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PRO-SOCIAL PREFERENCES AND THE CHOICE OF EDUCATIONAL ORIENTATION

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Abstract
This study examines the hypothesis that pro-social preferences influence decisions of educational orientation on college level in Sweden. We compare business students—who have high expected pecuniary returns to education—with healthcare students—who have lower expected pecuniary returns to education. To control for ability, students with top grades from upper secondary school are surveyed. Differences in pro-social preferences are approximated using a dictator game and a questionnaire. We find that healthcare students are more pro-social than business students. The results also indicate that business students are more responsive to pecuniary incentives. Our findings contribute to the understanding of what drives educational choices and have important implications for the design of incentive schemes linked to educational and career choices.

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1. Introduction

Contemporary economic research provides extensive evidence that rationality based on pecuniary factors alone is not a comprehensive explanation of human behavior (Fehr & Schmidt, 2005). This is not by itself a contradiction of rational choice theory where agents are assumed to be utility-maximizing. Progress in the economic discipline has, however, highlighted the incorporation of non-pecuniary elements in the traditional analysis of individual rational choice (Becker, 1992). Empirical evidence indicates that a significant proportion of the people are motivated by other-regarding preferences such as concerns for the well-being of others, for fairness and for reciprocity (Fehr & Schmidt, 2005). In this paper, we investigate how differences in pro-social preferences relate to educational—and thus career—choices.[1]

Knowledge of which factors influence educational choices is essential from an economical point of view. In order to promote economic growth, it is important to facilitate the matching between student places and the labor market's needs, and to design incentives and policies related to this. Mobility of labor is important in the short term for matching, while education has significant long term effects (Angelov et al, 2008). The importance of understanding what drives educational choices has been recognized by a large body of research in both economics and sociology. Several sociological studies have elaborated on socioeconomic inequality in educational opportunities, while economic research has primarily focused on pecuniary incentives (Angelov et al, 2008). The most prominent, with regards to the latter, is the human capital theory pioneered by Becker (1964) in which education is considered an investment of current time for future income.

Pro-social preferences have not previously been related to educational choices, but have been shown to be of particular importance in career contexts. Francois and Vlassopoulos (2008) argue that workers with strong pro-social preferences prefer to work for non-profit organizations. Delfgaauw and Dur (2008) similarily conclude that public agencies can attract dedicated workers endowed with a public service motivation. In light of this, linking pro-social preferences with educational choices will improve the current state of knowledge.

In this paper we address the question: do pro-social preferences affect individuals' choice of educational orientation? Using a dictator game and a questionnaire, we find that

[1] We define pro-social preferences as a general concern for other people which can originate in psychological concepts such as altruism (cf. Kolstad & Lindkvist, 2010).

healthcare students are more altruistic than business students and present evidence that pro-social preferences influence healthcare students' choice of educational orientation. The results are based on students with top grades from upper secondary school, which means that innate ability is controlled for.

In section 2, we describe previous research addressing educational choices. The conceptual framework and the data are introduced in section 3 and 4, respectively. We present our empirical approach in section 5 and the results in section 6. A discussion of the implications of our findings in section 7 precedes our concluding remarks in section 8.

2. Literature review

The primary focus of economic research in the field of educational choices is pecuniary returns to education. In a literature review on the demand for education, Freeman (1986) presents several American and British studies which all identify a correlation between educational choices and pecuniary returns. In a more recent paper, Angelov et al (2008) also refer to several Swedish studies that support a causal link between return to and demand for education. The common view on returns to education has, however, been criticized. Eliasson (2006) argues that estimates of the earnings effects of college or university choice are biased, since ability is not properly adjusted for. The paper shows that when primary and upper secondary school grades are used as a proxy for innate ability, higher education has no statistically significant effect on earnings on the individual level. The effect of ability on returns to schooling has also been addressed by Nordin (2008). Using the Swedish military enlistment test, he estimates the return to schooling for individuals belonging to different parts of the ability distribution. Nordin (2008) finds that a higher test score is associated with a higher return to schooling. Hence, when referring to an average return to schooling it is important to separate individuals from the upper and lower parts of the ability distribution.

While economic research has established a link between returns to education and individuals' educational choices, sociological research has emphasized that variables related to social background can affect individuals' educational careers. Research in this field argues that inequality in educational opportunities arise due to differences in families' economic situation and social class. Parental education is considered the most important factor in this respect for inequality in recruitment to higher education (i.e. college or university).

