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# With or without siblings: Sorting into competition in the experimental labor market

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## ARTICLE INFO

## ABSTRACT

We employ a well-controlled laboratory experiment to examine whether only children and those with siblings differ in their willingness to compete. We find that only children are more likely to undervalue the chance of winning and shy away from competition, but they become to embrace competition as their self-assessed winning probability increases. Alternatively, once uncertainty of relative performance is removed, the gap in willingness to compete between the two groups disappears. Utilizing a two-stage model of decision weights under uncertainty, we find that such a gap is predominantly caused by their heterogeneous attitudes toward ambiguity.

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## 1. Introduction

Although the comparison between people with and without siblings has been of interest in psychology for decades, only a few studies (among others, Cameron, Erkal, Gangadharan, & Meng, 2013) use standard economic methods to investigate the behavioral differences between the two groups. The relevant research (Heckman, Stixrud, & Urzua, 2006; Steelman, Powell, Werum, & Carter, 2002) have demonstrated that family background and socio-economic childhood environment where a child grows up will affect preferences toward achieving human capital and selecting occupations in adulthood.

In recent years, many Chinese media reported that job candidates were asked whether they are only children during job interviews and very often only children failed interviews after honestly answering such a question.[1] It is not surprising that people including human resource managers believe that only children, endowed with whole family's resources and spoiled by parents, are selfish, vulnerable, not cooperative, not confident and risk averse, just as found by Cameron et al. (2013). This stereotype forms a discrimination toward only children and affects their success in labor market, marriage market and careers. Therefore, it is worthy for economists to examine whether only children and those with siblings indeed behave differently in the labor market. However, we need a more careful examination on the behavioral differences between only children and those with siblings.

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[1] It is not illegal and in fact very common to ask a job candidate whether she or he is an only child in China, which is not permitted to do so in many developed countries. Chinese websites post this issue, for example in a job hunting website (http://www.090job.com/news/2014103117045.html) and China News website (http://www.chinanews.com/edu/2013/09-12/5279481.shtml).

In terms of competition in workplace, only children and those with siblings may differ in their willingness to compete and thus they may end up with different positions, occupations and different income levels.

We select sorting into competition as our subject because tournament compensation scheme is an increasingly used human resource management practice nowadays (Bloom & Van Reenen, 2011), which significantly affects employee's promotion, income, occupations and other labor market outcomes.

Because family backgrounds play a fundamental role in explaining differences in willingness to compete (Almås, Cappelen, Salvanes, Sørensen, & Tungodden, 2015), willingness to enter into competitive environment could differ between only children and those with siblings who grow up in different families.

However, it is not obvious if only children more likely embrace competition than their counterparts. On one hand, quality-quantity trade-off theory predicts that children in larger families have lower levels of educational attainment and worse outcomes in terms of risky behaviors and delinquency (Becker & Lewis, 1973; Steelman et al., 2002). Rosenzweig and Zhang (2009) find that in China extra child at parity one or at parity two decreases schooling, college enrollment, grades and health of all children in the family. Parents choose to allocate more resources to their more able child so as to maximize the lifetime income of all children, holding inequality aversion among children constant (Becker & Tomes, 1976). That said, since only child's parents do not need to divide their time and resources among multiple children, an only child will receive the whole endowment of time and care from parents. Hence, labor market outcomes for an only child are presumably ceteris paribus better than the outcomes for those with siblings. It follows that only children, exceeding their counterparts in performance, will then be more confident and thus tend to participate in competitive activities. This tendency may be reinforced by the fact that only children, raised by parents who encourage their kids to distinguish themselves through competition, may form a habit of preferring competition.

On the other hand, one might expect that children with more siblings compete for limited resources within the household, are more used to competition, and thus are more willing to enter competition. This sibling rivalry may create a taste for competition that continues to adulthood. However, siblings also provide constant opportunities for interaction with playmates of nearly the same age as opposed to interaction with adults who are in positions of authority. As a result, even after holding family characteristics and child characteristics constant, only children and those with siblings may develop different social and coping skills. Moreover, as reported by Maraño (2010), 82% of Americans with siblings typically spend their early years interacting with each other more than with outsiders. While siblings learn to resolve disputes on their own, only children learn to rely on others.

To examine whether only children and those with siblings behave differently in the labor market in terms of willingness to compete, we conducted a laboratory experiment with student participants recruited from the Central University of Finance and Economics in Beijing. The Chinese One Child Policy launched in 1979 imposes an exogenous occurrence of only children in our study.[2] We created an experimental labor market that involved selection between competitive and noncompetitive compensation schemes in a nondiscriminatory environment. This environment enables us to objectively measure productivity of each subject while at the same time controlling for several unobserved factors that may be correlated with decision to compete. First, participants are asked to play a puzzle game under a piece rate compensation scheme. Then, to elicit individual beliefs (subjective probability) of winning in a competition, all participants are required to self-assess how much better they performed than their peers in the lab. Finally, we elicit their compensation differentials for switching from the competition-free piece rate task to a tournament task to measure willingness to participate in competition.[3]

The key element in choosing to enter competition is the probability to win a tournament. As implied by tournament theory, individuals will favor competitive contracts if they have a higher chance to win and hence higher expected return, given *ex ante* prize structures. That said, in an ideal case, if both only children and those with siblings have full information regarding opponent performance, they should completely rely on this information to sort themselves into or out of competition thereafter behave in the same way. If there is still a difference in willingness to compete in this scenario, then the difference is due to different preference or taste toward competition.

In another scenario, when only children and those with siblings have asymmetric information on opponent performance, they will reply on *self-assessed* winning probabilities to make decisions. Specifically speaking, in the presence of uncertainty about opponent performance, to what degree those with and without siblings are willing to enter competition will depend on two factors—subjective probability and attitude toward ambiguity. The first factor is the difference in subjective beliefs about opponent's performance. That is, even if the performance of only children and those with siblings is exactly the same, but they may adopt different ways to estimate beliefs about their winning probability. The second factor determining individual decision-making under competition with uncertainty is attitude toward ambiguity. Frisch and Baron (1988) define ambiguity as

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[2] The policy was strictly enforced for urban residents and government employees. However, some people were exempted. For example, minorities, rural parents whose first child was a girl, parents who worked in high-risk occupations and parents who along with their spouse were both only children were all allowed to have a second child. These exceptions created an exogenous source of variation for the occurrence of children with siblings even for births after 1979.

[3] As part of a large behavioral experiment, the experimental design presented in this paper is an excerpt from the full version of the experiment in which four different compensation schemes (piece rate, tournament, team and team tournament) on subject's behaviors. In this study, we focus on individual differences in attitudes toward competition, thus we only discuss the experimental procedures and results associated with the comparison between piece rate scheme and tournament scheme. To what extent participants are willing to switch from piece rate scheme to tournament scheme will not affected by a large degree by other two games. First of all, the four games are mutually independent and every participant is required to play the games under corresponding compensation schemes. Second, since participants are paid by a compensation scheme from a randomly drawn game, participants are not motivated to game in performance. Third, through ranking their options and eliciting compensating differentials between any two consecutively ranked options, we are able to calculate the amount of money an individual would take to compensate for performing under a less preferred scheme. The learning curve of performance reaches a plateau so quickly after the first two tasks, i.e., piece rate scheme and then tournament scheme, that the ranking of the first two tasks will not be affected by insertion of another two games.