opt for or against competition.

Summarizing our findings, we obtain

**Result 1:** There is no significant difference between running times of competing and not competing children. In turn, age and gender seem not to influence whether to compete or not. In the next subsection, we will see how parents’ preferences and ambitions influence these results.

### 3.2 Parents’ Preferences and Ambitions

We now introduce parents’ characteristics as determining variables for a child’s willingness to compete. We divide our analysis along two blocks of questions from the survey, one concerning preferences and one concerning ambitions. As discussed in subsection 2.2, we focus in our analysis of parents’ preferences on inclination towards competition, risk preferences, and appreciation of hard work. For this purpose, we extend our previous probit model (*i*) on the children’s decision for or against competition by our three measures ‘like competition’, ‘risk loving’, and ‘hard work’ (model (*ii*)). As explained earlier, we expect all three variables to be positively correlated with the children’s choice for competition.

Turning to parents’ ambitions for their children, we test the ambitions concerning their child’s success in professional life, called ‘job success’. Along our earlier argument, we expect that this variable contributes positively to the probability that children opt in favor of competition. In addition, we control for the parental ambition concerning ‘sports success’, and – following up on Balafoutas et al. (2012) – the ambition regarding how ‘careful’ the own offspring is with weaker children. Therefore, we extend our previous probit model (*i*) on the children’s decision for or against competition by our three measures ‘careful’, ‘sports success’, and ‘job success’ (model (*iii*)). For both models, Table 5 reports mean marginal effects along robust standard errors, clustered by groups, in parentheses. In addition, model (*iv*) is included which tests both blocks of questions jointly.

The results show a positive effect of age in these richer models if we control for parents’ preferences and/or ambitions. The results of model (*ii*) and (*iv*) do not indicate any significant

association between parents' preferences and the likelihood that children compete. In other words, neither parents' own preferences for competitive tasks, nor their willingness to take risks, nor their appreciation of 'hard work' correlates with children's decision for or against competition. Thus, we cannot confirm the hypotheses that were derived from the literature on cultural transmission of preferences with our data.

*Table 5 here*

In contrast, the estimated mean marginal effects for 'job success' in model (iv) indicates a significant influence of parents' ambitions on the likelihood that children opt in favor of competition. In other words, the more parents stress the importance of professional success for their children, the more likely these children are to opt for competition. Quantitatively, at the mean ambition score (6), a decrease (increase) translates into a 14 percent (decrease) increase in competitiveness. Interestingly, we find the relation for 'job success', but not for 'sports success' and not for 'careful'.<sup>13</sup> That is, parents who strongly emphasize the future socio-economic success of their children coincide with children's willingness to compete. This may be caused through socialization (the so-called nurture channel). An alternative explanation is that ambitions and overconfidence, some key ingredients of competitiveness, are inherited through genetic similarity (the so-called nature channel, as stressed by Cesarini et al. 2009a).<sup>14</sup> In both cases, higher ambitions of parents concerning offspring's job success is associated with higher degrees of children's competitiveness.

Finally, we want to investigate whether this correlation of parents ambition on children's competitiveness is moderated by performance. For this purpose, we estimate the model (v) which extends model (i) by adding the variable 'job success' and interaction term 'job success  $\times$  fast'. Doing so, we address the question whether fast running children really opt against competition when parents' ambitions are low (in this case, 'fast' and the interaction term are insignificant), or whether the specific interaction between 'fast' and 'job success' influences the choice for competition (in this case, all three terms are significant). Table 5 reports mean marginal effects for model (v) along robust standard errors, clustered by groups, in parentheses.

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<sup>13</sup>Perhaps a direct elicitation of children's preferences in future studies is necessary to clarify the importance of the latter effect.

<sup>14</sup>Because parents might give a different interpretation to the items of the scale concerning importance of success, we reran model (iii) with 'relative importance of job success' (which is defined as 'job success' minus 'sports success') as a robustness test. Although the mean marginal effect is insignificant ( $p = 0.060$ ), we get qualitatively similar results.

Indeed, all three mean marginal effects are significant. This means that ‘fast’ and ‘job success’ interfere in a way that (beyond the effect of ‘age’) they both are correlated with children’s decisions for or against competition. There is a significant positive effect between relative performance, that is, of being faster than the median child of the own group, and the likelihood to compete. Notice that the sum of the coefficients of ‘job success’ and ‘job success  $\times$  fast’ is zero (a  $\chi^2$  test yields  $p = 0.97$  that the sum is zero) such that this effect cancels out for fast running children. Hence, it could be that fast running children opt for competition irrespective whether parents are ambitious or not. Here, fast children of ambitious parents are as likely to compete as fast children of unambitious parents. The former are not additionally inspired to compete due to their parents’ ambitions (therefore the sum of ‘job success’ and ‘job success  $\times$  fast’ is zero). For slow running children, however, the likelihood to compete increases with the degree of parents’ ambitions. In other words, parents’ high ambitions are associated with slow running children competing.<sup>15</sup>