According to Boudon (1974), social stratification has two effects on children's primary education: (1) upper class children tend to outperform lower class children in school, and (2) even if they are equal in performance, upper class children are more likely to continue into higher education. In their widely cited study, Shavit and Blossfeld (1992) compare stratification (with regards to parental socioeconomic characteristics and educational opportunities) in thirteen countries during the 20th century. They find that in eleven of the thirteen countries there has been little or no change in socioeconomic inequality in the educational selection process. Contrary to Boudon (1974), Shavit and Blossfeld (1992) find that the effect of social background is less important when individuals pursue higher education. Their empirical finding that the influence family effects have on the probability of transiting from one grade level to the next diminish at higher levels of education is also supported by Cameron and Heckman (1998). Based on the assumption that individuals are forward-looking, Cameron and Heckman (1998) show that family effects are for the most part limited to the initial choice of further education (i.e. from primary to upper secondary school). They conclude that differences in childhood conditions—and not economic constraints—explain the results.

Parental education as an influencing factor on educational choices is founded on the idea that educated parents are more able to support their children's learning processes throughout school. Evidence of the causal link between parental education and children's education is however far from conclusive (Holmlund et al, 2008). Research also suggests that social class disadvantages in children's educational careers have become less acute, not least in Sweden (Breen et al, 2009, and Ranehill, 2002).

Although much research in economics and sociology focuses on education, the influence of social preferences on individuals' choices of educational orientation has received little attention. One of the few papers on this topic compares students pursuing degrees in economics with students pursuing degrees in other fields (Carter & Irons, 1991). The conclusion is that people who have chosen to study economics can be labeled more self-serving as they tend to behave more like *economic men* than other students.

A couple of recent studies have focused on aspiring nurses. Serra et al (2010) investigate the role of intrinsic motivation when Ethiopian health workers make career choices. They find that philanthropically or pro-socially motivated health professionals are more likely to work in the non-profit sector as opposed to the public and the for-profit sectors. Serra et al (2010) also show that philanthropically motivated healthcare professionals em-

ployed by non-profit organizations receive lower wages than their colleagues who are not philanthropically motivated. In a similar study, Kolstad and Lindkvist (2010) investigate differences between nursing students who prefer to work in the private sector and nursing students who prefer to work in the public sector and conclude that nurses who prefer to work in the public sector have systematically stronger pro-social preferences.

3. Conceptual framework

In order to investigate if pro-social preferences affect the choice of educational orientation, *ceteris paribus* observations of individual agents are needed. A critical assumption underlying the interpretation of observed preferences is that insights gained from samples can be extrapolated to the world beyond. Levitt and List (2007) stress that human behavior may be sensitive to the conditions under which it is observed. A number of factors that systematically vary between experimental conditions and the outside world are likely to affect behavior, which complicates generalizability. Combining data analysis with a model of decision-making expands the potential generalizability (Levitt & List, 2007). Therefore, we begin with a simple model in which utility maximization is influenced not only by pecuniary factors, but also by an individual's other preferences. Assume the following utility function:

$$U_{i,j} = \alpha_i \omega_{i,j} + (1 - \alpha_i)\mu_{i,j} \quad \text{(Eq. 1)}$$

where $U_{i,j}$ is the utility for an individual *i* from choosing education *j*; α_i is a constant denoting the relative importance of pecuniary return; $\omega_{i,j}$ is the expected pecuniary return; $\mu_{i,j}$ is the expected non-pecuniary return. All inputs in Eq. 1 are dynamic and could be influenced by factors such as ability, age and gender. Now, assume that an individual can choose between two educational orientations: 1 or 2. The utility from choosing one of the two orientations is given by:

$$U_{i,1} = \alpha_i \omega_{i,1} + (1 - \alpha_i)\mu_{i,1} \quad \text{(Eq. 2)}$$

$$U_{i,2} = \alpha_i \omega_{i,2} + (1 - \alpha_i)\mu_{i,2} \quad \text{(Eq. 3)}$$

