Discussion paper

Willingness to Compete:
Family Matters

BY
Ingvild Almås, Alexander W. Cappelen, Kjell G. Salvanes,
Erik Ø. Sørensen, AND **Bertil Tungodden**

Norges

Willingness to Compete: Family Matters[*]

Ingvild Almås   Alexander W. Cappelen   Kjell G. Salvanes
Erik Ø. Sørensen   Bertil Tungodden

January 24, 2014

Abstract

This paper studies the role of family background in explaining differences in the willingness to compete. By combining data from a lab experiment conducted with a representative sample of adolescents in Norway and high quality register data on family background, we show that family background is fundamental in two important ways. First, boys from low socioeconomic status families are less willing to compete than boys from better off families, even when controlling for confidence, performance, risk preferences, time preferences, social preferences, and psychological traits. Second, family background is crucial for understanding the large gender difference in the willingness to compete. Girls are much less willing to compete than boys among children from better off families, whereas we do not find any gender difference in willingness to compete among children from low socioeconomic status families. Our data suggest that the main mechanism explaining the role of family background is that the father's socioeconomic status has a large effect on the boys' willingness to compete, but no effect on the girls. We do not find any effect on the willingness to compete for boys or girls of the mother's socioeconomic status or other family characteristic that may potentially shape competition preferences, including parental equality and sibling rivalry.

1 Introduction

A growing experimental literature has identified a significant gender difference in the willingness to compete, where females typically are more competition averse than males (Croson and Gneezy, 2009; Niederle and Vesterlund, 2011). This may potentially explain a wide range of real world economic phenomena, including observed gender differences in educational and occupational choices, and brings a new dimension into the public debate on gender-equalizing policies (Bertrand, 2011; Buser, Niederle, and Oosterbeek, Forthcoming; Flory, Leibbrandt, and List, 2010; Niederle and Vesterlund, 2010; Zhang, 2012). But why do males and females differ in their willingness to compete?

The novel contribution of the present paper is that we study how competition preferences relate to family background. We use a unique data set combining experimental data on the willingness to compete in a representative sample of Norwegian adolescents in the 9th grade (14-15 years old), who are soon to make important choices about whether to pursue a vocational or academic track in high school, with high quality register data on parents' income and education. We establish that family background is fundamental in two important ways. First, there is a strong socioeconomic gradient in competition preferences. As shown in the left panel in Figure 1, children from low socioeconomic status (SES) families are much less willing to compete than children from medium or high SES families, and this result holds even when controlling for confidence, performance, risk- and time preferences, social preferences, and psychological traits.[1] Second, family background is crucial for understanding the gender difference in competition preferences. As shown in the right panel in Figure 1, girls from well-off families are much less willing to compete than boys from well-off families, while we do not find a statistically significant gender difference in competitiveness preferences among children from families with low socioeconomic status. These results are also robust to the inclusion of our set of background variables.

[Figure 1 about here.]

We also provide evidence suggesting that the main mechanism explaining the impact of family background is the role of the father in shaping the competition preferences of the boys. As can be seen from the right panel in Figure 1, boys from low SES families are much less willing to compete than boys from medium and high SES families, and we find that this relationship is driven by the socioeconomic status of the father. We do not find a similar relationship between fathers and girls, and, more generally, the competition preferences of the girls appear not to be sensitive to family background. Further, we consider other family characteristics that may potentially

---

[1] We focus on the comparison between low SES families and the rest in the following analysis. As shown in Figure A1 in Appendix A, the differences in the willingness to compete between children from medium SES and high SES families are small. There is a slight socioeconomic gradient, but no difference in the gender gap in the two groups.

shape competition preferences, including parental equality, sibling rivalry, and birth order, but for none of these characteristics do we find a strong effect on the willingness to compete.

Our findings contribute to the growing literature on what shapes competition preferences and have implications for the discussion of which institutional arrangements to introduce in response to observed differences in the willingness to compete (Balafoutas and Sutter, 2012). In a recent important study, Gneezy, Leonard, and List (2009) provide evidence showing that the culture of a society plays an important role in shaping people's willingness to compete; they find that the gender gap is reversed in the matrilineal culture of the Khasi in India, where more females than males select into a competitive environment.[2] In light of this finding, they argue in favor of public policies targeting socialization and education early in life to eliminate the gender gap in competition preferences. An interesting aspect of the present study is that it is conducted in a Scandinavian country that for a long time has implemented gender equalizing policies. In 2012, Norway ranked highest on the gender equality index of the UN comprising measures of educational attainment, labor market participation, and health, which is consistent with our not observing any gender differences in the experimental data with respect to overconfidence, risk preferences, time preferences, and social preferences.[3] Still, we find that females are substantially less willing to compete than males, which maps to the fact that the Scandinavian countries have very gender segregated labor markets, both horizontally and vertically (Birkelund and Sandnes, 2003).[4]

Our study shows that a gender gap in competition preferences does not necessarily reflect a lack of female empowerment, consistent with the finding in Schmitt, Realo, Voracek, and Allik (2008) that gender differences in personality traits (Big Five) are greater in prosperous, healthy, and egalitarian cultures. This may partly reflect a gene-environment interaction, where the biological development of boys is more susceptible to a stressful environment than that of girls. Thus, it may be the case that innate differences in competitiveness inclinations between boys and girls are attenuated by growing up in a low socioeconomic family environment, but emerge for more well-off children facing greater opportunities. Thus, from a policy perspective, it is crucial to identify whether a gender gap in competitiveness reflects a lack of female empowerment or innate biological differences, where the latter make it more challenging to justify policies aiming at promoting stronger competition preferences among females.

The present paper also speaks to the literature in labor economics that has docu-

---

[2]Booth and Nolen (2012) also provide evidence suggesting that socialisation is an important driver of the gender gap in competitiveness. They study girls from single-sex schools and coeducational schools in UK, and find that the girls from single-sex schools are more likely to compete in the experiment than girls from coeducational schools.

[3]For further details on the gender equality index, see hdr.undp.org/en/media/

[4]See also Cárdenas, Dreber, von Essen, and Ranehill (2011), who find a larger gender difference in competitiveness in a highly gender equal Scandinavian country (Sweden) than in a much less gender equal Latin American country (Columbia).

mented that there is a strong intergenerational correlation in income and educational attainment between fathers and sons (Bowles and Gintis, 2002), and to recent work arguing that father presence appears to be crucial for this association (Baker and Milligan, 2013; Bertrand and Pan, 2013; Gould and Simhon, 2011; Kalil, Mogstad, Rege, and Votruba, 2013).[5] Our study suggests that the father's role in shaping competition preferences may be an important underlying mechanism, where medium and high SES fathers are more present than low SES fathers and cultivate a greater willingness to compete in their sons that may benefit them later in their career. Interestingly, this mechanism may also shed light on the observation in Cárdenas et al. (2011) of a larger gender gap in the more gender equal society, since more gender equality typically would imply that fathers spend more time at home with their children.[6]

The paper unfolds as follows: Section 2 describes the sample and the data, whereas Section 3 gives an overview of the experimental design. Section 4 provides a descriptive analysis, where we break down the data by both gender and socioeconomic status of the family. In Section 5, we report the main analysis on what explains the willingness to compete, whereas Section 6 studies in more detail potential mechanisms in the family that may shape competition preferences. Section 7 discusses some implications for field choices and offers some concluding remarks. In Appendix A, we present the complete regression estimates and further robustness analysis.

2   Sample and data

The participants were recruited among Norwegian adolescents in 9th grade, 14-15 years old. 9th grade is compulsory in Norway and almost all children attend public schools (97.2%). We randomly selected 11 public middle schools in Bergen, which is the second largest city in Norway and close to the national average of the Norwegian urban population with respect to the distribution of income, education and occupation. Two schools later withdrew due to practical circumstances. At each school we randomly selected two classes, and all the students in the selected classes received a personal invitation to participate in the experiment. Participation was voluntary and both students and their parents had to consent to participation. The participation rate was high; 523 out of 602 invited students took part in the experiment (87%). In the experimental session, which is explained in more detail in the next section, we collected both incentivized behavioral data and non-incentivized survey data.

In collaboration with Statistics Norway, we matched the data from the experiment to Norwegian register data, which is a linked national administrative high quality data set. We have detailed parental background information on education and income for

---

[5]See also the growing literature on the role of noncognitive abilities on labor market outcomes and social behavior (Heckman, Stixrud, and Urzua, 2006).

[6]There may certainly be other effects of gender equality working in the opposite direction, including a change in the father's role.

483 of the 523 children.[7] Table 1 shows that our sample of parents is largely representative for the urban Norwegian population. From panel A, we observe that there is a slightly lower share of parents with at least some college education in the sample compared to the population at large (44.1% versus 50.0% for fathers, 48.6% versus 53.4% for mothers), but also a slightly lower share of parents with only compulsory education (15.1% versus 17.8% for fathers, 16.9% versus 18.3% for mothers). As shown in panel B, the mean earnings of the parents in our sample are slightly higher than in the representative population (9.7% for fathers, 5.5% for mothers), but overall the income distributions of the sample and the representative population are very similar.

[Table 1 about here.]

It is also interesting to observe from Table 1 that, both in our sample and in the population at large, there is a slightly larger share of mothers than fathers with some college education, which reflects the long history of gender equalizing policies in Norway. At the same time, we also observe that the mothers have significantly lower incomes than the fathers, consistent with the fact that Norway has very gender segregated labor markets (Birkelund and Sandnes, 2003).

3   Experimental design

We conducted ten experimental sessions at NHH Norwegian School of Economics, where each session lasted for approximately two hours and used a web-based interface. All students received a show-up fee of 50 NOK (approximately 8 USD), in addition to what they earned in the lab experiment. The participants were not given any feedback on the different incentivized parts of the experiment until the end of the session. They were then given an overview of the outcomes and paid the sum of what they had earned in each part. The average total payment from the experiment was 361 NOK. The experiment was double blind, i.e., neither participants nor experimenters could associate decisions with particular participants.[8]

The experimental session consisted of two parts, an incentivized part and a non-incentivized part. In the incentivized part, we measured competition preferences, social preferences, risk preferences, time preferences, and the participants' knowledge

---

[7]For 28 children, we have some background information, whereas 12 children could not be matched to the register data.

[8]Special care was taken so that the payment procedure ensured participant-experimenter anonymity. At the end of the experiment the computer assigned a payment code to each of the participants, and a group of assistants, who were not present in the lab during the experiment, prepared envelopes containing the payments corresponding to each payment code. The assistants also made sure that it was impossible to identify the amount of money by simply looking at the envelope. After bringing the envelopes to the lab, the assistants immediately left and the envelopes were handed out in accordance with the payment codes. A similar procedure was implemented for payments from the time preference decisions.

of the labor market. In the nonincentivized part, we collected data on psychological traits using the Big Five Inventory (John, Donahue, and Kentle, 1991; Benet-Martínez and John, 1998), time use, family and individual background characteristics, the participants' subjective evaluation of subjects at school, occupations and job characteristics, fairness views and their general knowledge of society.[9] The complete set of instructions is provided in an online web-appendix, in the following we focus on the behavioral games used to measure preferences.