Our results of model (v) allow us to estimate the ex post probability for ‘fast’ and ‘slow’ children (i.e., children performing better than the median child, or at best as good as the median child, respectively, in its group with respect to time 1) depending on parents’ ambitions keeping all other variables constant at their mean value.<sup>16</sup> That is, we see the influence of parents’ ambitions on the probability to opt for competition for the “average” fast and slow child. Figure 1 shows the estimated probabilities along their 95% confidence intervals (we group parents’ ambitions such that in each ambition category we have approximately the same number of children). For slow children, one can see the upward trend of probabilities for increasing ambitions, while there is no clear trend for fast children along a substantially higher variance in the predicted probability (see the 95% confidence intervals).

*Figure 1 here*

Recall that we could not find an “obvious” gender effect in the sense that boys are more competitive than girls. However, running our regression model (v) for boys and girls separately provides interesting insights regarding parents’ ambitions and gender differences: as shown in Table 8 in the Appendix, the results for boys only show the influence of parents’ ambitions on whether to compete or not. Even fast boys are additionally inspired to compete due to

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<sup>15</sup>One may argue that ambitious parents have per se slower children. We test this claim by running the regression model (o) including the variable ‘job success’. The coefficient, however, for this variable  $-0.13$ , standard error  $0.141$ , is insignificant ( $p = 0.357$ ), while the coefficients for the other variables remain qualitatively the same.

<sup>16</sup>This approach is inspired by a similar technique presented in Page et al. (2007).

their parents' ambitions (compare the insignificant coefficient of 'job success  $\times$  fast'). For girls, we find qualitatively similar, but insignificant results combined with a strong influence of the number of siblings for their decisions. Thus it seems that boys are more susceptible for parents' ambitions than girls. Whether this gender effect results from different responses to parents' ambitions, or from different parents' ambitions towards boys and girls<sup>17</sup> we will discuss below.<sup>18</sup>

To summarize, our analysis of children's choices for or against competition yields

**Result 2:** Parents' preferences with respect to competition, risk, or hard work do not correlate significantly with the child's choice. However, there is a significant positive association of parents' ambitions on the children's (particularly boys') willingness to compete when children are relatively slow.

In the next subsection, we will address the potential origins and consequences of this finding.

### 3.3 Parents' Ambitions and their Characteristics

In this paragraph, we want to address two things: first, can we identify social characteristics of parents that are associated with their ambitions concerning children's job success? Second, what are the consequences of parents' ambitions for children's winning chances? For the first question, we will make use of parents' background variables which we collected in the questionnaire. Specifically, we estimate a linear regression model ( $vi$ ) with 'job success' as dependent variable, which, as we recall, measures the parents' ambitions concerning the professional success of their child on a seven-point scale. As independent variables we use income relative to other families (which is a subjective report on a seven-point scale), 'parents' age' (of the parent who filled out the questionnaire), a dummy variable 'married' (which is one if parents are married and zero otherwise), the 'number of children', a dummy variable 'college' (which is one if one of the parents has a college degree and zero otherwise), as well as 'housework mother' (measuring the percentage of housework handled by the mother). We relate these variables on the right hand side characterizing parents' personal background ('income', 'parents' age', 'college') and their family organization ('married', 'housework mother') and their

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<sup>17</sup> Ambitions for girls and boys do not differ significantly (averages are 6 and 5.37, respectively,  $p = 0.10$  using a Wilcoxon Mann-Whitney Rank Sum Test, two-sided).

<sup>18</sup> Notice that we also analyzed model ( $v$ ) for different age groups separately (not reported here), but could not find any significant gender difference between sub-samples.



ambitions regarding the job of their offspring.<sup>19</sup> It is important to stress that this by no means identifies causal directions: ‘job success’, ‘collage’, ‘income’, ‘age’, and the other variables are to some degree endogenous. Rather, the model shows correlations between ambitions and socio-demographic background variables, which need to be interpreted cautiously. Table 6 reports marginal effects for model (vi) along robust standard errors, clustered by groups, in parentheses.

*Table 6 here*

The estimated marginal effects for parents’ social characteristics indicates a significant negative relation of ‘income’ and ‘number of children’ on the parents’ ambitions and a positive effect of being married, while there is no significant marginal effect for ‘parents’ age’, education and ‘housework mother’.<sup>20</sup> Thus it seems that parents of singletons hold at the same time stronger ambitions concerning the job success of their children than parents having more than one child. Similarly, children whose parents are married face stronger parental ambitions.