An individual will prefer orientation 1 to orientation 2 if and only if he or she earns a higher utility by doing so. The evaluation rule is given by:

$$U_{i,1} > U_{i,2}\ iff\ U_i = \alpha_i(\omega_{i,1} - \omega_{i,2}) + (1 - \alpha_i)(\mu_{i,1} - \mu_{i,2}) > 0 \qquad \text{(Eq. 4)}$$

The above (Eq. 4) implies that an individual will sum the differences in pecuniary return and non-pecuniary return before the decision of educational orientation is made.[2] We are interested in the influence of pro-social preferences on the non-pecuniary return. However, note that the expected non-pecuniary return will be based on a multitude of factors—rather than pro-sociality alone—and that variables affecting the expected non-pecuniary return could influence the expected pecuniary return as well.[3, 4]

Our working hypothesis is that for individuals with strong pro-social preferences, the non-pecuniary return will dominate the pecuniary return in the choice of educational orientation. Measuring the effect of non-pecuniary return *ceteris paribus* is complex, given the conceivable correlation between the relative importance of pecuniary return (α_i) and the non-pecuniary return ($\mu_{i,j}$). Even if only the combined effect (of α_i and $\mu_{i,j}$) can be observed, we do not believe conclusions about the effect of pro-social preferences on the non-pecuniary return are invalid.

In order to approximate pro-social preferences in the non-pecuniary return, we use a dictator game and a questionnaire. Besides additional information on pro-social preferences, the questionnaire provides facts on the participating students' characteristics (such as age and gender). Section 5 provides an elaborate presentation of our empirical approach.

4. The data

Since individuals from the lower part of the ability distribution have less pecuniary return to education (Nordin, 2008), it is difficult to test the significance of non-pecuniary factors for this group. We address this issue by comparing individuals from the upper part of the ability distribution, using grades from upper secondary school as a proxy for ability.

Previous empirical research indicates that individuals with strong pro-social preferences are attracted to employment within the healthcare sector (cf. Serra et al, 2010 and Kolstad & Lindkvist, 2010). To build on these results we have examined students enrolled

[2] We assume rational individuals in the sense that they maximize their utility.
[3] Non-pecuniary factors could for example include expected working hours, personal interests and signaling.
[4] Serra et al (2010) find that philanthropic motivation has a negative impact on wages for healthcare professionals employed by non-profit organizations.

in the Physiotherapist Program at the Karolinska Institute and students enrolled in the Nursing Programs at the Red Cross University College of Nursing and Sophiahemmet University College respectively. These students were compared to students enrolled in the Bachelor of Science Program in Business and Economics at Stockholm School of Economics (henceforth SSE). Around 300 students participated in the survey which was conducted during spring 2011.

The large amount of applicants for all these programs makes top grades a necessary requirement for admission (VHS, 2011).[5] Despite the high innate ability among the students, the difference in pecuniary return to education is considerable. The Confederation of Swedish Enterprise has used a cross-sectional analysis (based on data collected by Statistics Sweden) to compute lifetime earnings estimates. At a given time, people of different ages are examined and their median wages are summarized to make up a lifetime of earnings.[6] The differences between business professionals, nurses and physiotherapists are quite striking: the median lifetime salary for nurses is about 30.5 percent lower than that of SSE graduates whereas the median physiotherapist earns about 34.5 percent less than the median graduate from SSE (Confederation of Swedish Enterprise, 2008b).[7, 8]

The selected educational programs all have the same duration (three years respectively), which improves comparability. In addition, the schools are free from tuition fees and are all located in Stockholm. This means that little discrepancy with regards to economic or geographic preconditions should exist among applicants to the programs, *ceteris paribus*. Eliasson (2006) provides empirical findings which show that geographical accessibility to higher education affects university enrollment decisions in Sweden. Not surprisingly, he also finds that individuals with a less privileged background are more sensitive to university education accessibility than those with a more favorable background. By studying student groups with no significant geographical distance we hope to circumvent this issue.

A possible effect of studying at a particular university or college is that social preferences change as individuals adapt to their fellow students. This is referred to as a sociali-

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[5] Grading based admission statistics fall 2010.

[6] For more details on the method and data discussed, see Confederation of Swedish Enterprise (2008a).

[7] The Confederation of Swedish Enterprise only reports medians for all business graduates in Sweden. To determine the median for SSE students, we have used an article by Ljunglöf (2004), in which the returns to certain colleges are reported.