In measuring competition preferences, we largely followed the approach of Niederle and Vesterlund (2007). First, participants were asked to add sets of four two-digit numbers over a three minute period under a competitive tournament scheme, where they earned 50 NOK if they got at least as many correct answers as the mean score in the same session, and otherwise zero. A timer on their computer screen, which informed the participants of how much time was left, and the number of correct answers was updated each time the participant moved to a new set of four two-digit numbers.

Second, without receiving any feedback on their performance in the first round, they were told to do the same task again for another three minutes. In this round, they could choose between being compensated with a fixed piece rate of 1 NOK per correct answer or enter into a competition where they received 3 NOK per correct answer if they got at least as many points as the mean score in this session in the first round, and otherwise zero.

We also collected data on their confidence in the competitiveness game. Before they started working in the first round, we asked them to state how well they believed that they would perform on the task relative to the other participants in their session. Specifically, they were asked to state the fraction (in deciles) of participants they believed would do better than them on the task, which gives us a measure of their confidence. Comparing the participants' answers to this question with their actual performance provides us with a measure of their overconfidence.

To get a measure of their risk preferences, we asked the participants to choose between a safe alternative and a risky alternative in a structured sequence of situations (Holt and Laury, 2002). Correspondingly, to get a measure of time preferences we asked the participants to choose in a structured sequence of situations between receiving a sum of money today or a larger sum of money after three weeks. In the following analysis, we use the number of times a participant chose the risky option and the later option as proxies of their risk and time preferences, but our results are not sensitive to alternative measures of these preferences. Finally, to measure social preferences, we conducted a version of a real effort dictator game (Cappelen, Sørensen, and Tungodden, 2010). First, we asked all participants to work on a math task where they earned a fixed sum of money plus a bonus that depended on their performance relative to that of the others. We then matched each participant with another participant with

---

[9]Heckman (2011) and Becker, Deckers, Dohmen, Falk, and Kosse (2012) show that economic preferences and psychological personality measures are complementary in explaining life outcomes and behavior.

the same performance record and asked them to decide how they would distribute the sum of the fixed payments between themselves and the other participant. The share given to the other participant provides us with a measure of their level of selfishness. To measure whether the participants had an egalitarian or a meritocratic fairness view, we followed the impartial spectator approach of Cappelen, Konow, Sørensen, and Tungodden (2013). Specifically, we asked all participants to decide as impartial spectators how the bonus earned by two other participants should be distributed, where they could choose between an equal division (egalitarian fairness view) or a division in proportion to the productivity of the two participants (meritocratic fairness view).

4 Descriptive statistics

In this section we provide an overview of gender and socioeconomic differences in our sample.

4.1 Gender differences

We find a large gender difference in the willingness to compete in the present experiment. As shown in Table 2a, boys are much more likely than girls to choose competition (51.6% versus 32.2%).[10]

[Tables 2a and 2b and about here.]

We also find a gender difference in performance in the first round, where boys score higher than girls (11.0 vs. 9.8 correct answers).[11] But as shown in the upper left panel of Figure 2, the gender difference in the willingness to compete applies to almost all performance levels. Similarly, we observe from the upper right panel of Figure 2 that the gender difference in competitiveness also applies to almost all confidence levels.

[Figure 2 about here.]

The gender difference in willingness to compete is particularly striking when we compare it to the absence of gender differences in overconfidence, social preferences, time preferences and risk preferences in our sample, as reported in Table 2a. Females are often found to be less overconfident (Niederle and Vesterlund, 2007), more risk

---

[10]In Table A1 in Appendix A, we provide an overview of the experimental data for the full sample of 505 participants. On all experimental variables, there are only minimal differences between the full sample and the restricted sample of 485 participants for which we also have data on family background (Tables 2a and 2b).

[11]Note that this does not necessarily imply that the girls are less able to do the task. The first round was a tournament, and Gneezy, Niederle, and Rustichini (2003); Gneezy and Rustichini (2004) show that women may be less effective than men in competitive environments, even if they are able to perform similarly in noncompetitive environments.

averse (Croson and Gneezy, 2009), and more generous (Engel, 2011) than males, but these gender patterns do not apply to Norwegian adolescents.[12] This may reflect that Norway is a highly gender equal society, which makes it even more intriguing to observe large gender differences in competition preferences.

On the Big Five personality measures, we observe that the girls score higher on all dimensions, but the differences are only statistically significant for extraversion and neuroticism. Overall, the observed gender differences in personality are in line with what has been documented in other studies (Schmitt et al., 2008), where it also has been shown that adolescence is a key period in the development of individual personality (Soto, John, Gosling, and Potter, 2011).

Finally, we observe that there are no gender differences in family background, which means that girls are not more likely to grow up in families with low socioeconomic status. This is consistent with there not being a gender preference with respect to children, which is as expected in a gender equal society.

4.2 Socioeconomic differences

In this subsection, we consider differences between children across socioeconomic backgrounds, where we focus on the differences between children from low socioeconomic families and the rest of the children.[13] A participant is defined to be from a low SES family if one of the parents has only compulsory schooling, the other has no more than high-school education, and the total parental income (the sum of the incomes of the mother and the father) is in the lowest 20th percentile of the income distribution of total parental income. As we return to in the later analysis, our results are not sensitive to the exact cut-off chosen in the definition of the low SES families.

From Table 2b we observe that there is a significant socioeconomic gradient in the willingness to compete, where low SES children are much less likely than medium and high SES children to choose competition (23.1% versus 43.9%). The low SES children perform, as expected, significantly worse than the medium and high SES children on the task (8.4 versus 10.6 correct answers), whereas we do not find a statistically significant difference between the two groups in overconfidence. The socioeconomic gradient in the willingness to compete is persistent across performance and confidence levels, as shown in the bottom panels of Figure 2,

On the other experimental measures, we observe, in particular, that the low SES children are much more likely than the medium and high SES children to choose an egalitarian (and not a meritocratic) division of the bonus as impartial spectator (51.3% versus 24.8%). The low SES children also give away a smaller share in the dictator

---

[12]Our findings on social preferences are in line with Almås, Cappelen, Sørensen, and Tungodden (2010), who also do not find a gender difference in the level of selfishness and the fairness views in a representative sample of Norwegian adolescents.

[13]There are only small differences between children from medium and high socioeconomic families, see Table A2 in Appendix A.

game and are less patient, but these differences are not statistically significant.[14] We do not observe any difference in risk preferences between the two groups.

On the personality measures, we observe that the low SES children score lower on openness, extraversion, and agreeableness and higher on neuroticisim, but only the difference in agreeableness is statistically significant. Finally, by definition, there are large differences between the two groups in family background variables. The father's income is on average twice as high for the medium and high SES children, the mother's income is on average 54% higher. The parents in the high SES also, on average, have 3.5 more years of education than parents in low SES families.

5 Explaining willingness to compete

In this subsection, we study in more detail how gender and socioeconomic background are associated with the participants' willingness to compete.

Table 3, which reports from a linear probability regression, confirms that there is a highly statistically significant gender difference in the choice of whether to compete.[15] This gender difference in competitiveness is robust to controlling for performance and confidence, other experimental variables, psychological variables, and family background. The estimated effect of gender on the competition choice is lower when including the performance variable (13.9 percentage points versus 19.4 percentage points), which is as expected given the gender difference in performance, but not sensitive to the inclusion of the other variables. In all specifications, the gender effect is highly significant, and thus our study clearly demonstrates that even in a gender equal society, girls are more averse to competition than boys.

[Table 3 about here.]

Table 4, however, shows that family background is also closely linked to the competition choice. Low SES children are much less willing to compete than medium and high SES children, the estimated difference without any controls being 20.8 percentage points. We observe that this partly works through the low SES children performing worse on the task; controlling for performance reduces the estimated effect of low SES to 12.2 percentage points. The inclusion of the other variables only marginally affects the estimated effect, and even when including all background variables, we observe that the estimated low SES effect on competition is as large as the estimated gender effect reported in column (5) in Table 3.

---

[14]These findings may clearly differ across cultures. Bauer, Chytilová, and Pertold-Gebicka (2012), for example, find in a study conducted in the Czech Republic that children of parents with low education are more spiteful, more selfish and less altruistic. See also Buechel, Khadjavi, and Nicklisch (2013), who report from a field study that looks at how the willingness to compete among pre-school children in Germany is related to the ambitions and preferences of their parents.

[15]In Appendix A, we report the full regression results for this and later tables reported in this and the following section (Table A3 - Table A7).

[Table 4 about here.]

In Table 5, we consider whether family background affects boys and girls differently in their competition choice, by introducing an interaction variable between family background and gender. We observe that that there is a large and highly significant negative effect on the willingness to compete for boys coming from low SES families, but no such effect for girls. The estimated effect of low SES for boys is 24 percentage points and highly statistically significant, whereas the estimated effect for girls is 1.8 percentage points and not statistically significant. From the estimated interaction term, we observe that the difference in how family background affects boys and girls is statistically significant. In Appendix A, we show that the estimated effects of low SES are not sensitive to the exact definition of this group (Figure A2) or to the inclusion of a separate dummy for high SES (Table A6).

[Table 5 about here.]

To summarize, we find that both gender and family background are important factors for understanding competition preferences, and, in particular, that family background is strongly negatively associated with a willingness to compete for boys. We now turn to a further analysis of possible mechanisms that may explain how the family shapes competition preferences.

6   Family mechanisms

In this section, we study mechanisms in the family that may potentially shape competitiveness preferences. We do this by running the same type of regression as reported in our main specification in column (5) in Table 5, but where we in some specifications consider alternative definitions of low SES and in others replace the low SES dummy with other family variables of interest.

First, we consider the relative importance of the socioeconomic status of the father and the mother, to see whether there is evidence in the data of same-gender role modeling (Bussey and Bandura, 1984). Is it the case that low SES fathers make boys less willing to compete, whereas low SES mothers make girls less willing to compete? In columns (2) and (3) in Table 6, we report separate regressions for low SES being defined by one of the parent's education and income. We observe from column (2) that having a low SES father has a huge negative effect on boys' willingness to compete, but no statistically significant effect on girls. We do not find the same-sex pattern for the mothers, however, as seen from column (3). In fact, the pattern for low SES mothers is the same as for low SES fathers, but the estimated effects are smaller and not statistically significant. Thus, it appears that our finding of low SES family background being detrimental for willingness to compete is primarily driven by the negative effect of the fathers on the boys.

10

[Table 6 about here.]