Interestingly, the results of model (vi) show another important relation between ambitions of parents and another characteristic, namely their perceived income relative to other families. That is, parents perceiving that they earn higher incomes than other families are associated with less ambitions with respect to their offspring. As such, our results fit the classic psychological study by McKee and Leader (1955) who find evidence that lower class children at the age of 3-4 compete more than higher class children.<sup>21</sup> One potential mechanism for this could be the getting-ahead orientation or in words of the authors, competitiveness of lower class children might be “a compensatory device” (McKee and Leader, 1955, p. 141). Thus, one way to interpret the finding is that higher relative income is correlated with lower ambitions: parents with higher education are at the same time more confident regarding the success of their children, and, therefore, do not stress the importance of their success as much. However, an alternative explanation could be that well educated parents have a higher relative income. At the same time, knowing how difficult it is to reap success on the job, they are less ambitious regarding their offspring’s job success.

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<sup>19</sup>In this regression, as well as in all estimations, there is no significant effect of which parent, that is, mother or father, has answered the questionnaire. Most of the respondents were mothers.

<sup>20</sup>In an additional model (not reported here), we included also ‘male’ and an interaction term ‘male × housework mother’ to see whether role perception affects parents’ ambitions concerning boys and girls differently. However, estimated marginal effects are insignificant.

<sup>21</sup>Our as well as results by McKee and Leader (1955) contradict the findings of Almås et al. (2015) on Norwegian adolescents. We provide an interpretation of this result in our Discussion.

The final question that we examine is whether children forgo rewards in our study due to their parents' strong ambitions. That is, how is the children's likelihood to win competition correlated with parents' ambitions? Certainly, 'job success' is a crude predictor for children's performance in the second running task.<sup>22</sup> In other words, relating the decision to compete to parents' ambitions, but not to (relative) performance leads to questionable decisions. Consequently strong ambitions might result in unwise inclinations in favor of competition.

To investigate this question we assess the quality of decisions from two angles, ex ante and ex post. For the ex ante assessment, slow children make poor decisions by choosing competition. Restricting our attention to these slow children, we assess how many of them made the suboptimal decision to enter competition depending on parents' ambitions in Figure 2. Among the children who are slower than the median child in their group, the fraction of those who still enter competition is increasing in parents' ambitions – from one out of four to three out of four. The results indicate that higher ambitions of parents is associated with a child entering competition although this choice is suboptimal. Thus, children of highly ambitious parents decide poorly from an ex ante perspective.

*Figure 2 here*

Ex post, we know who entered competition and how they performed in competition, which makes it easier to assess the quality of decisions. Recall that children winning in competition received both rewards, while their opponents do not receive any reward. Hence, entering competition is always optimal ex post when a competition is won and never optimal ex post when a competition is lost.

Table 7 presents the fraction of actual winners in competition separated again by parents' ambitions. It must be noted, however, that the actual outcome depends on the applied matching procedure, and, as such, also on luck. To more robustly assess the quality of decisions ex post, we additionally compare a child's running time in competition with the running time of an average child in the set of children who entered competition within their group. Table 7 thus also reports the fraction of children who would have won in competition (i.e., being strictly faster) when meeting a median competitor of their group.

*Table 7 here*

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<sup>22</sup>A linear regression with 'job success' as the only independent and time 2 as the dependent variable has an r-square of 0.03 (robust standard errors, clustered at the group level). For comparison, including 'time 1' as the only independent variable in this regression leads to an r-square of 0.80 (again, robust standard errors, clustered at the group level).

Among the children whose parents stated ambitions of 5 or less 63% (5 out of 8) won in competition, among the children whose parents stated 6 only 41% (7 out of 17) won in competition and among the children whose parents stated 7 as few as 38% (5 out of 13) won in competition.<sup>23</sup> The hypothetical median matching confirms the qualitative observation of the actual matching. Although the numbers of observations for these subgroups are small, there is a clear indication that most of the children of parents with strong ambitions would have been better off, if they had not entered competition. In fact, if they had opted against competition then 63% of them would have earned the large reward and 36% would have earned the small reward, both of which is better than no reward.

Summarizing our findings in this subsection, we obtain

**Result 3:** High ambitions regarding children’s job success are associated with lower incomes. In turn, most children of parents with strong ambitions would have been better off, if they had not entered competition as they would have increased their average number of presents.

## 4 Conclusion

We started our article with some reflections on the positive and negative effects of competition. Being competitive offers the chance for substantial success, particularly in modern societies. However, competitions has also important down-sides (e.g., Dohmen et al., 2011): resources are potentially wasted, and the prospect of winning may change dramatically depending on the task and the opponent. Therefore, it is not wise to compete in every contest.