[8] All differences are between net wages. Since marginal taxes in Sweden are higher for high earners, using gross wages would increase the differences between the professions.

zation effect or "learning hypothesis" (Carter & Irons, 1991). If we add the assumption of self-selection in education, the result would be that students closer to graduation are more aligned to the norm of that education than new students. This would invalidate any conclusions drawn from samples outside the first year (or even month) of a particular education. Consequently, a socialization effect is a potential source of bias which should be taken into account when conducting inference.

5. Empirical approach

5.1 The dictator game

Economic experiments in the form of games are commonly used to test economic behavior. To approximate pro-social preferences, we use a questionnaire and a conventional dictator game consisting of the allocation of monetary units between a dictator and a recipient. The dictator game was originally constructed by Kahneman et al (1986) and its purpose is to measure altruism. The game has two players: one dictator and one recipient. The dictator is allotted a sum of money, and his task is to divide it between himself and the recipient. This decision is final, unlike many other games where the interaction is bilateral. The profit-maximizing strategy is for the dictator to keep the funds since the recipient is unable to punish egoistic behavior. Hence, all non-zero donations can be seen as acts of altruism (Camerer, 2003).

The dictator game used in this study is digital and blind, which means that the participants' actions are anonymous. The advantage of a blind dictator game is that there is no scope for signaling. All participants play the role of a dictator and are instructed to split 100 SEK between themselves and an unknown recipient. The participants are informed that an unspecified number of the games will be realized and result in actual payments.[9] Whether a game is selected for realization is random and independent on outcome. Thus, participants do not know whether their distribution will be materialized. This means that all students will have an incentive to play the game as if it were to result in an actual payment. The funds for the realized games will be distributed anonymously and a participant will not know whether he or she has received any money until after the experiment. The recipients will be randomly chosen among the participating students.

[9] A total of 10 games will be realized.

Criticism of our dictator game includes the size of the monetary sum that is to be distributed (i.e. the effect of stakes). This issue is addressed in a paper by Carpenter et al (2005). They conclude that there is no statistically significant difference in the way a subject plays the dictator game with $100 compared to when the stake is merely $10. The results of Carpenter et al (2005) are in line with previous research, including Camerer and Hogarth (1999) and Prasnikar and Roth (1992). We also recognize that students in business and economics continuously accumulate knowledge regarding economic optimization and financial logic. This may in turn affect their approach to a conventional dictator game. To minimize this problem, we have delimited our study to SSE students in the first and second years that only have elementary knowledge of relevant subjects such as microeconomics and game theory.

Participation in the survey is voluntary. Consequently, the selection of observations might be biased since volunteers could be expected to be more altruistic than the average. This argument is rejected by Cleave et al (2010) who present evidence that social preferences do not differ significantly between those who volunteer for laboratory experiments and those who prefer not to participate. Furthermore, our focus on differences, rather than absolute levels, in dictator game donations means that potential bias in one direction is of minor importance.

5.2 Econometric strategy

The evaluation rule (Eq. 4) is the basis for our econometric strategy. There is a substantial difference in expected pecuniary return to education between business students and healthcare students (Confederation of Swedish Enterprise, 2008b). To investigate if expected non-pecuniary return—rather than the relative importance of pecuniary return—affect the choice of educational orientation, we test if there also is a significant difference in pro-social preferences between the surveyed student groups. A simple comparison of means and medians provides an initial indication on whether there is any difference in dictator game donation. We further compare the business students and the healthcare students by estimating the following equation:

$$DONATION_i = \beta_0 + \beta_1 BUSINESS\ STUDENT_i + \beta_n X_i \qquad \text{(Eq. 5)}$$

where $DONATION_i$ is the amount donated in the dictator game; $BUSINESS\ STUDENT_i$ is a dummy variable separating business students from healthcare students; X_i is a vector containing variables affecting comparability.[10, 11] Estimating the above equation will allow testing for correlation between having relatively strong pro-social preferences and being a business student. Since correlation is not equivalent with causality, we use information derived from the questionnaire to establish whether any observed correlation is causal.