Second, we turn to family mechanisms that are not directly related to the low SES status of the family, but still may be important in shaping competition preferences: the level of equality between the parents, the number of siblings, and birth order. Parental equality typically comes with more liberal gender-role attitudes (Myers and Booth, 2002; Bertrand, Pan, and Kamenica, 2013), and it seems plausible to assume that traditional gender roles are associated with boys being more competitive than girls. We might therefore expect the gender gap in competitiveness to be narrower in families with greater parental equality. There is, however, no evidence of this mechanism in our data, as shown in columns (4) and (5) in Table 6. We here proxy equality between parents with the relative income difference between fathers and mothers (4) and the absolute difference in years of education (5), but for neither specification do we see any effect on the willingness to compete for girls or boys.[16]

Further, we consider whether the number of siblings or birth order have an impact on the competition preferences. Sibling rivalry has been extensively studied both in animal and human behavior, where the basic idea is that siblings are competitors for parents' resources (Black, Devereux, and Salvanes, 2005; Downey, 2001). One might therefore expect that children with more siblings are more used to competition, and thus also more willing to enter into competitive environments. For the same reason, one might expect that the first-born is less competitive, since the first-born typically is less exposed to competition from siblings.[17] As shown in columns (5) and (6) in Table 6, our estimates are in the expected direction both for boys and girls. More siblings make you more competitive (6) and being the first-born makes you less competitive (7), but the effects are relatively small and not statistically significant.

To summarize, our analysis suggests that the father's socioeconomic status is the most important family mechanism in shaping competition preferences among boys.[18] One possible explanation for this finding is the combination of two forces; medium and high SES fathers spend more developmentally effective time with their children than low SES fathers (Guryan, Hurst, and Kearney, 2008; Rege and Solli, 2013); and fathers serving a distinct parenting role (Kalil, Ugaz, and Guryan, 2011). Fathers

---

[16]In Table A8 in Appendix A, we provide descriptive statistics on the family variables used in Table 6. Further, in Table A9, we report the results for a specification where the proxy for parental equality is a dummy for whether the mother earns more than the father or for whether the father has more education than the mother. It has been shown in other studies that the social norm "a man should earn more than his wife" is crucial for understanding important labor market and family outcomes (Bertrand et al., 2013), but we do not find any evidence of this mechanism shaping the competition preferences of the children.

[17]Recent evidence from China suggests that the role of siblings in shaping competitiveness preferences is potentially of great importance. Cameron, Erkal, Gangadharan, and Meng (2013) find that the one-child policy had a detrimental effect on individuals' competition preferences. We only have 15 children with no siblings and thus are not able to distinguish between the effect of being first born and being an only child.

[18]We also show in Table A10 in Appendix A that the father's socioeconomic status does not affect the performance, risk, or confidence of the boys and girls in a way that can explain our findings.

typically engage with their children in more competitive activities, like sports, and also spend more time with their sons than their daughters (Lundberg, 2005; Baker and Milligan, 2013), and the fact that medium and high SES boys are particularly exposed to these activities and the competitive culture encompassing them may make them more attracted to competition also later in life.[19]

The fact that we find much weaker evidence of the father's socioeconomic status shaping the competition preferences of the girls may also reflect a gene-environment interaction. In particular, it may be the case that innate differences in competition preferences are allowed to develop more in the medium and high SES families, where children face more opportunities (Schmitt et al., 2008). [20] Our findings are also consistent with girls being less responsive to the competitive culture of a medium and high SES father because they are biologically less inclined to compete.

7 Conclusion

We have shown that family matters for competition preferences. In particular, our findings suggest that the fathers play an important role in shaping the competition preferences of the boys, where boys with low SES fathers are much less willing to compete than boys with high SES fathers. We do not find a similar pattern for girls, and as a consequence we find that gender differences in competitiveness are sensitive to family background. We do not observe any gender difference in competitiveness among children from low SES families, but a large and significant gender difference among children from medium and high SES families.

Our results shed light on the ongoing debate on the role of nature versus nurture in explaining gender differences in competition preferences. The fact that fathers play a specific role in shaping the competition preferences of boys is consistent with the gender gap reflecting a socialization process, and in this respect we complement the study of Gneezy et al. (2009) by showing that the family institution is a crucial part of the nurture process. But our study is also consistent with nature playing a role, where gene-environment interactions may explain why girls react less to family background than do boys.

The present paper also contributes to explaining the intergenerational association between fathers and sons in educational and income attainment. Our study suggests that medium and high SES fathers to a greater extent than low SES fathers cultivate a willingness to compete in their sons that may benefit them in later educational and

---

[19]There is also evidence showing that parents in general engage differently with sons and daughters, for example by reading more to the daughters (Bertrand and Pan, 2013). This is consistent with our finding the same low SES pattern, even though weaker, for mothers.

[20]Sutter and Rützler (2010) find gender differences in competition preferences early in life, which is suggestive of there being innate biological differences in competition preferences. See also Guo and Stearns (2002); Turkheimer, Haley, Waldron, D'Onofrio, and Gottesman (2003) for studies of how socioeconomic status and genetic dispositions may interact in the context of the intellectual development of children.

labor market choices. Recent evidence shows that competitiveness preferences are indeed predictive of educational choices in adolescence (Buser et al., Forthcoming), and we provide evidence suggesting that this also applies to labor market choices. As shown in Figure 3, children choosing to compete in the experiment are much more likely to find competitive (and typically high paid) occupations more attractive than children choosing not to compete ($p < 0.01$).

[Figure 3 about here.]

Differences in competition preferences initially due to socialization in adolescence may over time manifest themselves in neural structures that have lasting implications for choices also made in adulthood (Knudsen, Heckman, Cameron, and Shonkoff, 2006). This may provide justification for policies targeting low SES children with interventions that may give them the opportunity to cultivate competition preferences, which at the same time should respect the inherent variation in competitiveness inclinations between and within the genders.

References

Almås, Ingvild, Alexander W. Cappelen, Erik Ø. Sørensen, and Bertil Tungodden (2010). "Fairness and the development of inequality acceptance," *Science*, 328(5982): 1176–1178.

Baker, Michael and Kevin Milligan (2013). "Boy-girl differences in parental time investments: Evidence from three countries," Working Paper 18893, National Bureau of Economic Research.

Balafoutas, Loukas and Matthias Sutter (2012). "Affirmative action policies promote women and do not harm efficiency in the laboratory," *Science*, 335(6068): 579–582.

Bauer, Michal, Julie Chytilová, and Barbara Pertold-Gebicka (2012). "Parental background and other-regarding preferences in children," *IES Working Paper 10/2012*.

Becker, Anke, Thomas Deckers, Thomas Dohmen, Armin Falk, and Fabian Kosse (2012). "The relationship between economic preferences and psychological personality measures," *Annual Review of Economics*, 4: 453–478.

Benet-Martínez, Verónica and Oliver P. John (1998). "Los Cinco Grandes across cultures and ethnic groups: multitrait multimethod analyses of the Big Five in Spanish and English," *Journal of Personality and Social Pscychology*, 75(3): 729–750.

Bertrand, Marianne (2011). "New perspectives on gender," in Orley C. Ashenfelter and David Card (eds.), "Handbook of Labor Economics," volume 4, chapter 17, Elsevier, pp. 1543–1590.

Bertrand, Marianne and Jessica Pan (2013). "The trouble with boys: Social influences and the gender gap in disruptive behavior," *American Economic Journal: Applied Economics*, 5(1): 32–64.

Bertrand, Marianne, Jessica Pan, and Emir Kamenica (2013). "Gender identity and relative income within households," Working Paper 19023, National Bureau of Economic Research.

Birkelund, Gunn Elisabeth and Toril Sandnes (2003). "Paradoxes of welfare states and equal opportunities: Gender and managerial power in Norway and the USA," *Comparative Social Research*, 21: 203–242.

Black, Sandra E., Paul J. Devereux, and Kjell G. Salvanes (2005). "The more the merrier? The effect of family composition on children's outcomes," *Quarterly Journal of Economics*, 120(2): 669–700.

Booth, Alison and Patrick Nolen (2012). "Choosing to compete: How different are girls and boys?" *Journal of Economic Behavior & Organization*, 81(2): 542–555.

Bowles, Samuel and Herbert Gintis (2002). "The inheritance of inequality," *Journal of Economic Perspectives*, 16(3): 3–30.

Buechel, Berno, Menusch Khadjavi, and Andreas Nicklisch (2013). "Parents' ambitions and children's competitiveness," mimeo, University of Hamburg.

Buser, Thomas, Muriel Niederle, and Hessel Oosterbeek (Forthcoming). "Gender, competitiveness and career choices," *Quarterly Journal of Economics*.

Bussey, Kay and Albert Bandura (1984). "Influence of gender constancy and social power on sex-linked modeling," *Journal of Personality and Social Pscychology*, 47(6): 1292–1302.

Cameron, Lisa, Nisvan Erkal, Lata Gangadharan, and Xin Meng (2013). "Little emperors: Behavioral impacts of China's one-child policy," *Science*, 339(6122): 953–957.

Cappelen, Alexander W., James Konow, Erik Ø. Sørensen, and Bertil Tungodden (2013). "Just luck: An experimental study of risk taking and fairness," *American Economic Review*, 103(3): 1398–1413.

Cappelen, Alexander W., Erik Ø. Sørensen, and Bertil Tungodden (2010). "Responsibility for what? Fairness and individual responsibility," *European Economic Review*, 54(3): 429–441.

Cárdenas, Juan-Camilo, Anna Dreber, Emma von Essen, and Eva Ranehill (2011). "Gender and cooperation in children: Experiments in Colombia and Sweden," Stockholm University, Department of Economics, Research Papers in Economics 2011:15.

Croson, Rachel and Uri Gneezy (2009). "Gender differences in preferences," *Journal of Economic Literature*, 47(2): 1–27.

Downey, Douglas B. (2001). "Number of siblings and intellectual development: The resource dilution explanation," *American Psychologist*, 56(6-7): 497–504.

Engel, Christoph (2011). "Dictator games: A meta study," *Experimental Economics*, 14(4): 583–610.

Flory, Jeffrey A., Andreas Leibbrandt, and John A. List (2010). "Do competitive work places deter female workers? A large-scale natural field experiment on gender differences in job-entry decisions," Working Paper 16546, National Bureau of Economic Research.

Gneezy, Uri, Kenneth L. Leonard, and John A. List (2009). "Gender differences in competition: Evidence from a matrilineal and a patriarchal society," *Econometrica*, 77(5): 1637–1664.

Gneezy, Uri, Muriel Niederle, and Aldo Rustichini (2003). "Performance in competive environments: Gender differences," *Quarterly Journal of Economics*, 118(3): 1049–1074.

Gneezy, Uri and Aldo Rustichini (2004). "Gender and competition at a young age," *American Economic Review*, 94(2): 378–381.