This article provides evidence for an association between parents’ ambitions and children’s (misguided) decisions for competition. More specifically, even slow children opt for competition in our running task if parents are highly ambitious concerning the professional success of their offspring. The decisions of slow children of ambitious parents have a two-folded effect. On the one hand, fast children – who are “correctly” attracted by competition – are more likely to win as they may meet one of the slowly, but nonetheless competing children. On the other hand, excessive ambitions by their parents coincide with a substantial reduction for those slow children to receive any reward, although there was an alternative option with a guaranteed small reward and a likely large reward.

Estimation results suggest that boys are more prone to the ambition effect than girls. This

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<sup>23</sup>Since some groups have an odd number of participants, the number of winners and losers in competition need not exactly coincide.

could reflect the fact that among the children, there was a substantial number of boys and girls with a third and fourth generation migration background from Southern Europe and the Middle East. Parents associated with this cultural background may stress the job success of their male offspring, whereas this issue may be of less importance for girls. It could be the case that this point is reflected in the asymmetry by which parents' ambitions influence the decision of boys and girls to compete. However, due to the limited number of observations, this point needs to be explored in future research.

Further, we find a strong correlation between the socio-economic background and parents' ambitions. Parents of singletons hold stronger ambitions concerning the job success of their children, so that the 'number of children' in a family is negatively related to those ambitions. On the other hand, the data indicate strong ambitions for parents with lower perceived income along married couples. This result suggests a mechanism following the classic psychological finding (e.g., McKee and Leader, 1955) that children with lower socio-economic status are more competitive. That is, parents of lower socio-economic status put particular stress on the job success of their offspring. One potential reason could be that parents with a limited experience on how to climb the social ladder may wish the best for their children because they do not apprehend correctly the difficulties ahead. In turn, their children are very competitive.<sup>24</sup>

At the first glance, our findings contradict previous results on Norwegian adolescents in the age of 14 to 15 years suggesting that children from high income and high education households compete significantly more often than children from low income and low education households (Almås et al., 2015). These latter results might be the consequence of patterns similar to the ones that we found: too much competitive spirit of young children with a low socio-economic background may lead to a waste of effort in the wrong competitions, potentially connecting competition with motions of stress, depression and anxiety (Gilbert et al., 2009). Hence, the long term effect of too much competition in early years could be the avoidance of competition later on, laying the foundations for less success in their future life. On the other hand, the competitiveness of slow children with a lower socio-economic background increases the winning chances for young children with a higher socio-economic background, who compete predominantly in their favorable tasks. Therefore, extreme ambitions on the parents' side do not reduce but rather strengthen the existing status and income structure within societies.

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<sup>24</sup>Our results indicate correlations, but no causal effects. Therefore, we cannot rule out heritability of preferences (Cesarini et al. 2009a, 2009b) and the claim that children's high level of competitiveness increases parents' ambitions concerning the job success of their offspring. Further research is needed to establish (or refute) this claim.

Overall, our results indicate suggestions for a more balanced education policy. Although we live in a meritocracy stressing the importance of competitiveness for the personal success in most modern societies, our results show the drawbacks of excessive competitiveness for children. Even economists acknowledge the downsides of excessive competitiveness (e.g., Belfield and Levin, 2002; Ladd and Fiske, 2003). For that reason, it is important to give youngsters room to develop a sound understanding when competition is beneficial, and when it is not. One way for parents and teachers to support them may be to keep merit principles away from their youngsters. Restricting the competitive pressure very early on in life (e.g., by lowering the number of performance differentiations in primary schools or kindergartens) avoids children's experience of exaggerated competition. This may help children in rather early years to develop the ability to choose competitions wisely and to be equipped with the specific gear that allows them to participate successfully in daily competition later on.

Of course, further research is needed to develop a thorough understanding of this topic. For instance, in our paper we work with parents' risk attitude as a substitute for children's risk attitude. But this is indeed a first approximation, and it would be interesting to explore in greater detail the interaction between children's competitiveness, their own risk attitude, parents' risk attitude, and parents' ambitions. Therefore, we consider this study as a promising invitation for future research to shed more light on this exciting aspect of human life.

## References and Notes

- [1] Almås, I., Cappelen, A., Salvanes, K., Sørensen, E. & Tungodden, B. (2015). Willingness to compete: family matters, *Management Science* 62, 2149-2162.
- [2] Andersen, S., Ertac, S., Gneezy, U., List, J. & Maximiano, S. (2013). Gender, competitiveness, and socialization at a young age: Evidence from a matrilineal and a patriarchal society, *Review of Economics and Statistics* 95, 1438–1443.
- [3] Balafoutas, L., Kerschbamer, R. & Sutter, M. (2012). Distributional preferences and competitive behavior, *Journal of Economic Behavior & Organization* 83, 125–135.
- [4] Bauer, M., Chytilová, J. & Pertold-Gebicka, B. (2014). Parental background and other-regarding preferences in children, *Experimental Economics* 17, 24–46.