6. Results

6.1 Student characteristics

Our collected dataset consists of 21 observations from the Karolinska Institute, 119 from Red Cross University College of Nursing, 54 from Sophiahemmet University College and 119 from SSE. We have pooled the results from the students at the Karolinska Institute, Red Cross University College of Nursing and Sophiahemmet University College for simplification (i.e. 194 observations in total). This group of students is henceforth referred to as "healthcare students". The students from SSE are correspondingly referred to as "business students".[12]

Table 1. **Student characteristics**

	Business students (n=114)		Healthcare students (n=167)	
	Mean or proportion	**Standard deviation**	**Mean or proportion**	**Standard deviation**
Age	21.4	0.2	27.4	0.5
Education father *	14.3	0.1	13.2	0.2
Education mother *	14.1	0.1	13.6	0.1
Female	39.5%	4.6%	83.9%	2.8%
Dependence father **	44.7%	4.7%	7.8%	2.1%
Dependence mother **	28.9%	4.3%	28.6%	3.5%

Note: * Education in years if primary school=9; upper secondary school=12; university/ college=15.
** Percentage with father/ mother working within future profession (broadly defined) respectively.

[10] The donated amount in the dictator game is the experimental proxy for pro-social preferences.
[11] $n = 2, 3, \ldots, N$
[12] The number of observations (n) differs in the various tables presented. This is due to lack of comprehensive responses from participants in the presented variable(s).

We observe that students at SSE are on average younger than the healthcare students. This dissimilarity is partly due to the fact that the business students are in the first or second year of education, whereas healthcare students from the third year of education are also included in the sample. The average age of the business students is 21.4, whereas the average age of the healthcare students is 27.4.

Besides age, a considerable difference between our two samples is the gender distribution. Women account for 39.5 percent of the business students and 83.9 percent of the healthcare students. If women have stronger pro-social preferences than men, this could explain the relatively greater percentage of women in the sample of healthcare students. The higher proportion of men at SSE can hypothetically also be due to a greater interest in economics and finance among men. Additional information is needed to clarify this.

The level of parental education is slightly higher for the studied business students than for the healthcare students. With regards to fatherly path dependence, 44.7 percent of the business students have a father who is currently working within the field of economics or business administration while a mere 7.8 percent of the healthcare students have a father working within the healthcare sector. The difference in motherly path dependence is negligible.

6.2 Econometric results

Before proceeding with the estimation of equation 5 (Eq. 5), we begin with a simple comparison of means and medians in dictator game donations. The values are presented in Table 2. In Figure 1 we present histograms of the dictator game donations.

As expected, it is difficult to discern any statistical distribution in Figure 1. However, it is clear that the majority of business students donated less than half of the available funds. Such a conclusion is difficult to apply to the healthcare students. Although more than half donated between 50 and 100 SEK, more than 20 percent did not donate anything at all. The business students donated 26.5 SEK out of the 100 SEK on average, which can be compared to 42.9 SEK for the healthcare students. The difference is significant at the 0.1 percent level, using both a Mann-Whitney-Wilcoxon rank-sum test and a t-test.[13] The median business student donated 20 versus 50 for the median healthcare student. A median

[13] The MWW test has the advantage of being non-parametric, meaning that no assumption of normality is necessary. The t-test has the advantage of being easier to combine with other explanatory variables (for example in an OLS regression), but is potentially misleading for small samples.

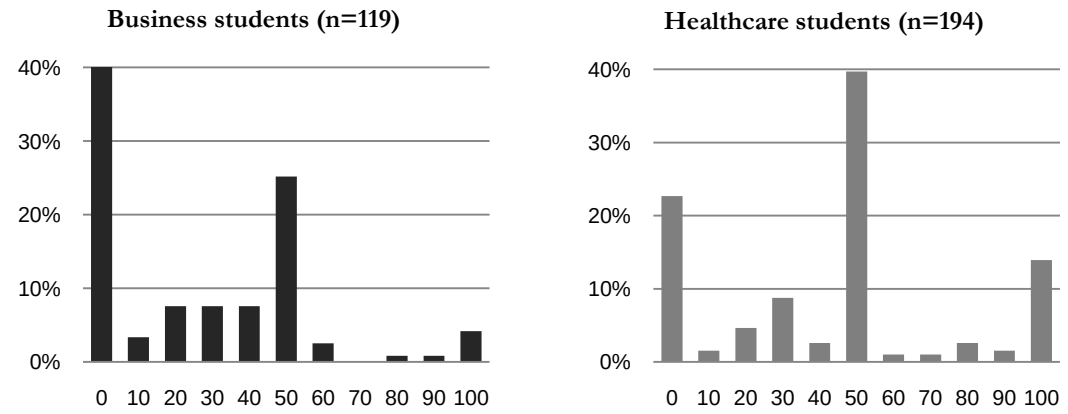
test, based on a chi-square distribution, shows that this difference also is significant at the 0.1 percent level.