Gould, Eric D. and Avi Simhon (2011). "Does quality time produce quality children? evidence on the intergenerational transmission of human capital using parental deaths," IZA Discussion Paper 5487. Bonn, Germany: Institute for the Study of Labor.

Guo, Gyang and Elisabeth Stearns (2002). "The social influence on the realization of genetic potential for intellectual development," *Social Forces*, 80(3): 881–910.

Guryan, Jonathan, Erik Hurst, and Melissa Kearney (2008). "Parental education and parental time with children," *Journal of Economic Perspectives*, 22(3): 23–46.

Heckman, James J. (2011). "Integrating personality psychology into economics," Working Paper 17378, National Bureau of Economic Research.

Heckman, James J., Jora Stixrud, and Sergio Urzua (2006). "The effects of cognitive and noncognitive abilities on labor market outcomes and social behavior," *Journal of Labor Economics*, 24(3): 411–482.

Holt, Charles A. and Susan K. Laury (2002). "Risk aversion and incentive effects," *American Economic Review*, 92(5): 1644–1655.

John, O. P., E. M. Donahue, and R. L. Kentle (1991). "The Big Five Inventory—versions 4a and 54," Berkeley, CA: University of California, Berkeley, Institute of Personality and Social Research.

Kalil, Ariel, Magne Mogstad, Mari Rege, and Mark E. Votruba (2013). "Father presence and the intergenerational transmission of educational attainment," mimeo, University of Stavanger.

Kalil, Ariel, Jorge Ugaz, and Jonathan Guryan (2011). "Parents' shared and solo time with children: Composition and correlates," mimeo, University of Chicago.

Knudsen, Eric I, James J. Heckman, Judy L. Cameron, and Jack P. Shonkoff (2006). "Economic, neurobiological, and behavioral perspectives on building america's future workforce," *Proceedings of the National Academy of Sciences*, 103(27): 10155–10162.

Lundberg, Shelly (2005). "Sons, daughters and parental behavior," *Oxford Economic Papers*, 21(3): 340–356.

Myers, Scott M. and Alan Booth (2002). "Forerunners of change in nontraditional gender ideology," *Social Psychology Quarterly*, 65(1): 18–37.

Niederle, Muriel and Lise Vesterlund (2007). "Do women shy away from competition? Do men compete too much?" *Quarterly Journal of Economics*, 122(3): 1067–1101.

Niederle, Muriel and Lise Vesterlund (2010). "Explaining the gender gap in math test scores: The role of competition," *Journal of Economic Perspectives*, 24(2): 129–144.

Niederle, Muriel and Lise Vesterlund (2011). "Gender and competition," *Annual Review of Economics*, 3(1): 601–630.

Rege, Mari and Ingeborg F. Solli (2013). "The impact of paternity leave on fathers' future earnings," *Demography*, 50(6): 2255–2277.

Schmitt, David P., Anu Realo, Martin Voracek, and Jüri Allik (2008). "Why can't a man be more like a woman? Sex differences in Big Five personality traits across 55 cultures," *Journal of Personality and Social Psychology*, 94(1): 168–182.

Soto, Christopher J., Oliver P. John, Samuel D. Gosling, and Jeff Potter (2011). "Age differences in personality traits from 10 to 65: Big Five domains and facets in a large cross-sectional sample," *Journal of Personality and Social Pscychology*, 100(2): 330–348.

Sutter, Matthias and Daniela Rützler (2010). "Gender differences in competition emerge early in life," IZA Discussion Paper No. 5015.

Turkheimer, Eric, Andreana Haley, Mary Waldron, Brian D'Onofrio, and Irving I. Gottesman (2003). "Socioeconomic status modifies heritability of IQ in young children," *Psychological Science*, 14(6): 623–628.

Zhang, Y. Jane (2012). "Can experimental economics explain competitive behavior outside the lab?" Working Paper, University of California Berkeley, USA.

Figure 1: Differences in the willingness to compete
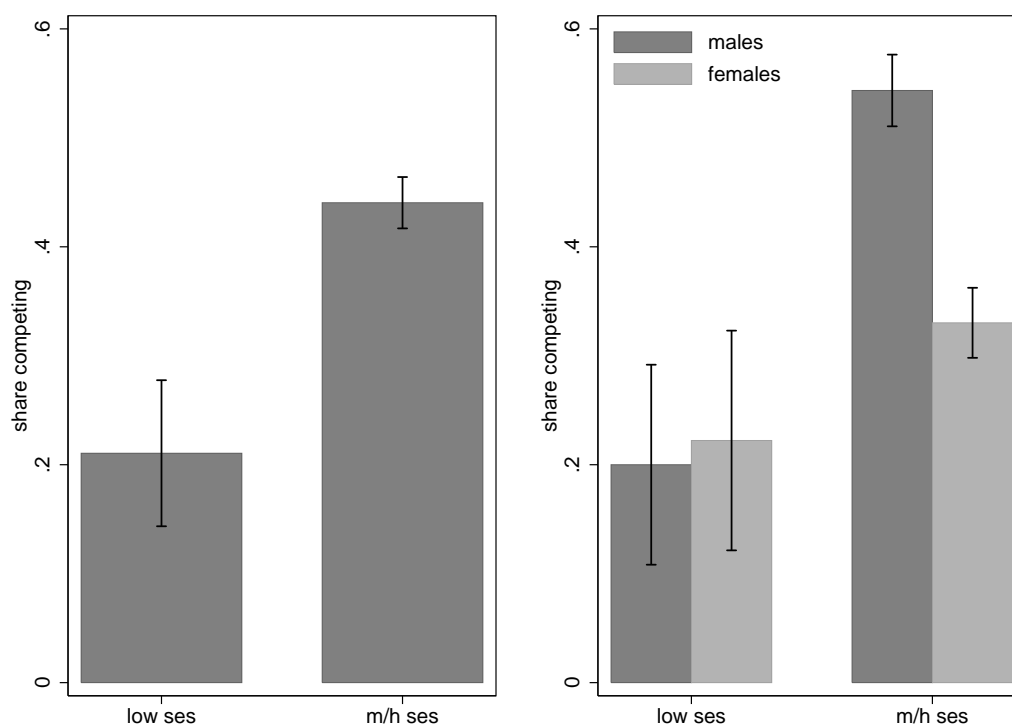
Note: The figure reports the share of the participants that chose to compete by gender and family background. A participant is defined to be from a low SES family if one of the parents has only compulsory schooling, the other has no more than high-school education, and the total parental income (the sum of the incomes of the mother and the father) is in the lowest 20th percentile of the income distribution of total parental income. The standard errors are indicated.

Figure 2: Share that chose to compete by performance and confidence
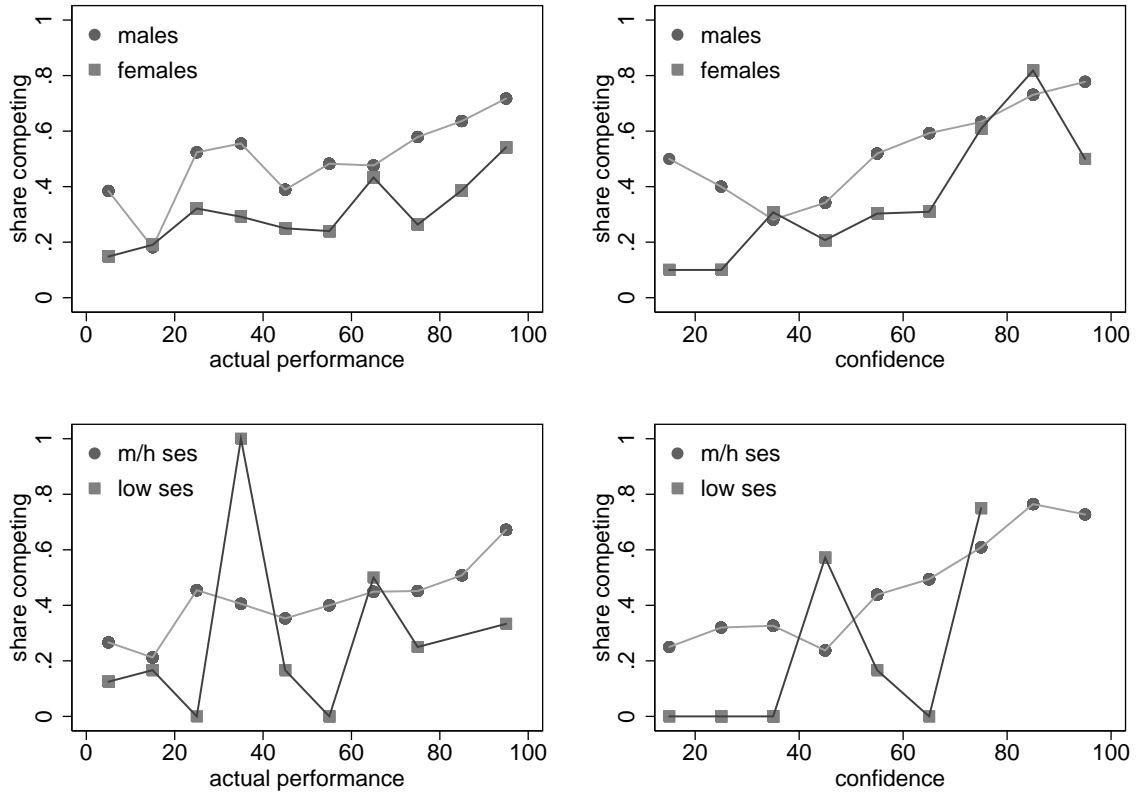
Note: The upper left panel shows the share of boys and girls that chose to compete by actual performance in the first round (defined by the decile of the performance distribution they belong to). The upper right panel shows the share of boys and girls that chose to compete by confidence (defined by the decile of the performance distribution they believe they belong to). The lower left panel shows the share of low SES and medium and high (m/h) SES participants that chose to compete by performance. The lower right panel shows the share of low SES and m/h SES participants that chose to compete by confidence. A participant is defined to be from a low SES family if one of the parents has only compulsory schooling, the other has no more than high-school education, and the total parental income (the sum of the incomes of the mother and the father) is in the lowest 20th percentile of the income distribution of total parental income. The rest of the participants are defined to be from medium and high SES families.