- [5] Belfield, C. & Levin, H. (2002). The effects of competition between schools on educational outcomes: a review for the United States, *Review of Educational Research* 72, 279–341.
- [6] Bisin, A. & Verdier, T. (2010). The economics of cultural transmission and socialization, in Benhabib, J., Bisin, A. & Jackson, M. (eds.): *Handbook of Social Economics* 1, North Holland.
- [7] Bisin, A. & Verdier, T. (2001). The economics of cultural transmission and the dynamics of preferences, *Journal of Economic Theory* 97, 298–319.
- [8] Cárdenas, J.-C., Dreber, A., Von Essen, E. & Ranehill, E. (2012). Gender differences in competitiveness and risk taking: Comparing children in Colombia and Sweden, *Journal of Economic Behavior & Organization* 83, 11–23.
- [9] Cesarini, D., Lichtenstein, P., Johannesson, M., & Wallace, B. (2009a). Heritability of overconfidence, *Journal of the European Economic Association* 7, 617–627.
- [10] Cesarini, D., Dawes, C. T., Johannesson, M., Lichtenstein, P., & Wallace, B. (2009b). Genetic variation in preferences for giving and risk taking, *The Quarterly Journal of Economics* 124, 809–842.
- [11] Deckers, T., Falk, A., Kosse, F., Schildberg-Hörisch, H. (2015). How does socio-economic status shape a Child’s Personality, *Working paper of the sfbtr* 498.
- [12] Dohmen, T., Falk, A., Fliessbach, K., Sunde, U. & Weber, B. (2011). Relative versus absolute income, joy of winning, and gender: brain imaging evidence, *Journal of Public Economics* 95, 279–285.
- [13] Dohmen, T., Falk, A., Huffman, D. & Sunde, U. (2012). The intergenerational transmission of risk and trust attitudes, *The Review of Economic Studies* 79, 645–677.
- [14] Dreber, A., Von Essen, E. & Ranehill, E. (2011). Outrunning the gender gap – boys and girls compete equally, *Experimental Economics* 14, 567–582.
- [15] Fernandez, R., Fogli, A. & Olivetti, C. (2004). Mothers and sons: preference formation and female labor force dynamics, *The Quarterly Journal of Economics* 119, 1249–1299.

- [16] Gilbert, P., McEwan, K., Bellew, R., Mills, A. & Gale, C. (2009). The dark side of competition: How competitive behaviour and striving to avoid inferiority are linked to depression, anxiety, stress and self-harm, *Psychology and Psychotherapy: Theory, Research and Practice* 82, 123–136.
- [17] Gneezy, U. & Rustichini, A. (2004). Gender and competition at a young age, *The American Economic Review* 94, 377–381.
- [18] Hupp, J., Smith, J., Coleman, J. & Brunell, A. (2010). That’s a boy’s toy: gender-typed knowledge in toddlers as a function of mother’s marital status, *The Journal of Genetic Psychology* 171, 389–401.
- [19] Khachatryan, K. (2012). Gender differences in preferences at a young age? Experimental evidence from Armenia, *Working paper*.
- [20] Kosse, F. & Pfeiffer, F. (2012). Impatience among preschool children and their mothers, *Economics Letters* 115, 493–495.
- [21] Ladd, H. & Fiske, E. (2003). Does competition improve teaching and learning? Evidence from New Zealand, *Educational Evaluation and Policy Analysis* 25, 97–112.
- [22] Lazear, E. & Rosen, S. (1981). Rank-order tournaments as optimum labor contracts, *The Journal of Political Economy*, 841–864.
- [23] McKee, J. & Leader, F. (1955). The relationship of socio-economic status and aggression to the competitive behavior of preschool children, *Child Development* 26, 135–142.
- [24] Page, L. , Levy Garboua, L. & Montmarquette, C. (2007). Aspiration levels and educational choices: An experimental study, *Economics of Education Review* 26, 748–758.
- [25] Poulin-Dubois, D., Serbin, L., Eichstedt, J., Sen, M. & Beissel, C. (2002). Men don’t put on make-up: toddlers’ knowledge of the gender stereotyping of household activities, *Social Development* 11, 166–181.
- [26] Samak, A. (2013). Is there a gender gap in preschoolers’ competitiveness? An experiment in the US, *Journal of Economic Behavior & Organization* 92, 22–31.
- [27] Sutter, M. & Rützler, D. (2014). Gender differences in the willingness to compete emerge early in life and persist, *Management Science* 61, 2339–2354.