Table 2. **Dictator game donations**

	Observations	Mean	Std. dev	Median
Business students	119	26.5	2.5	20
Healthcare students	194	42.9	2.3	50
Total	313	37.0	1.8	40

Note: The differences in both mean and median are statistically significant at the 0.1% level.

Figure 1. **Histograms of dictator game donations**



Note: Observations are added to a bin if its value is equal to or less than the bin value, and greater than bins with lower values (e.g. "10" includes all individuals who donated between 1 and 10).

After simple comparisons of means and medians, we estimate equation 5 (Eq. 5) in four treatments, using ordinary least squares. In the treatments we add variables to the vector (X_i) in order to increase comparability. Results are reported in the appendix, Table 3.

In the first treatment we address the considerable difference in age distribution between our two comparative groups.[14] Based on dictator game donations, Engel (2010) has provided evidence that people tend to become more altruistic as they get older. In order to test for an age effect, we add age and age squared to the regression. The results show that

[14] Appendix, Table 3: column 1

age and age squared are jointly significant (p-value 0.15 percent). The age effect on our study is far from obvious. That the healthcare students are more altruistic than the business students could depend on the difference in age. We observe that pro-social preferences tend to increase with age after a certain time in life.[15] Individuals with strong pro-social preferences could be less prone to invest in a fast career and therefore postpone their education. This will reduce the pecuniary return, since the working life will be shortened, *ceteris paribus*. Hence, referring to the utility function (Eq. 1), postponement of education is a sign that an individual puts relatively less emphasis on the pecuniary return.[16] The observed age effect is in all likelihood an example of correlation between non-pecuniary return ($\mu_{i,j}$) and the relative importance of pecuniary return (α_i).

Previous research indicates that students could be influenced by a socialization or learning effect (Carter & Irons, 1991). If students are affected by their peers to behave in a way that conforms to the social pressure of their school, the observed differences in donation cannot be attributed to the choice of educational orientation. Since a learning effect could be correlated with age, we add a dummy variable for first-year students and an interaction dummy variable for first-year business students in the second treatment.[17] The results indicate that there is a learning effect for the business students, but not for the healthcare students.[18] Age and age squared are still jointly significant (p-value 0.2 percent). At a first glance, the first-year business students do not appear different from the healthcare students with regards to pro-social preferences. However, due to the considerable age difference, we conclude that there is still a significant difference in donation between first-year business and healthcare students.

Next, we test for a gender effect in the third treatment.[19] Camerer (2003) surveys some early papers on dictator games and presents some in which gender seems to play an important role and some where it seems to make no difference at all. The difference in gender distribution between our two samples is considerable; 83.9 percent of the healthcare students are women, compared to 39.5 percent of the business students. By adding a dummy variable for gender to the regression, we find that this has no significant effect on

[15] Theoretically, this corresponds to an increase in $\mu_{i,j}$ in Eq. 1.
[16] This implies that postponement of education is negatively correlated with α_i.
[17] Appendix, Table 3: column 2.
[18] The variable "first-year student" is not significant, while "first-year business student" is significant on the 1 percent level.
[19] Appendix, Table 3: column 3.

donation (p-value 60 percent). Note that gender is strongly correlated with business student. Therefore, it is difficult to distinguish the separate effect of gender on donation.

The last variables of interest—parental education and line of work—relate to inequality in educational opportunities. Especially parental education has been emphasized by previous research as an influencing variable on individuals' educational careers (Shavit & Blossfeld, 1992). To test whether parental education and path dependence are correlated with altruism, we add the variables to the regression in the fourth treatment.[20, 21] The results show that parental education and path dependence have no effect on donation. We find that 44.7 percent of the business students follow in their fathers' footsteps, meaning that there is a strong correlation between path dependence and business student. Hence, it is difficult to observe the separate effect of path dependence on donation.

6.3 The causal effect of pro-social preferences

Having established that there is a correlation between donation and educational orientation, we use information from the questionnaire to determine whether the observed correlation is causal.