Figure 3: Subjective evaluation of occupations
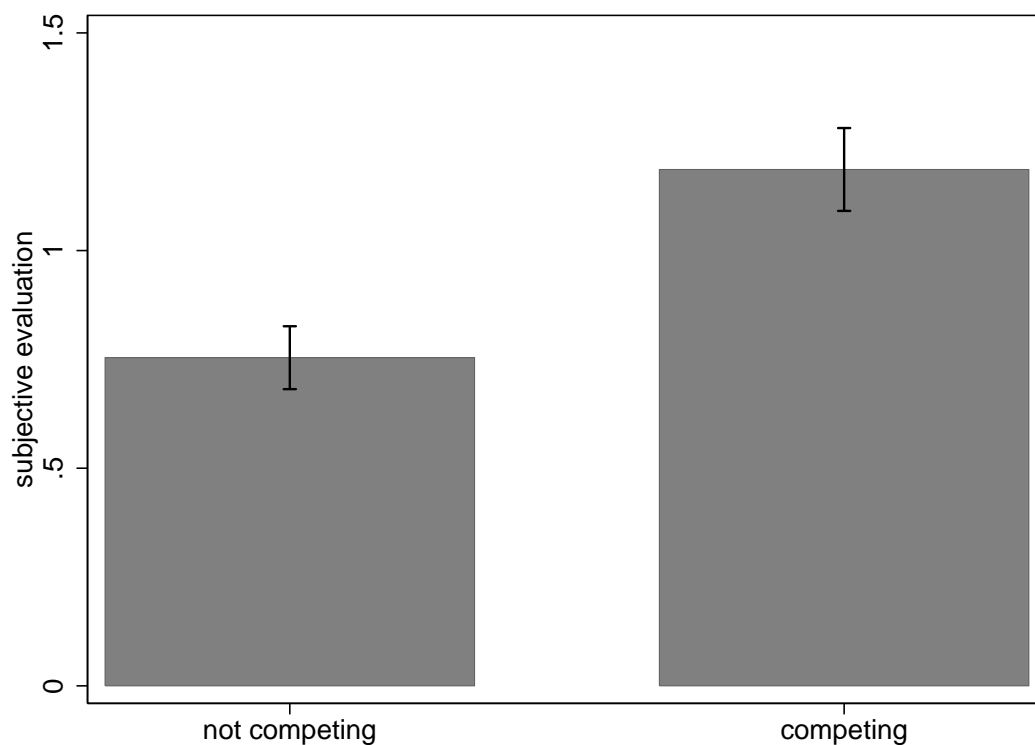
Note: The figure reports the participants' subjective evaluation of occupations (on a scale from 1 (low) to 7 (high)), where it was stated that the evaluation should be conditional on the income being the same in all occupations. We report the difference in subjective evaluation between the three most competitive occupations (lawyer, stock-broker, and self-employed) and the other occupations (electrician, nurse, bureaucrat for the municipality, fire-fighter, actor, and journalist). The average difference is reported separately for the participants who chose not to compete ("not competing") and those who chose to compete ("competing"). The standard errors are indicated.

Table 1: Parental background: Comparison of sample and population

	Father		Mother	
	population	sample	population	sample
A. Education				
Only compulsary education	0.178	0.151	0.183	0.169
		(0.016)		(0.017)
Some secondary education	0.322	0.408	0.283	0.345
		(0.022)		(0.021)
At least some college	0.500	0.441	0.534	0.486
		(0.022)		(0.022)
B. Income				
Mean income	569	624	345	364
		(22)		(9)
10th percentile	128	302	0	173
		(17)		(10)
25th percentile	342	403	194	245
		(10)		(8)
50th percentile	487	527	333	342
		(16)		(8)
75th percentile	708	754	448	433
		(22)		(9)
90th percentile	1007	1009	606	541
		(33)		(28)

Note: In panel A, we report the share of individuals in each category of education, where "population" refers to the full population having children in the 1996 cohort in one of the larger cities (Oslo, Stavanger, Bergen, Trondheim), weighted by the number of such children, and "sample" refers to the parents of the 485 participants for which we have data on family background. In panel B, we report the mean and the distribution of income in thousands 2009 NOK (from administrative register data, using the social insurance definition of income). Standard errors in parentheses (for the sample only).

Table 2a: Overview of differences by gender

	means		std.dev.		*p*-value
	boys	girls	boys	girls	(equal means)
Variables pertaining to the competition game					
Compete	0.516	0.322	0.501	0.468	< 0.001
Performance	10.98	9.82	4.979	4.372	< 0.001
Confidence	57.88	51.70	18.34	16.96	< 0.001
Overconfidence	1.120	0.601	26.70	29.15	0.839
Other experimental measures					
Risk	3.636	3.652	2.274	2.134	0.935
Patience	4.268	4.030	2.122	1.901	0.194
Selfish	0.306	0.310	0.243	0.230	0.858
Egalitarian	0.268	0.270	0.444	0.445	0.953
Personality					
Openness	0.307	0.354	0.435	0.404	0.221
Conscientiousness	0.428	0.477	0.485	0.452	0.247
Extraversion	0.379	0.450	0.374	0.411	0.048
Agreeableness	0.711	0.760	0.349	0.407	0.158
Neuroticism	-0.572	-0.362	0.426	0.466	< 0.001
Background					
Father education (yrs)	14.01	14.27	2.84	2.82	0.326
Mother education (yrs)	14.26	14.09	2.66	2.82	0.502
Father average income (1000s)	550	544	198	245	0.857
Mother average income (1000s)	322	321	158	145	0.917

Continued next page.

Table 2b: Overview of differences by SES

	means		std.dev.		*p*-value
	m/h SES	low SES	m/h SES	low SES	(equal means)
Variables pertaining to the competition game					
Compete	0.440	0.211	0.497	0.413	0.006
Performance	10.61	8.18	4.703	4.489	0.003
Confidence	55.90	43.16	17.62	17.68	< 0.001
Overconfidence	0.652	3.421	27.758	29.526	0.580
Other experimental measures					
Risk	3.38	3.711	2.175	2.567	0.867
Patience	4.187	3.763	2.025	1.937	0.204
Egalitarian	0.248	0.526	0.432	0.506	< 0.001
Selfish	0.311	0.277	0.236	0.247	0.421
Personality					
Openness	0.338	0.240	0.415	0.475	0.227
Conscientiousness	0.454	0.427	0.470	0.467	0.735
Extraversion	0.418	0.352	0.392	0.410	0.341
Agreeableness	0.745	0.608	0.372	0.436	0.067
Neuroticism	-0.477	-0.399	0.454	0.501	0.363
Background					
Father education (yrs)	14.41	10.81	2.741	1.431	< 0.001
Mother education (yrs)	14.45	11.03	2.653	1.385	< 0.001
Father average income (1000s)	570	288	348	88.3	< 0.001
Mother average income (1000s)	332	210	153	65.8	< 0.001

Note: The upper and lower panels report the variables by gender and SES (m/h and low) for the restricted sample of 485 participants for which we have data on family background. "Compete": indicator variable taking the value one if the participant chose to compete. "Performance": the number of correct answers on the addition task in the first round. "Confidence": the participant's belief about own performance (defined as the percentage of participants in the session that the participant believed performed worse than him- or herself). "Overconfidence": the difference between "Performance" (here defined as the percentage of participants in the session that performed worse than the participant) and "Confidence". "Risk": the number of times the risky alternative was chosen. "Patience": the number of times the later option was chosen. "Selfish": share given to the other participant. "Egalitarian": indicator variable taking the value one if the participant divided equally as spectator. "Personality" is measured by the Big Five Inventory. The background variables are taken from administrative register data, where "education" refers to years of schooling and "income" is in thousands 2009 NOK, averaged over the past 10 years, and includes transfers and capital incomes. A participant is defined to be from a low SES family if one of the parents has only compulsory schooling, the other has no more than high-school education, and the total parental income (the sum of the incomes of the mother and the father) is in the lowest 20th percentile of the income distribution of total parental income. The rest of the participants are defined to be from medium and high SES families. The p-values refer to the Pearson's chi-squared test for the indicator variables and to t-tests of equality with unequal variances for all the other variables.

Table 3: Effect of gender on willingness to compete.

	(1)	(2)	(3)	(4)	(5)	(6)
Female	-0.194***	-0.168***	-0.142***	-0.139***	-0.135***	-0.137***
	(0.044)	(0.044)	(0.044)	(0.043)	(0.044)	(0.044)
Performance		0.023***	0.043***	0.040***	0.036***	0.035***
		(0.004)	(0.006)	(0.006)	(0.006)	(0.006)
Overconfidence			0.005***	0.004***	0.004***	0.004***
			(0.001)	(0.001)	(0.001)	(0.001)
Included controls:						
Experimental variables	no	no	no	yes	yes	yes
Big Five personality	no	no	no	no	yes	yes
Low SES	no	no	no	no	no	yes
Observations	483	483	483	483	483	483
R^2	0.039	0.085	0.118	0.173	0.186	0.191

Standard errors in parentheses

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

Note: The table reports regressions of the indicator value "Compete" (taking the value one if the participant chose to compete) on a set of explanatory variables. "Female": indicator variable taking the value one if the participant is a female. "Performance": the number of correct answers on the addition task in the first round. "Overconfidence": the difference between "Performance" (here defined as the percentage of participants in the session that performed worse than the participant) and "Confidence" (defined as the percentage of participants in the session that the participant believed performed worse than him- or herself). "Experimental variables: "Risk", "Patience", "Selfish", and "Egalitarian" (see Table 2 for definitions). "Big Five personality: Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism. "Low SES": indicator variable taking the value one if the participant is from a low SES family, that is, if one of the parents has only compulsory schooling, the other has no more than high-school education, and the total parental income (the sum of the incomes of the mother and the father) is in the lowest 20th percentile of the income distribution of total parental income. Standard errors in parentheses.

Table 4: Effect of low SES on willingness to compete.

	(1)	(2)	(3)	(4)	(5)	(6)
Low SES	-0.230***	-0.173**	-0.134**	-0.122*	-0.132*	-0.139*
	(0.070)	(0.071)	(0.068)	(0.068)	(0.069)	(0.071)
Performance		0.024***	0.045***	0.043***	0.038***	0.035***
		(0.004)	(0.006)	(0.006)	(0.006)	(0.006)
Overconfidence			0.005***	0.005***	0.004***	0.004***
			(0.001)	(0.001)	(0.001)	(0.001)
Included controls:						
Experimental variable	no	no	no	yes	yes	yes
Big Five personality	no	no	no	no	yes	yes
Female	no	no	no	no	no	yes
Observations	483	483	483	483	483	483
R^2	0.016	0.066	0.103	0.158	0.174	0.191

Standard errors in parentheses

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

Note: The table reports regressions of the indicator value "Compete" (taking the value one if the participant chose to compete) on a set of explanatory variables. "Low SES": indicator variable taking the value one if the participant is from a low SES family, that is, if one of the parents has only compulsory schooling, the other has no more than high-school education, and the total parental income (the sum of the incomes of the mother and the father) is in the lowest 20th percentile of the income distribution of total parental income. Standard errors in parentheses. "Performance": the number of correct answers on the addition task in the first round. "Overconfidence": the difference between "Performance" (here defined as the percentage of participants in the session that performed worse than the participant) and "Confidence" (defined as the percentage of participants in the session that the participant believed performed worse than him- or herself). "Experimental variables: "Risk", "Patience", "Selfish", and "Egalitarian" (see Table 2 for definitions). "Big Five personality: Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism. "Female": indicator variable taking the value one if the participant is a female. Standard errors in parentheses.