- [28] Van Lange, P., DeBruin, E., Otten, W. & Joireman, J. (1997). Development of prosocial, individualistic, and competitive orientations: theory and preliminary evidence, *Journal of Personality and Social Psychology* 73, 733.



## Figure and Tables

Kindergarten	Heimfeld	Essenrode
total children	52	32
girls	29	12
boys	23	20
number of siblings	0.78	0.97
parents' age (median)	34	37
married parents	83%	88%
mother university education	27%	23%
father university education	42%	31%

Table 1: Number of participants and family structure.

	variables	mean	std. dev.	min.	median	max.
child's char.	age	4.30	0.94	2.90	4.05	6.52
	male	51%				
	number of siblings	0.89	0.70	0	1	2
parents' pref.	like competition	4.84	1.45	1	5	7
	risk	3.98	1.55	1	4	7
	hard work	5.60	1.03	3	6	7
parents' ambitions	job success	5.66	1.27	1	6	7
	sports success	4.45	1.41	1	4	7
	careful with weaker	6.50	0.69	4	6.5	7

Table 2: Most important control variables – children's and parents' characteristics.

	children	time 1	time 2	$\Delta$ time
no competition	46	11.71 (2.95)	11.12 (2.29)	0.59 (1.68)
competition	38	11.38 (4.07)	10.70 (3.20)	0.67 (1.56)
total	84	11.56 (3.48)	10.93 (2.73)	0.63 (1.62)

Table 3: Mean performance in the running task in seconds (standard deviations in parentheses).

<i>dependent variable: time 1</i>		
variables	(o)	
age	−2.395*	(0.589)
male	−1.801**	(.357)
number of siblings	−.797*	(.253)
r-square	.461	
F-test(3,5)	14.99**	

Note: standard errors in parentheses; significance at the 5 and 1 percent level is denoted by \* and \*\*, respectively.

Table 4: Linear regression results: children's running time in first round on children's variables.

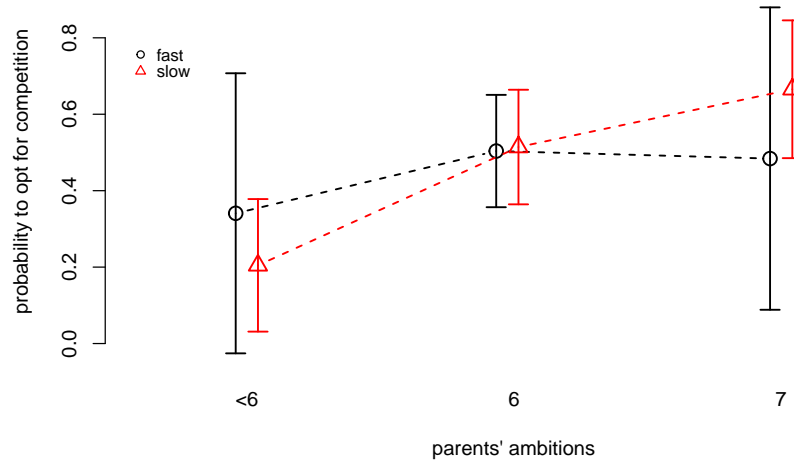


Figure 1: Estimated probabilities to opt for competition according to model ( $v$ ) (along their 95% confidence intervals) depending on the children's performance and parents' ambitions and keeping the remaining variables fixed at their mean.

<i>dependent variable: choice in favor to competition</i>					
variable	(i)	(ii)	(iii)	(iv)	(v)
age	.1119 (.0647)	.145* (.064)	.1414* (.0649)	.1444* (.0732)	.1342* (.0595)
male	.0282 (.1008)	.0404 (.1214)	.0994 (.0899)	.1064 (.1164)	.0391 (.0846)
number of siblings	-.0978 (.0654)	-.1036 (.0567)	-.0705 (.0644)	-.0791 (.0718)	-.0705 (.0611)
fast	-.0656 (.214)	-.1016 (.2318)	-.0616 (.2459)	-.0639 (.2667)	.8892** (.1359)
like competition		.0059 (.065)		.0035 (.0568)	
risk loving		-.0072 (.0384)		-.0216 (.0451)	
hard work		.0164 (.0884)		-.0136 (.0669)	
careful			.0423 (.0382)	.0504 (.0471)	
sports success			-.0718 (.0523)	-.0719 (.0522)	
job success			.1296 (.074)	.1427* (.0606)	.2295* (.0684)
job success $\times$ fast					-.2252* (.0985)
pseudo r-square	.04 4.086	.05 6.862	.09 10.885	.09 11.072	.10 11.326
$\chi^2(k)$					

Note: standard errors in parentheses; significance at the 5 and 1 percent level is denoted by\* and \*\*, respectively.  
 $k$  denotes the number of estimated mean marginal effects tested jointly in the likelihood ration test.

