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No myopic loss aversion in adolescents? – An experimental note

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ABSTRACT

Myopic loss aversion (MLA) has been found to play a persistent role for investment behavior under risk. We study whether MLA is already present during adolescence. Quite surprisingly, we find no evidence of MLA in a sample of 755 adolescents. This finding is at odds with previous findings, and it might be explained by self-selection effects. In other dimensions, however, we are able to replicate stylized findings in our pool of adolescents, such that teams invest higher amounts than individuals and that women invest less than men.

1. Introduction

Myopic loss aversion (MLA) has been put forward by Benartzi and Thaler (1995) as an explanation for the "equity premium puzzle" which refers to the evidence that the risk premium on stocks is inexplicably high compared to yields on bonds and it is unreasonable to assume that risk aversion alone can explain it (Mehra and Prescott, 1985). The concept of MLA combines loss aversion (Kahneman and Tversky, 1979; Tversky and Kaheman, 1992) and mental accounting (Kahneman and Tversky, 1984; Thaler, 1985). In the context of financial markets, loss aversion refers to an investor's tendency to weigh losses more heavily than gains, while myopia – a mental accounting mechanism – implies focusing on short-term results rather than on the longer horizon of an investment. The combination of both, loss aversion and mental accounting, can explain at least parts of the equity premium puzzle. By now, MLA is considered as a robust behavioral pattern. The experimental evidence is impressive, starting with the seminal papers of Gneezy and Potters (1997) and Thaler et al. (1997). They have shown that subjects are willing to invest more money into a risky gamble the longer the investment horizon (the less flexible they are to change their investment decision) and the less often they receive feedback. By and large, this main result has been replicated in Barron and Erev (2003), Gneezy et al. (2003), Bellemare et al. (2005), Langer and Weber (2008), Fellner and Sutter (2009), or Charness and Gneezy (2010). Interestingly, professionals do even worse than student subject pools. Haigh and List (2005)

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have shown that the extent of MLA is larger for Chicago Board of Trade traders than for students, and Eriksen and Kvaløy (2010) have found the same pattern for financial advisors of a Norwegian bank.

So far, the evidence for MLA and its behavioral effects has been collected on adult samples. In this paper, we present an experiment on MLA with adolescents, aged 11–18 years. Studying the behavior of adolescents is motivated by a statement of Colin Camerer (2003, p. 66) who notes that children are "*closer* to the self-interest prediction of game theory than virtually any adult population" and hints at the fact that experience (through age) might drive actual behavior even further away from standard predictions instead of letting it converge to them. In this note, we examine whether the behavioral effects of MLA are already existent at an earlier age than has been investigated in previous studies. In addition to that, we study whether teams (of adolescents) behave significantly different from individuals with respect to investment levels and myopic loss aversion. This latter issue can serve as a robustness check of earlier results by Sutter (2007) who has shown that teams are also prone to loss aversion, but that the effect is dampened, and that teams invest higher amounts than individuals. We investigate whether these results also hold for adolescents.

Quite surprisingly, we find no evidence of MLA in our data with 755 adolescents, although their average investment levels are somewhat comparable to earlier studies. This finding is at odds with previous findings, and in the concluding section we speculate about possible explanations. Concerning the effects of team decision making, we can confirm higher investment levels for teams than for individuals, but our teams are also not prone to MLA. Women are found to invest lower levels, which is consistent with previous findings of Charness and Gneezy (2010), for instance.

Studying dynamic effects across rounds we observe that our participants are subject to two anomalies in their investment choice. (i) A short-sighted dependency expressed by decreased investments after experiencing a win in the previous (block of) round(s). (ii) A long-sighted dependency shown by increasing investments with the number of wins in previous rounds, thus somewhat counterbalancing the short-sighted effect.

The rest of the paper is organized as follows. Section 2 presents the experimental design. The results are described in Section 3. Section 4 discusses our findings and their implications for the literature on MLA and concludes the paper.

2. Experimental design

Our design is based on Gneezy and Potters (1997). In each of nine rounds subjects were endowed with 100 tokens and had to decide how much of this endowment to invest in a lottery with positive expected value and two possible outcomes: (i) With a likelihood of 1/3 the participant wins the lottery, resulting in a payoff of $100 + 2.5X$, where X denotes the invested amount, (ii) with a likelihood of 2/3 the participant loses the invested amount, i.e. she earns $100 - X$. At the end of the experiment, subjects received their cumulative earnings over all nine rounds. Subjects were instructed to imagine this lottery as if there were 10 orange and 20 white balls in a bag and one ball was randomly picked. If the randomly picked ball was orange, this would lead to a win, otherwise to a loss. Ultimately, the computer determined randomly whether the lottery was won or lost.

In our 2×2-design subjects made their decisions (i) either *individually* or in a *2-person-team* and (ii) either under the condition *SHORT* or *LONG*. 2-person-teams were randomly assigned before the start of a session, thus a team was either single sex or mixed sex. Team members were seated face-to-face next to each other and had to agree upon a single investment amount.[1] Teams were instructed to speak in a low voice and were seated in such a distance to other teams that they could not hear the discussion of other team members. The process how decisions in teams were made was not controlled for. Marginal incentives were held constant across decisions made by individuals or in teams as the full amount earned across the nine rounds was paid to each team member in the case of team decision making. In condition SHORT, the amount X to be invested in the lottery had to be chosen anew in each of the nine rounds. Feedback about the outcome of the lottery and the resulting earnings was given after each round. In condition LONG, the choice of the amount X was made in rounds one, four and seven, and in each case the same amount was implemented for three consecutive rounds. Feedback on the outcome of the lottery and on earnings was given after rounds three, six, and nine, separately for each period.[2] Subjects were informed about their cumulative earnings during the experiment whenever feedback was given (i.e. after each round in condition SHORT and after each block of three rounds in condition LONG).

The experiment was conducted in four grammar schools, comparable to US high schools, in Innsbruck and Schwaz (25 km from Innsbruck), two cities located in the Federal State of Tyrol, Austria. The study was approved by the Internal Review Board of the University of Innsbruck, the Tyrolean State Board of Education, and the headmasters of the participating schools gave their permission to run the experiment in school during regular school hours. Participation in the computerized experiment (Fischbacher, 2007) was voluntary, but only 5 parents opted their child out, and no single child opted out. Altogether 755 students, aged 11/12 years (grade 6), 13/14 years (grade 8), 15/16 years (grade 10) and 17/18 years (grade 12) participated

[1] Note that an alternative implementation of a team treatment which many other studies use is a chat device. We use face-to-face communication because it was easier to implement with our subject pool. Thus we dissolve anonymity within teams but not between.

[2] Note that our design differs slightly from Gneezy and Potters (1997) in that we gave feedback on each single round in the LONG condition while Gneezy and Potters (1997) have revealed the aggregate outcome in the LONG condition for blocks of three rounds (meaning that the outcome was not shown separately for each round). However, Fellner and Sutter (2009) have investigated myopic loss aversion in a design very similar to ours (yet with 18 instead of 9 periods). A discussion why we think that this does not influence our results is included in the discussion and conclusion section.