Table 5: Willingness to compete: Interaction between low ses and gender

	(1)	(2)	(3)	(4)	(5)
Low SES	-0.343***	-0.287***	-0.254***	-0.283***	-0.279***
	(0.096)	(0.096)	(0.091)	(0.085)	(0.081)
Female	-0.213***	-0.188***	-0.163***	-0.167***	-0.162***
	(0.046)	(0.046)	(0.046)	(0.045)	(0.046)
Low SES X female	0.235*	0.226	0.232*	0.325**	0.304**
	(0.141)	(0.140)	(0.132)	(0.127)	(0.127)
Low SES (female)	-0.108	-0.061	-0.023	0.042	0.025
	(0.104)	(0.104)	(0.099)	(0.101)	(0.104)
Included controls:					
Performance	no	yes	yes	yes	yes
Overconfidence	no	no	yes	yes	yes
Experimental variables	no	no	no	yes	yes
Big Five personality	no	no	no	no	yes
Observations	483	483	483	483	483
R^2	0.059	0.099	0.128	0.186	0.198

Robust standard errors in parentheses

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

Note: The table reports regressions of the indicator value "Compete" (taking the value one if the participant chose to compete) on a set of explanatory variables. "Low SES": indicator variable taking the value one if the participant is from a low SES family, that is, if one of the parents has only compulsory schooling, the other has no more than high-school education, and the total parental income (the sum of the incomes of the mother and the father) is in the lowest 20th percentile of the income distribution of total parental income. Standard errors in parentheses. "Female": indicator variable taking the value one if the participant is a female. "Low SES X Female" is an interaction variable between "Low SES" and "Female". "Low SES (Female)": the sum of the estimated parameters for "Low SES" and "Low SES X Female". "Performance": the number of correct answers on the addition task in the first round. "Overconfidence": the difference between "Performance" (here defined as the percentage of participants in the session that performed worse than the participant) and "Confidence" (defined as the percentage of participants in the session that the participant believed performed worse than him- or herself). "Experimental variables: "Risk", "Patience", "Selfish", and "Egalitarian" (see Table 2 for definitions). "Big Five personality: Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism. Standard errors in parentheses.

Table 6: Regressions of willingness to compete: Family mechanisms

	Low SES			Parental power difference		Siblings	
	Parents	Father	Mother	Father / Mothers inc.	Father's − Mother's edu.	Number of siblings	Firstborn
Family	-0.279***	-0.265***	-0.137	0.004	-0.010	0.006	-0.095
	(0.081)	(0.082)	(0.126)	(0.007)	(0.033)	(0.029)	(0.061)
Female	-0.162***	-0.163***	-0.147***	-0.149***	-0.141***	-0.162*	-0.162***
	(0.046)	(0.045)	(0.045)	(0.051)	(0.044)	(0.088)	(0.056)
Family X Female	0.304**	0.316**	0.175	0.006	-0.010	0.014	0.053
	(0.127)	(0.159)	(0.182)	(0.010)	(0.048)	(0.041)	(0.088)
Family (Female)	0.025	0.050	0.038	0.010	-0.020	0.020	-0.042
	(0.104)	(0.138)	(0.131)	(0.007)	(0.035)	(0.028)	(0.063)
Included controls:							
Performance	yes	yes	yes	yes	yes	yes	yes
Overconfidence	yes	yes	yes	yes	yes	yes	yes
Experimental variables	yes	yes	yes	yes	yes	yes	yes
Big Five personality	yes	yes	yes	yes	yes	yes	yes
N	483	476	481	483	474	483	483
R^2	0.198	0.201	0.187	0.188	0.190	0.187	0.191

Robust standard errors in parentheses

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

Note: The table reports regressions of the indicator value "Compete" (taking the value one if the participant chose to compete) on a set of explanatory variables. "Family" differs across the six specifications. "Family (Parents)": indicator variable taking the value one if the participant is from a low SES family, that is, if one of the parents has only compulsory schooling, the other has no more than high-school education, and the total parental income (the sum of the incomes of the mother and the father) is in the lowest 20th percentile of the income distribution of total parental income. "Family (father)": indicator variable taking the value one if the participant has a low SES father, that is, if the father only has compulsory schooling and is in the lowest 20th percentile of the income distribution of the fathers. "Family (mother)": indicator variable taking the value one if the participant has a low SES mother, that is, if the mother only has compulsory schooling and is in the lowest 20th percentile of the income distribution of the mothers. "Family (Father's - Mother's inc)": Father's income divided by the mother's income. "Family (Father's - Mother's edu)": Father's years of education minus mother's years of education. "Family (Siblings)": Number of siblings. "Family (Firstborn)": indicator variable taking the value one if the participant is the firstborn in the family. "Female": indicator variable taking the value one if the participant is a female. "Family X Female" is an interaction variable between "Family" and "Female". "Family (Female)": the sum of the estimated parameters for "Family" and "Family X Female". "Performance": the number of correct answers on the addition task in the first round. "Overconfidence": the difference between "Performance" (here defined as the percentage of participants in the session that performed worse than the participant) and "Confidence" (defined as the percentage of participants in the session that the participant believed performed worse than him- or herself). "Experimental variables: "Risk", "Patience", "Selfish", and "Egalitarian" (see Table 2 for definitions). "Big Five personality: Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism. Standard errors in parentheses.

A   Appendix

Figure A1: Gender differences in the willingness to compete

Note: The figure reports the share of the participants that chose to compete by gender and family background. A participant is defined to be from a low SES family if one of the parents has only compulsory schooling, the other has no more than high-school education, and the total parental income (the sum of the incomes of the mother and the father) is in the lowest 20th percentile of the income distribution of total parental income. A participant is defined to be from a high SES family if both parents have a degree higher than high school and total parental income is above the 85th percentile of the total parental income distribution. The cutoff at the 85th percentile is chosen in order to make the high SES group of the same size as the low SES group. The remaining participants are defined as coming from medium SES families. The standard errors are indicated.

Figure A2: Robustness analysis: Estimated low SES effects for different cut-offs of income
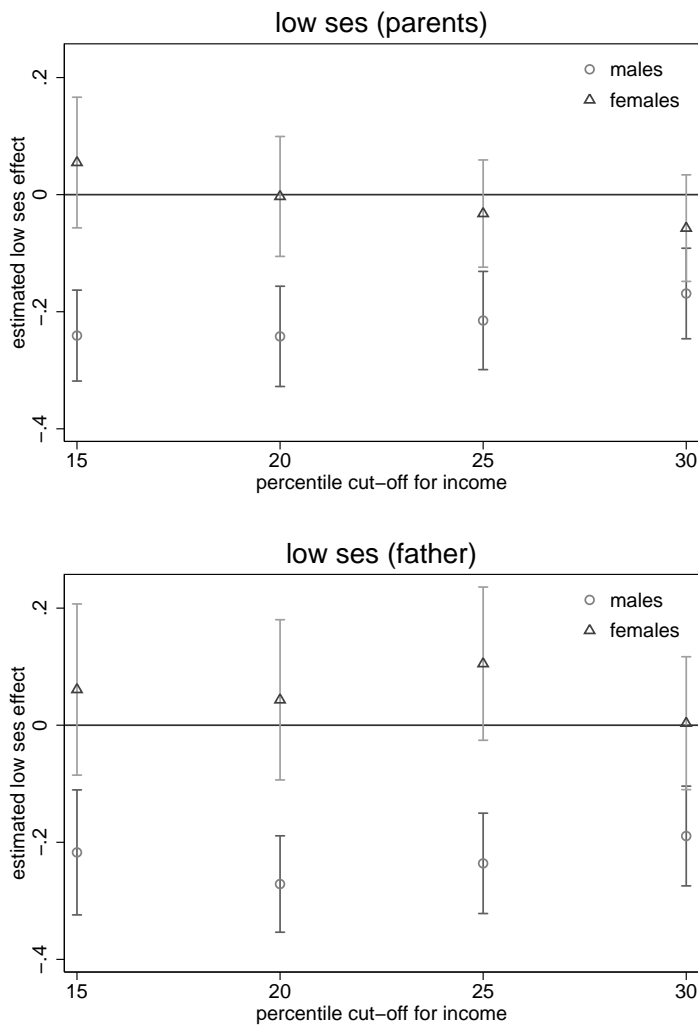
Note: The graph shows the estimated effect of low SES for different cut-offs of income in the definition of low SES, where the cut-off level is indicated by the x-axis The specification estimated corresponds to (5) in Table 5 (with the full set of controls) In the upper panel, the low SES definition includes the education and income of both the mother and the father; in the lower panel, the low SES definition includes the education and income of only the father. Standard errors are indicated.

Table A1: Experimental data by gender, full sample from experiment.

	means		std.dev.		*p*-value
	boys	girls	boys	girls	(equal means)
Variables pertaining to the competition game					
Compete	0.522	0.312	0.501	0.464	< 0.001
Performance	11.00	9.69	4.94	4.39	< 0.001
Confidence	57.98	52.04	18.31	17.08	< 0.001
Overconfidence	1.059	1.800	26.67	28.96	0.765
Other experimental measures					
Risk	3.663	3.596	2.265	2.195	0.737
Patience	4.278	3.992	2.105	1.933	0.112
Selfish	0.303	0.322	0.243	0.229	0.372
Egalitarian	0.267	0.264	0.443	0.442	0.946
Personality					
Openness	0.306	0.362	0.432	0.398	0.128
Conscientiousness	0.429	0.490	0.482	0.459	0.150
Extraversion	0.381	0.444	0.376	0.404	0.071
Agreeableness	0.712	0.762	0.352	0.403	0.137
Neuroticism	-0.573	-0.358	0.425	0.471	< 0.001

Note: The upper and lower panels report the variables by gender and SES for the full sample of 505 participants. "Compete": indicator variable taking the value one if the participant chose to compete. "Performance": the number of correct answers on the addition task in the first round. "Confidence": the participant's belief about own performance (reported here as the percentage of participants in the session that the participant believed performed worse than him- or herself). "Overconfidence": the difference between "Performance" (here defined as the percentage of participants in the session that performed worse than the participant) and "Confidence". "Risk": the number of times the risky alternative was chosen. "Patience": the number of times the later option was chosen. "Selfish": share given to the other participant. "Egalitarian": indicator variable taking the value one if the participant divided equally as spectator. "Personality" is measured by the Big Five Inventory. The background variables are taken from administrative register data, where "education" refers to years of schooling and "income" is in thousands 2009 NOK, averaged over the past ten years, and includes transfers and capital incomes. A participant is defined to be from a low SES family if one of the parents has only compulsory schooling, the other has no more than high-school education, and the total parental income (the sum of the incomes of the mother and the father) is in the lowest 20th percentile of the income distribution of total parental income. The rest of the participants are defined to be from medium and high SES families. The p-values refer to the Pearson's chi-squared test for the indicator variables and to t-tests of equality with unequal variances for all the other variables.