Table 5: Probit mean marginal effects – children’s decision to compete.

<i>dependent variable: 'job success'</i>		
variables	<i>(vi)</i>	
relative income	−.283*	(.0444)
parents' age	−.000	(.029)
married	1.232**	(.424)
number of children	−.622**	(.214)
college	−.336	(.286)
housework mother	.041	(.137)
adj. r-square	.17	
F-test(6,67)	3.13**	

Note: standard errors in parentheses; significance at the 5 and 1 percent level is denoted by \* and \*\*, respectively.

Table 6: Linear regression results – parents' ambitions on social characteristics.

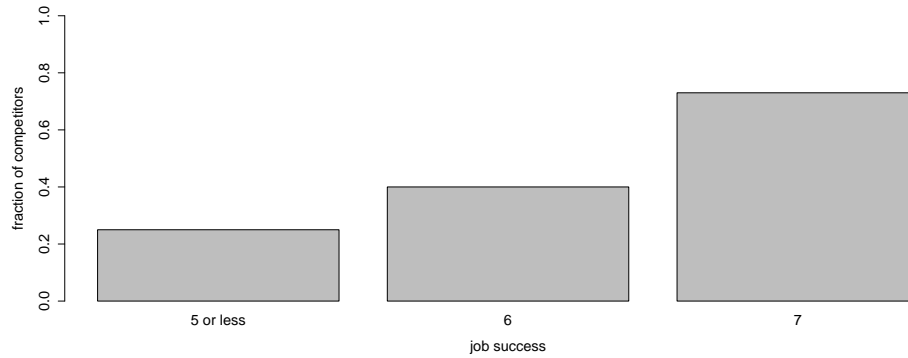


Figure 2: Suboptimal decisions among slow children, by parents' ambitions.

winners	job success < 6	job success = 6	job success = 7
actual matching	63%	41%	38%
median matching	50%	47%	31%

Table 7: Fraction of children winning competition, by parents' ambitions.

## 5 Appendix

### 5.1 Appendix: Regression results for model (v) separately for boys and girls

<i>dependent variable: likelihood to compete</i>			
variable	boys only		girls only
age	.2177	(.1164)	.0578 (.0697)
number of siblings	.0972	(.1612)	-.2558** (.0824)
fast	.9478**	(.1256)	.3613 (.9972)
job success	.3065*	(.1188)	.053 (.096)
job success $\times$ fast	-.2945	(.1891)	-.0414 (.1967)
pseudo r-square	.23		.10
$\chi^2(k)$	11.826*		6.597

Note: standard errors in parentheses; significance at the 5 and 1 percent level is denoted by \* and \*\*, respectively.  $k$  denotes the number of estimated mean marginal effects tested jointly in the likelihood ratio test.

Table 8: Probit mean marginal effects – children's decision to compete for boys and girls.

### 5.2 Appendix: Experimental protocol

- Kindergarten teachers take care of the children who are playing in the yard of the kindergarten.
- The team of researchers measures the running distance (30 meters) with a measuring tape and marks the beginning and the end of the track with orange cones.
- The children receive their gift packages after lunch.

- All children are instructed by one of the kindergarten teachers and two members of the research team. They receive the following information:  
*Please run as fast as you can from here, these two cones, to the other two cones over there. We will stop your time. In case you are faster than a certain time, you will receive a gift for your running.*
- Other kindergarten teachers watch any remaining (mostly very young) children inside the building or in the yard.
- One of the kindergarten teachers begins recruiting individual children for the task. The other children are free to watch and play off the running track. One of the researchers and of the kindergarten teachers helps the children to get ready at the beginning of the track. Another researcher waits at the end of the running track. He measures the time with a stop watch and notes it down. Children do not get to know their times.
- Children were ask individually, with a kindergarten teacher being present in the background:  
*Now you have two possibilities (showing the two decision boards and explaining them). You may run against another child. In this case you can receive a big and a small gift, if you run faster and win against the other child. If you run slower and lose against the other child, you will receive no additional gifts. Or you decide to run by yourself and try to improve your first time. If you run faster than the first time, you will receive a big gift. If you run slower than the first time, you will receive a small gift. What do you prefer? (Child answers and points towards one of the decision boards, we ask the child to repeat her choice.)*

## Part 2

- The children run individually for the second time alike the protocol of the Part 1.
- The research team calculates the resulting amount of gifts for all parts and a ‘show-up gift’. It prepares gift packages.

### 5.3 Appendix: Survey sheet

Please fill in the form completely and return it to Mrs. -----.