The business students stated that the three most important factors for their choice of profession were (1) personal development, (2) good salary and (3) career opportunities. Few stated that helping others was important. The healthcare students rated (1) help others as the most important factor, followed by (2) personal development and (3) varied tasks. Contrary to the business students, only 11.3 percent of the healthcare students stated that a good salary was one of the three most important factors for their choice of profession.[22]

We use "good salary" as a proxy for the relative importance of pecuniary return (α_i), and "help others" as a proxy for non-pecuniary return ($\mu_{i,j}$) in the utility function (Eq. 1). The business students' focus on earning a good salary makes it possible to conclude that they are primarily concerned with the pecuniary return. This does not by itself mean that business students are less pro-social than healthcare students, but that the pecuniary return will be predominant in the utility function (Eq. 1). Hence, we do not know if pro-social preferences affect business students' choice of educational orientation.

[20] Appendix, Table 3: column 4.
[21] "Path dependence" is an interaction variable combining healthcare students with parents working in the healthcare sector and business students with parents working in the field of business administration.
[22] For further details see Appendix, Figure 2.

With regards to the healthcare students, the emphasis on helping others indicates that pro-social preferences are of great importance. Further, it is evident that healthcare students are less concerned with the pecuniary return of choosing a particular career path. Since a combined effect of non-pecuniary return ($\mu_{i,j}$) and the relative importance of pecuniary return (α_i) is observed, we are unable to determine which factor that has the strongest impact on the choice of educational orientation. However, the healthcare students' desire to help others suggests that pro-social preferences give rise to non-pecuniary returns, influencing the choice of educational orientation.

7. Discussion

Healthcare students donate more in a blind dictator game than business students. Our survey also shows that healthcare students are less responsive to pecuniary incentives and career opportunities in their choice of profession. The results imply that pro-social preferences influence the choice of educational orientation for healthcare students. Compared with the healthcare students, the business students are more responsive to pecuniary factors. Due to this responsiveness, we cannot determine if pro-social preferences affect the choice of educational orientation for business students.

An extension of our analysis can be related to motivation crowding theory. According to this line of research, monetary incentives or punishments may undermine or strengthen intrinsic motivation (Frey & Jegen, 2001).[23] Even though business students are more frugal in the dictator game than healthcare students, this does not by itself imply that business students are less generous. The responsiveness to pecuniary factors could crowd out altruistic behavior in their decision-making process in situations that involve money. The challenge is to identify under which conditions this effect dominates behavior—as emphasized by Frey and Jegen (2001). Since educational choices are of great individual importance it is probable that the responsiveness to pecuniary incentives has a behavioral impact, as identified by previous research (Freeman, 1986, and Angelov et al, 2008).

That healthcare professionals put less emphasis on wage is a conceivable explanation for the inferior pecuniary returns to education for nursing students compared to business students. The fact that they are motivated by non-pecuniary preferences will lead to a

[23] An individual can be said to be intrinsically motivated to perform an activity if there are no apparent rewards except the activity itself (Deci, 1975).

supply of workers willing to work for low wages. Although there might exist a supply of workers who are more responsive to pecuniary incentives, the wages will still be low due to the lack of wage differentiation.

Sociological research on educational choices highlights the effect of socioeconomic inequality in educational opportunities (Shavit & Blossfeld, 1992). While this is something we have taken into account when analyzing the data, we are unable to reject that socioeconomic inequalities have affected our study.[24] Whether pro-social preferences are inherent or developed during life also matters in this context. When and how pro-social preferences are formed is of sociological significance and could be addressed by future research. In order to further improve the state of knowledge on pro-social preferences and educational choices, future research could also survey students with educational orientations other than healthcare or business.

8. Concluding remarks

That individual behavior is motivated by pecuniary factors alone is a traditional assumption in economics. In recent research, theorists have started to integrate non-pecuniary factors, such as pro-social preferences, into their models of decision-making. In this paper, we empirically investigate the influence of pro-social preferences on educational orientation choices among college students in Sweden. Our survey includes students at different educational programs that diverge in terms of prospects for future income. We have compared business students with high expected pecuniary returns to education and healthcare students with lower expected pecuniary returns to education. By comparing students with top grades from upper secondary school, we control for innate ability.