Table A2: Overview of differences between high SES and medium SES

	means		std.dev.		p-value
	medium SES	high SES	medium SES	high SES	(equal means)
Variables pertaining to the competition experiment					
Compete	0.435	0.500	0.496	0.506	0.426
Performance	10.44	12.30	4.72	4.20	0.011
Confidence	55.32	61.75	17.52	17.74	0.034
Overconfidence	1.210	-5.000	27.87	26.21	0.162
Other experimental measures					
Risk	3.635	3.675	2.225	1.607	0.885
Patience	4.111	4.950	2.001	2.136	0.021
Egalitarian	0.252	0.200	0.434	0.405	0.468
Selfish	0.309	0.334	0.236	0.234	0.522
Personality					
Openness	0.331	0.405	0.411	0.456	0.329
Conscientiousness	0.447	0.525	0.475	0.417	0.269
Extraversion	0.419	0.413	0.388	0.439	0.934
Agreeableness	0.740	0.799	0.376	0.327	0.289
Neuroticism	-0.473	-0.514	0.455	0.444	0.580
Background					
Father education (yrs)	14.09	17.70	2.623	1.400	< 0.001
Mother education (yrs)	14.18	17.23	2.575	1.693	< 0.001
Father average income (1000s)	517	1011	263	585	< 0.001
Mother average income (1000s)	318	465	139	214	< 0.001

Note: The table reports the variables by gender. "Compete": indicator variable taking the value one if the participant chose to compete. "Performance": the number of correct answers on the addition task in the first round. "Confidence": the participant's belief about own performance (reported here as the percentage of participants in the session that the participant believed performed worse than him- or herself). "Overconfidence": the difference between "Performance" (here defined as the percentage of participants in the session that performed worse than the participant) and "Confidence". "Risk": the number of times the risky alternative was chosen. "Patience": the number of times the later option was chosen. "Selfish": share given to the other participant. "Egalitarian": indicator variable taking the value one if the participant divided equally as spectator. "Personality" is measured by the Big Five Inventory. The background variables are taken from administrative register data, where "education" refers to years of schooling and "income" is in thousands 2009 NOK, averaged over the past ten years, and includes transfers and capital incomes. A participant is defined to be from a high SES family if both parents have a degree higher than high school and total parental income is above the 85th percentile of the total parental income distribution. A participant is defined to be from a low SES family if one of the parents has only compulsory schooling, the other has no more than high-school education, and the total parental income (the sum of the incomes of the mother and the father) is in the lowest 20th percentile of the income distribution of total parental income. A participant is defined to be from a high SES family if both parents have a degree higher than high school and total parental income is above the 85th percentile of the total parental income distribution. The cutoff at the 85th percentile is chosen in order to make the high SES group of same size as the low SES group. The remaining participants are defined as coming from medium SES families. The p-values refer to the Pearson's chi-squared test for the indicator variables and to t-tests of equality with unequal variances for all the other variables.

Table A3: Effect of gender on willingness to compete.

	(1)	(2)	(3)	(4)	(5)	(6)
Female	-0.194***	-0.168***	-0.142***	-0.139***	-0.135***	-0.137***
	(0.044)	(0.044)	(0.044)	(0.043)	(0.044)	(0.044)
Performance		0.023***	0.043***	0.040***	0.036***	0.035***
		(0.004)	(0.006)	(0.006)	(0.006)	(0.006)
Overconfidence			0.005***	0.004***	0.004***	0.004***
			(0.001)	(0.001)	(0.001)	(0.001)
Risk				0.043***	0.044***	0.044***
				(0.009)	(0.009)	(0.009)
Patience				0.029***	0.028***	0.027***
				(0.010)	(0.010)	(0.010)
Egalitarian				-0.049	-0.050	-0.038
				(0.049)	(0.049)	(0.050)
Selfish				-0.030	-0.030	-0.037
				(0.089)	(0.089)	(0.089)
Missing selfish				-0.062	-0.049	-0.034
				(0.265)	(0.250)	(0.241)
BF extraversion					0.093	0.090
					(0.057)	(0.057)
BF agreeableness					-0.040	-0.049
					(0.059)	(0.059)
BF conscientiousness					0.038	0.044
					(0.047)	(0.047)
BF neuroticism					-0.062	-0.062
					(0.052)	(0.052)
BF openness					-0.040	-0.047
					(0.050)	(0.051)
Low SES						-0.139*
						(0.071)
Constant	0.516***	0.266***	0.039	-0.180**	-0.190*	-0.151
	(0.032)	(0.058)	(0.074)	(0.091)	(0.101)	(0.103)
Observations	483	483	483	483	483	483
R^2	0.039	0.085	0.118	0.173	0.186	0.191

Robust standard errors in parentheses

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

Note: Table 3 in the paper - all parameters reported.

Table A4: Effect of low SES on willingness to compete.

	(1)	(2)	(3)	(4)	(5)	(6)
Low SES	-0.230***	-0.173**	-0.134**	-0.122*	-0.132*	-0.139*
	(0.070)	(0.071)	(0.068)	(0.068)	(0.069)	(0.071)
Performance		0.024***	0.045***	0.043***	0.038***	0.035***
		(0.004)	(0.006)	(0.006)	(0.006)	(0.006)
Overconfidence			0.005***	0.005***	0.004***	0.004***
			(0.001)	(0.001)	(0.001)	(0.001)
Risk				0.043***	0.044***	0.044***
				(0.009)	(0.009)	(0.009)
Patience				0.029***	0.028***	0.027***
				(0.010)	(0.010)	(0.010)
Egalitarian				-0.032	-0.032	-0.038
				(0.049)	(0.050)	(0.050)
Selfish				-0.038	-0.034	-0.037
				(0.091)	(0.091)	(0.089)
Missing selfish				-0.049	-0.032	-0.034
				(0.258)	(0.243)	(0.241)
Extraversion					0.065	0.090
					(0.057)	(0.057)
Agreeableness					-0.063	-0.049
					(0.060)	(0.059)
Conscientiousness					0.027	0.044
					(0.047)	(0.047)
Neuroticism					-0.105**	-0.062
					(0.052)	(0.052)
Openness					-0.048	-0.047
					(0.051)	(0.051)
Female						-0.137***
						(0.044)
Constant	0.440***	0.190***	-0.042	-0.273***	-0.253***	-0.151
	(0.024)	(0.052)	(0.067)	(0.085)	(0.097)	(0.103)
Observations	483	483	483	483	483	483
R^2	0.016	0.066	0.103	0.158	0.174	0.191

Robust standard errors in parentheses

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

Note: Table 4 in the paper - all parameters reported.

Table A5: Willingness to compete: Interaction between low SES and gender

	(1)	(2)	(3)	(4)	(5)
Low SES	-0.343***	-0.287***	-0.254***	-0.283***	-0.279***
	(0.096)	(0.096)	(0.091)	(0.085)	(0.081)
Female	-0.213***	-0.188***	-0.163***	-0.167***	-0.162***
	(0.046)	(0.046)	(0.046)	(0.045)	(0.046)
Low SES X female	0.235*	0.226	0.232*	0.325**	0.304**
	(0.141)	(0.140)	(0.132)	(0.127)	(0.127)
Performance		0.021***	0.041***	0.038***	0.035***
		(0.004)	(0.006)	(0.006)	(0.006)
Overconfidence			0.004***	0.004***	0.004***
			(0.001)	(0.001)	(0.001)
Risk				0.045***	0.046***
				(0.009)	(0.009)
Patience				0.029***	0.028***
				(0.010)	(0.010)
Egalitarian				-0.044	-0.044
				(0.050)	(0.050)
Selfish				-0.024	-0.026
				(0.088)	(0.088)
Missing selfish				-0.080	-0.064
				(0.270)	(0.255)
Extraversion					0.088
					(0.056)
Agreeableness					-0.041
					(0.059)
Conscientiousness					0.043
					(0.046)
Neuroticism					-0.059
					(0.052)
Openness					-0.042
					(0.051)
Constant	0.543***	0.305***	0.083	-0.149	-0.154
	(0.033)	(0.061)	(0.078)	(0.094)	(0.104)
Low SES (female)	-0.108	-0.061	-0.023	0.042	0.025
	(0.104)	(0.104)	(0.099)	(0.101)	(0.104)
Observations	483	48334	483	483	483
R^2	0.059	0.099	0.128	0.186	0.198

Robust standard errors in parentheses

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

Note: Table 5 in the paper - all parameters reported.

Table A6: Willingness to compete: Interaction between low SES and gender, including interaction effect and dummy for high SES

	(1)	(2)	(3)	(4)	(5)
high ses	0.096	0.044	0.027	-0.020	-0.014
	(0.117)	(0.112)	(0.113)	(0.108)	(0.108)
low ses	-0.336***	-0.284***	-0.253***	-0.285***	-0.281***
	(0.096)	(0.097)	(0.092)	(0.085)	(0.082)
high ses X female	-0.040	-0.017	-0.003	0.036	0.034
	(0.162)	(0.159)	(0.156)	(0.147)	(0.146)
low ses X female	0.233	0.225	0.232*	0.328**	0.307**
	(0.142)	(0.141)	(0.133)	(0.128)	(0.128)
Female	-0.211***	-0.187***	-0.163***	-0.171***	-0.165***
	(0.048)	(0.048)	(0.048)	(0.047)	(0.048)
Performance		0.021***	0.041***	0.038***	0.035***
		(0.005)	(0.006)	(0.006)	(0.006)
Overconfidence			0.004***	0.004***	0.004***
			(0.001)	(0.001)	(0.001)
Low SES (female)	0.056	0.027	0.023	0.016	0.020
	(0.112)	(0.114)	(0.109)	(0.100)	(0.099)
High SES (female)	-0.103	-0.059	-0.021	0.044	0.026
	(0.104)	(0.104)	(0.100)	(0.102)	(0.105)
Included controls:					
Performance	no	yes	yes	yes	yes
Overconfidence	no	no	yes	yes	yes
Experimental variables	no	no	no	yes	yes
Big Five personality	no	no	no	no	yes
Observations	483	483	483	483	483
R^2	0.061	0.099	0.128	0.186	0.198

Robust standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note: Corresponding to Table 5 in the paper, including a separate indicator variable for high SES. A participant is defined to be from a high SES family if both parents have a degree higher than high school and total parental income is above the 85th percentile of the total parental income distribution.