I agree that my child \_\_\_\_\_ (please fill in the first and last name)  
participates in the study of the University of Hamburg.

Date

Signature

### General Information

Age of the child: \_\_\_\_\_

Age of the siblings. Brothers: \_\_\_\_\_ Sisters: \_\_\_\_\_

Your relationship to the child (for instance mother, father, ...): \_\_\_\_\_

Your year of birth: \_\_\_\_\_

Did you breast feed your child? Until what month? \_\_\_\_\_

Status of the parents (for instance married, separated, divorced): \_\_\_\_\_

The language most spoken at home: \_\_\_\_\_

Highest edu. degree ...of the mother: \_\_\_\_\_ ...of the father: \_\_\_\_\_

Please assess the following statements.

Statement	Your Assessment (please mark with a cross)	
"In general one can trust other people."	I fully disagree	I fully agree
	O-----O-----O-----O-----O-----O-----O	
"Games without identifiable winners are..."	"boring"	"exciting"
	O-----O-----O-----O-----O-----O-----O	
"Competitive environments are..."	"unpleasant"	"appealing"
	O-----O-----O-----O-----O-----O-----O	
"I am a person who is willing to take risks."	I fully disagree	I fully agree
	O-----O-----O-----O-----O-----O-----O	
"I am a sore loser."	I fully disagree	I fully agree
	O-----O-----O-----O-----O-----O-----O	
"One needs to work hard to be successful."	I fully disagree	I fully agree
	O-----O-----O-----O-----O-----O-----O	

Figure 5.1: The survey sheet (English translation); side one

*Questions concerning your child*

Question	Your Assessment (please mark with a cross)	
My child is rather	shy	outgoing
	O-----O-----O-----O-----O-----O	
As how important do you regard your child's future athletic success?	completely irrelevant	very important
	O-----O-----O-----O-----O-----O	
As how important do you regard your child's future professional success?	completely irrelevant	very important
	O-----O-----O-----O-----O-----O	
As how important do you regard it that your child is careful with weaker children?	completely irrelevant	very important
	O-----O-----O-----O-----O-----O	
How much does your child like to go to the kindergarten?	very little	very much
	O-----O-----O-----O-----O-----O	

*General questions*

Question	Your Assessment (please mark with a cross)		
How would you assess your household income relative to incomes of other families?	very low	average	very high
	O-----O-----O-----O-----O-----O		
What share of time for household care does the mother of the child handle?	0 %		100%
	O-----O-----O-----O-----O-----O		
As how important do you regard feedback about the general behavior of children in this study?	completely irrelevant		very important
	O-----O-----O-----O-----O-----O		
As how important do you regard feedback about your child's behavior in this study??	completely irrelevant		very important
	O-----O-----O-----O-----O-----O		

Thank you for your help and for making this study of the University of Hamburg possible.

Figure 5.2: The survey sheet (English translation); side two



## 5.4 Appendix: Illustrations

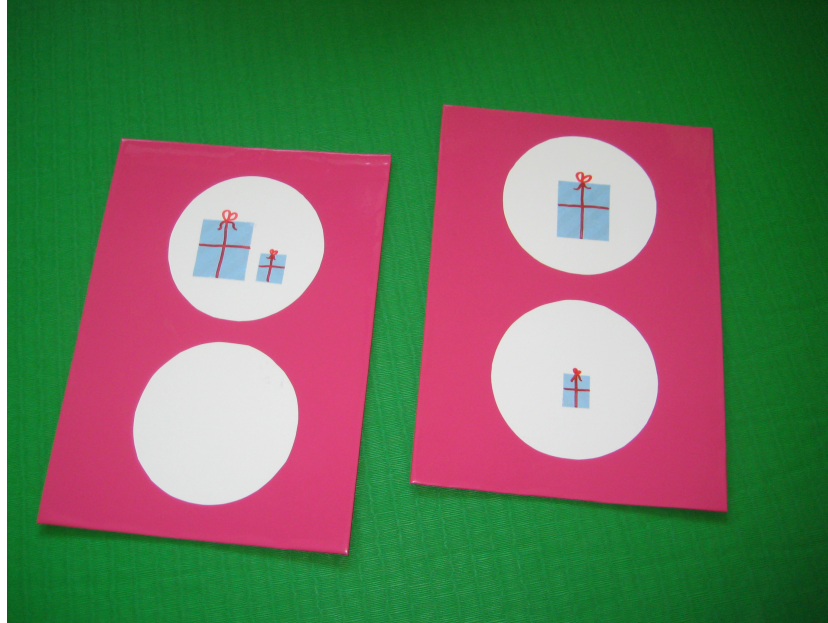


Figure 5.3: Illustration of reward scheme



Figure 5.4: Children during the task