



Too smart to be selfish? Measures of cognitive ability, social preferences, and consistency[☆]



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ABSTRACT

Although there is an increasing interest in examining the relationship between cognitive ability and economic behavior, less is known about the relationship between cognitive ability and social preferences. We investigate the relationship between consequential measures of cognitive ability and measures of social preferences. We have data on a series of small-stakes dictator-type decisions, known as Social Value Orientation (SVO), in addition to choices in a larger-stakes dictator game. We also have access to the grade point averages (GPA) and SAT (formerly referred to as the Scholastic Aptitude Test) outcomes of our subjects. We find that subjects who perform better on the Math portion of the SAT are more generous in both the dictator game and the SVO measure. By contrast we find that subjects with a higher GPA are more selfish in the dictator game and more generous according to the SVO. We also find some evidence that the subjects with higher GPA and higher SAT outcomes offer more consistent responses. Our results involving GPA and social preferences complement previous work which employ measures of cognitive ability which are sensitive to the intrinsic motivation of the subject. Our results involving SAT scores are without precedent in the literature and suggest that measures of cognitive ability, which are less sensitive to the intrinsic motivation of the subject, are positively related to generosity.

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1. Introduction

Researchers have made improvements in understanding behavior by conceptualizing choice as originating from a brain which is heterogeneous across subjects and influenced by external factors. For instance, these successes include cognitive hierarchy models (Camerer et al., 2004; Nagel, 1995; Costa-Gomes et al., 2001), the discovery of a relationship between play in games and the working memory capacity of the subject (Devetag and Warglien, 2003), the finding that subjects apply similar strategies across fundamentally different games which are played in parallel (Bednar et al., 2012; Savikhin and Sheremeta, 2013), and a relationship between strategic sophistication and access to sleep (Dickinson and McElroy, 2010).¹

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¹ Other advancements resulting from this conceptualization include the improvements in understanding behavior by studying the response time of subjects (Rubinstein, 2007; Brañas-Garza et al., 2012b; Piovesan and Wengström, 2009; Frank, 2010; Matthey and Regner, 2011), deviations from optimal search patterns (Sanjurjo, 2012a,b), and a better understanding of strategic behavior as the result of neurological measurements (Coricelli and Nagel, 2009).

The benefits of this conceptualization also offer an explanation of the subject-specific heterogeneity which is often found in economics experiments: subjects differ in their cognitive ability.² As an implication of this, researchers have sought to identify a relationship between measures of cognitive ability and economic behavior in the laboratory. Specifically, experiments have found that measures of cognitive ability are related to performance on a dynamic savings problem (Ballinger et al., 2011), learning optimal behavior in a decision problem (Palacios-Huerta, 2003), mistakes on a forecasting task (Rydval, 2011), the complexity of the strategies implemented in the repeated prisoner's dilemma game (Jones, 2011), outcomes in the repeated prisoner's dilemma game (Jones, 2008), and choice in a beauty contest game (Burnham et al., 2009).³

While these papers examine the relationship between cognitive ability and outcomes in economics experiments, less is known about the relationship between cognitive ability and social preferences. Clarifying the relationship between cognitive ability and social preferences would seem to be useful in the interpretation of these experiments. Here we hope to shed new light on the relationship by analyzing dictator-type allocations decisions and measures of cognitive ability. Our measures of cognitive ability include data on grade point averages (hereafter GPA) and the national rank on the SAT.⁴ Upon completion of a college course, the instructor gives the student a grade which summarizes their performance in the course. GPA is a numerical representation of the average of the grades received. The SAT is an entrance examination for admission as a freshman to universities in the United States. The SAT has a verbal portion and a math portion, where a separate score is given on both portions. We refer to the SAT and GPA measures as *consequential* because they can have a large effect on the subsequent life outcomes of the subject.

In our experiment, subjects make a choice in a dictator game in which it is possible to keep \$10. Our subjects also complete a nine item Social Value Orientation (hereafter SVO) measure for smaller monetary stakes. Each of the nine items has an *individualistic* response, a *prosocial* response, and a *competitive* response. The individualistic response is the one in which the material payoffs accruing to oneself are the largest. In other words, selecting the individualistic choice suggests that the subject neither positively nor negatively values the material payoffs accruing to the other subject. The prosocial response is the one in which the sum of the material payoffs accruing to both the subject and the other subject are the largest. In other words, selecting the prosocial response suggests that the subject positively values the material payoffs accruing to the other subject. The competitive response is the one in which the difference between the material payoffs accruing to the subject and the other subject are the largest. In other words, selecting the competitive choice suggests that the subject negatively values the material payoffs accruing to the other subject.

By observing choice in the dictator game and choice in the SVO we have two measures of the social preferences of the subject. We consider both measures because they are incentivized differently: the choice in the dictator game involves larger stakes and the SVO involves smaller stakes.

We compare our measures of cognitive ability with our measures of social preferences. We find that higher GPA subjects are more selfish in the dictator game than are lower GPA subjects. We also find that subjects who performed better on the Math portion of the SAT are more generous in the dictator game than subjects who performed worse. We do not find a relationship between the Verbal portion of the SAT and choice in the dictator game. There is also evidence of a positive relationship between generosity in the SVO and each of our three measures of cognitive ability.

Each of the nine items contained in the SVO are nearly identical.⁵ As such, the coherence of the choices on these items offers a measure of the consistency of a subject. We find some evidence that GPA, and outcomes on both portions of the SAT are each related to the consistency of SVO choices.

1.1. Our measures of cognitive ability: SAT and GPA

In order to interpret the contributions of our results, it is essential to have an understanding of the literature on the SAT and GPA measures. Although to our knowledge, there does not exist a detailed examination of the differences between the SAT and GPA measures, there does exist helpful research. Research shows that SAT outcomes are strongly related to incentivized measures of general intelligence. For instance, Frey and Detterman (2004) find a positive relationship between SAT scores and scores on the Armed Services Vocational Aptitude Battery.⁶ The literature also finds a close relationship between SAT scores and subsequent GPA in college.⁷ Despite this close relationship between SAT and GPA measures, there remain variations in this relationship which can only be explained by factors other than those related to cognitive ability. For instance, personality (Nofle and Robins, 2007; Kappe and van der Flier, 2012), patience (Kirby et al., 2005), and self-discipline in adolescents (Duckworth and Seligman, 2005) have been found to vary with GPA. In summary, both the SAT and GPA outcomes provide a measure of cognitive ability, however GPA in particular seems to be affected by factors other than cognitive ability.

² For instance, see Camerer and Hogarth (1999).

³ We should note that not each such study has turned up such a relationship. For instance, Georganas et al. (2010) find that measures of cognitive ability are poorly related to the strategic sophistication in games.

⁴ Originally, SAT was an acronym for Scholastic Aptitude Test. However, presently the letters SAT do not denote a sequence of words.

⁵ See Appendix C for the SVO items.

⁶ Also see Beaujean et al. (2006).

⁷ See Coyle and Pillow (2008) and Coyle et al. (2011).

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