Using a blind dictator game and a questionnaire, we conclude that pro-social preferences influence the choice of educational orientation for healthcare students. We also find evidence that business students are more responsive than healthcare students to pecuniary factors. Due to this responsiveness, we cannot determine if pro-social preferences affect the choice of educational orientation for business students. Responsiveness to pecuniary factors could crowd out altruistic behavior in the dictator game. This is a case of extrinsic versus intrinsic motivation that could be subject to further research.

[24] Factors that are related to inequality in educational opportunities include level of parental education and path dependence.

Our results have several consequences. Non-pecuniary incentives designed to affect the supply of healthcare workers are likely to be effective due to high levels of responsiveness. We also hypothesize that the current wage level for nurses in Sweden may be partly explained by the fact that aspiring nurses put less emphasis on money. The high proportion of female workers within the healthcare sector indicates a correlation between gender and the relative importance of pecuniary factors. The results of this paper also confirm a correlation between women and pro-social preferences.

It is easy to neglect motives related to personal preferences such as altruism. We hope that our study can contribute to a broader view on motivation in educational choices and increase understanding of the determinants and effects of incentives related to this. While equality in educational opportunities and returns to education are essential in this respect, it is also important to acknowledge that pro-social preferences influence behavior.

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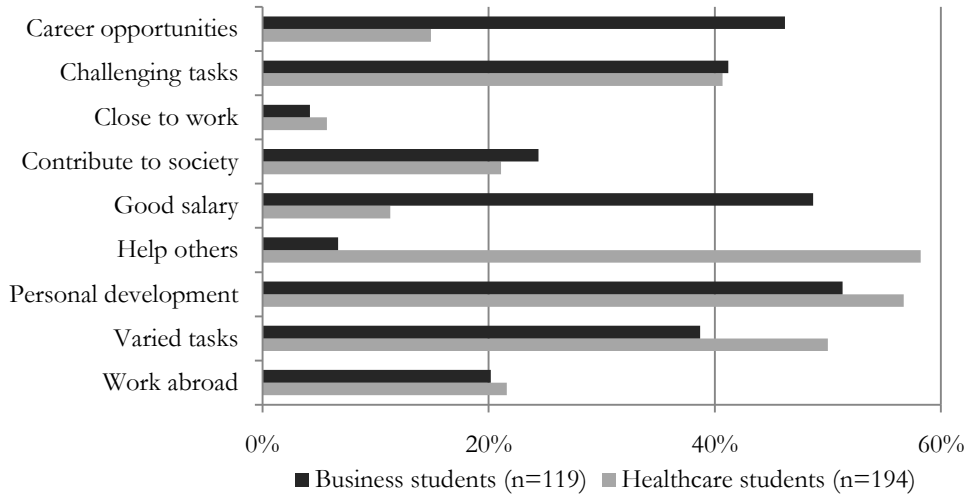
Appendix

Table 3. **Econometric results**

	(1)	(2)	(3)	(4)
Donation	57.70 (33.4)	48.68 (34.09)	47.85 (34.17)	58.01 (40.81)
Business student	-11.76** (4.27)	-20.58** (5.43)	-19.31** (5.92)	-16.82** (6.18)
Age	-1.95 (2.23)	-1.25 (2.25)	-1.33 (2.25)	-1.20 (2.33)
Age squared	0.05 (0.04)	0.04 (0.04)	0.04 (0.04)	0.04 (0.04)
First-year student		-3.61 (4.71)	-3.49 (4.72)	-2.62 (4.95)
First-year business student		18.69** (2.58)	18.20* (7.32)	17.63* (7.58)
Female			2.28 (4.23)	1.99 (4.36)
Level of education father				-0.17 (1.18)
Level of education mother				-0.72 (1.24)
Path dependence father				-6.62 (5.00)
Path dependence mother				2.37 (4.05)
R-squared (adjusted R-squared)	0.11 (0.10)	0.13 (0.11)	0.13 (0.11)	0.14 (0.11)
Observations	292	292	292	281

Note: Marginal effects reported, standard deviation in parentheses. ** p-value ≤ 1.0%, * p-value ≤ 5.0%.

Figure 2. **The most important factors for the choice of profession**



Note: Out of the nine factors above, the students were asked to state the three most important factors for their choice of profession. The histogram illustrates the percentage of students who indicated that the given factor was one of the three most important factors in this respect.