Table A7: Regressions of willingness to compete: Family mechanisms

	Low SES			Parental power difference		Siblings	
	Parents	Father	Mother	Father / mothers inc.	Father's − mother's edu.	Number of siblings	Firstborn
Low SES	-0.279***	-0.265***	-0.137	0.004	-0.010	0.006	-0.095
	(0.081)	(0.082)	(0.126)	(0.007)	(0.033)	(0.029)	(0.061)
Female	-0.162***	-0.163***	-0.147***	-0.149***	-0.141***	-0.162*	-0.162***
	(0.046)	(0.045)	(0.045)	(0.051)	(0.044)	(0.088)	(0.056)
Low SES X female	0.304**	0.316**	0.175	0.006	-0.010	0.014	0.053
	(0.127)	(0.159)	(0.182)	(0.010)	(0.048)	(0.041)	(0.088)
Performance	0.035***	0.035***	0.036***	0.037***	0.035***	0.036***	0.037***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Overconfidence	0.004***	0.004***	0.004***	0.004***	0.004***	0.004***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Risk	0.046***	0.045***	0.044***	0.044***	0.046***	0.044***	0.044***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Patience	0.028***	0.027***	0.028***	0.028***	0.028***	0.029***	0.028***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Egalitarian	-0.044	-0.053	-0.050	-0.050	-0.044	-0.051	-0.047
	(0.050)	(0.049)	(0.050)	(0.050)	(0.049)	(0.049)	(0.049)
Selfish	-0.026	-0.032	-0.030	-0.034	-0.028	-0.024	-0.030
	(0.088)	(0.089)	(0.090)	(0.089)	(0.091)	(0.090)	(0.089)
Missing selfish	-0.064	-0.061	-0.052	-0.044	-0.039	-0.053	-0.068
	(0.255)	(0.260)	(0.251)	(0.248)	(0.254)	(0.250)	(0.251)
Extraversion	0.088	0.093*	0.093	0.095*	0.101*	0.088	0.098*
	(0.056)	(0.056)	(0.058)	(0.057)	(0.057)	(0.057)	(0.057)
Agreeableness	-0.041	-0.031	-0.038	-0.039	-0.025	-0.040	-0.036
	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)	(0.060)
Conscientiousness	0.043	0.032	0.040	0.038	0.038	0.038	0.053
	(0.046)	(0.046)	(0.047)	(0.047)	(0.047)	(0.047)	(0.048)
Neuroticism	-0.059	-0.068	-0.058	-0.062	-0.058	-0.065	-0.058
	(0.052)	(0.052)	(0.053)	(0.052)	(0.053)	(0.052)	(0.053)
Openness	-0.042	-0.038	-0.041	-0.036	-0.051	-0.036	-0.045
	(0.051)	(0.051)	(0.051)	(0.050)	(0.051)	(0.050)	(0.051)
Constant	-0.154	-0.167	-0.177*	-0.200*	-0.201**	-0.209*	-0.163
	(0.104)	(0.103)	(0.103)	(0.104)	(0.101)	(0.112)	(0.104)
Family (female)	0.025	0.050	0.038	0.010	-0.020	0.020	-0.042
	(0.104)	(0.138)	(0.131)	(0.007)	(0.035)	(0.028)	(0.063)
Observations	483	476	481	483	474	483	483
R^2	0.198	0.201	0.187	0.188	0.190	0.187	0.191

Robust standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Note: Table 6 in the paper - all parameters reported

Table A8: Descriptive statistics: Other characteristics of the family

	means		std.dev.		*p*-value
	boys	girls	boys	girls	(equal means)
Family characteristics					
Father's relative income	2.315	2.259	3.227	3.017	0.846
Diff father's and mother's education	-0.102	0.026	0.849	0.844	0.101
Number of siblings	1.864	1.961	1.032	1.100	0.316
Only child	0.436	0.365	0.497	0.482	0.111

Note: The table reports the descriptive statistics for the "Family" variables used in the four last columns of table 6.

Table A9: Regressions of willingness to compete: Family mechanisms, alternative specification

	Income	Education
Family	0.042	0.040
	(0.070)	(0.065)
Female	-0.141***	-0.132***
	(0.049)	(0.049)
Indicator X Female	0.027	-0.003
	(0.102)	(0.098)
Family (female)	0.069	0.037
	(0.076)	(0.074)
Included controls:		
Performance	yes	yes
Overconfidence	yes	yes
Experimental variables	yes	yes
Big Five personality	yes	yes
Observations	483	483
R^2	0.188	0.187

Robust standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Note: The table reports regressions of the indicator value "Compete" (taking the value one if the participant chose to compete) on a set of explanatory variables. "Family" differs across the six specifications. "Family (Income)": indicator variable taking the value one if the mother has more income than the father. "Family (Education)": indicator variable taking the value one if the mother has more years of education than the father. Female": indicator variable taking the value one if the participant is a female. "Family X Female" is an interaction variable between "Family" and "Female". "Family (Female)": the sum of the estimated parameters for "Family" and "Family X Female". "Performance": the number of correct answers on the addition task in the first round. "Overconfidence": the difference between "Performance" (here defined as the percentage of participants in the session that performed worse than the participant) and "Confidence" (defined as the percentage of participants in the session that the participant believed performed worse than him- or herself). "Experimental variables: "Risk", "Patience", "Selfish", and "Egalitarian" (see Table 2 for definitions). "Big Five personality: Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism. Standard errors in parentheses.

Table A10: Regression of risk, performance and confidence: the effect of low SES

	Low SES (parents)			Low SES (father)		
	Risk	Performance	Confidence	Risk	Performance	Confidence
Low SES	0.856	-1.714***	-9.045**	-0.093	-1.057	-6.878**
	(0.673)	(0.631)	(3.608)	(0.604)	(0.946)	(3.271)
Female	0.124	-1.034***	-4.684***	0.084	-0.962***	-3.839**
	(0.220)	(0.303)	(1.595)	(0.221)	(0.296)	(1.592)
Low SES X female	-1.544*	0.049	2.725	-0.693	-0.504	-1.804
	(0.790)	(0.842)	(5.473)	(0.782)	(1.147)	(6.250)
Low SES (female)	-0.688	-1.615***	-6.320	-0.786	-1.561**	-8.682
	(0.457)	(0.550)	(4.187)	(0.500)	(0.666)	(5.313)
Performance	yes	no	yes	yes	no	yes
Overconfidence	yes	yes	no	yes	yes	no
Experimental variables	yes*	yes	yes	yes*	yes	yes
Big Five personality	yes	yes	yes	yes	yes	yes
Observations	483	483	483	476	476	476
R^2	0.027	0.606	0.266	0.021	0.603	0.268

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The table reports regressions of "Risk", "Performance", and "Confidence" on a set of explanatory variables (see Table 2 for definitions). "Low SES": indicator variable taking the value one if the participant is from a low SES family, that is, if one of the parents has only compulsory schooling, the other has no more than high-school education, and the total parental income (the sum of the incomes of the mother and the father) is in the lowest 20th percentile of the income distribution of total parental income. Standard errors in parentheses. "Female": indicator variable taking the value one if the participant is a female. "Low SES X Female" is an interaction variable between "Low SES" and "Female". "Low SES (Female)": the sum of the estimated parameters for "Low SES" and "Low SES X Female". "Overconfidence": the difference between "Performance" (here defined as the percentage of participants in the session that performed worse than the participant) and "Confidence" (defined as the percentage of participants in the session that the participant believed performed worse than him- or herself). "Experimental variables: "Patience", "Selfish", and "Egalitarian" (see Table 2 for definitions). "Big Five personality: Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism. Standard errors in parentheses. "yes*" indicates that "Risk" is excluded from the set of experimental variables.

Issued in the series Discussion Papers 2013

2013

01/13 January, **Lukáš Lafférs**, "Identification in Models with Discrete Variables".

02/13 January, **Ingvild Almås**, Anders Kjelsrud and Rohini Somanathan, "A Behaviour-based Approach to the Estimation of Poverty in India".

03/13 February, **Ragnhild Balsvik** and Line Tøndel Skaldebø, "Guided through the `Red tape'? Information sharing and foreign direct investment".

04/13 February, **Sissel Jensen**, Ola Kvaløy, Trond E. Olsen, and **Lars Sørgard**, "Crime and punishment: When tougher antitrust enforcement leads to higher overcharge".

05/13 February, **Alexander W. Cappelen**, **Trond Halvorsen**, **Erik Ø. Sørensen**, and **Bertil Tungodden**, "Face-saving or fair-minded: What motivates moral behavior?"

06/13 March, **Jan Tore Klovland** and **Lars Fredrik Øksendal**, "The decentralised central bank: regional bank rate autonomy in Norway, 1850-1892".

07/13 March, **Kurt Richard Brekke**, Dag Morten Dalen, and Tor Helge Holmås, "Diffusion of Pharmaceuticals: Cross-Country Evidence of Anti-TNF drugs".

08/13 April, **Kurt R. Brekke**, Luigi Siciliani, and Odd Rune Straume, "Hospital Mergers:A Spatial Competition Approach".

09/13 April, **Liam Brunt** and Edmund Cannon, "The truth, the whole truth, and nothing but the truth: the English Corn Returns as a data source in economic history, 1770-1914".

10/13 April, **Alexander W. Cappelen**, **Bjørn-Atle Reme**, **Erik Ø. Sørensen**, and **Bertil Tungodden,** "Leadership and incentives".

11/13 April, Erling Barth, **Alexander W. Cappelen**, and Tone Ognedal, "Fair Tax Evasion".

12/13 June, **Liam Brunt** and Edmund Cannon, "Integration in the English wheat market 1770-1820".

13/13 June, **Fred Schroyen** and **Nicolas Treich**, "The Power of Money: Wealth Effects in Contests".

14/13 August, **Tunç Durmaz** and **Fred Schroyen**, "Evaluating Carbon Capture and Storage in a Climate Model with Directed Technical Change".

15/13 September, **Agnar Sandmo**, "The Principal Problem in Political Economy: Income Distribution in the History of Economic Thought".

16/13 October, **Kai Liu**, "Health Insurance Coverage for Low-income Households: Consumption Smoothing and Investment".

17/13 December, **Øivind A. Nilsen**, **Lars Sørgard**, and **Simen A. Ulsaker**, "Upstream Merger in a Successive Oligopoly: Who Pays the Price?"

18/13 December, Erling Steigum and **Øystein Thøgersen**, "A crisis not wasted – Institutional and structural reforms behind Norway's strong macroeconomic performance".

2014

01/14 January**, Kurt R. Brekke**, Tor Helge Holmås, and Odd Rune Straume, "Price Regulation and Parallel Imports of Pharmaceuticals".

02/14 January, **Alexander W. Cappelen, Bjørn-Atle Reme, Erik Ø. Sørensen,** and **Bertil Tungodden, "**Leadership and incentives".

03/14 January, **Ingvild Almås, Alexander W. Cappelen, Kjell G. Salvanes, Erik Ø. Sørensen**, and **Bertil Tungodden**, "Willingness to Compete: Family Matters".