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The only thing that will redeem mankind is cooperation
Bertrand Russell [1954: 212]

Indoctrination, Preselection or Culture? Economic Education and Attitudes towards Cooperation¹

Abstract: Students of economics are often presented as less cooperative than students of other disciplines. A method commonly used to establish this difference is based on laboratory experiments where students participate in trust games. However, these games are analysed as part of microeconomics courses. Hence, drawing conclusions about how students of economics behave while playing these games may not indicate their actual behaviour. This paper contributes to the discussion on economics students' attitudes towards cooperation by presenting the results of a survey conducted among undergraduate students of economics at the University of Lodz in central Poland (N=129). Besides the indoctrination and preselection hypotheses, a culture hypothesis was also examined.

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To analyse the significance of culture on students' cooperativeness, we recruited respondents from two countries, China and Poland, representing two different cultures of collectivism vs. individualism. Our findings lend support to the culture hypothesis, while we failed to find evidence for the indoctrination hypothesis. Moreover, the values of the *Cooperation Index*, an indicator coined to express respondents' attitude towards cooperation, confirm that females are more ready to cooperate than males. Since an ability to work in a team is regarded as the most valuable skill by employers (NACE Job Outlook 2016), our findings suggest treating training in teamwork as an integral part of economics curricula.

Keywords: economic education, cooperation, teamwork, economics students, gender, collaboration

JEL classification codes: A22, A23, Z13

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Introduction

Economics and business students are often presented as different from other university learners. They are reported to be more egotistic [Frank, Gilovich, Regan, 1993; James, Soroka, Benjafield, 2001; Frey, Meier, 2003; Drange Hole, 2013; Lopes, Garça, Correia, 2015; Boylan, 2015], greedy [Wang, Malhotra, Murnighan, 2011], dishonest [Wang, Malhotra, Murnighan, 2011], less generous [Frank, Gilovich, Regan, 1993; Frey, Meier, 2003; Bauman, Rose, 2011], less empathic [Krick *et al.*, 2016], prone to free-riding [Marwell, Ames, 1981; Frank, Gilovich, Regan, 1993], and unscrupulous/unethical in their pursuit of profit [Frank, Schultze, 2000]. In addition to these somewhat negative attributes, economics students are also reported to be uncooperative [cf. Marwell, Ames, 1981; Frank, Gilovich, Regan, 1993; Seguino, Stevens, Lutz, 1996; Cadsby, Maynes, 1998; James, Soroka, Benjafield, 2001].

The difference between economists and others is typically explained by either the (1) preselection or (2) indoctrination hypotheses². The preselection hypothesis holds that those who choose to study economics are less cooperative by nature, i.e. their willingness to cooperate is lower than that of other people. This is evident even before they begin their studies in economics. The indoctrination hypothesis, meanwhile, suggests that their coursework in economics impacts the students' attitude towards cooperation, and that economists are less cooperative not because they are born this way but because the content of economics curricula dulls their cooperativeness [cf. Marwell, Ames, 1981: 309–310].

The method most frequently applied to empirically identify the difference in cooperativeness between economists and other students comes in the form of laboratory (classroom) experiments during which participants play trust

² The indoctrination hypothesis is also labelled as the *learning hypothesis*, *nurture hypothesis*, or simply as a *treatment effect* [cf. Carter, Irons, 1991; Haucap, Müller, 2014; Hummel, Pfaff, Rost, 2016].

games. The most commonly used game to analyse respondents' willingness/unwillingness to cooperate is the *prisoner's dilemma* game³ [cf. Marwell, Ames, 1981; Frank, Gilovich, Regan, 1993; Seguin, Stevens, Lutz, 1996; Cadsby, Maynes, 1998; James, Soroka, Benjafield, 2001; Hu, Liu, 2003; Ahmed, 2008; Haucap, Müller, 2014]. In economics, the game has been used as an analytical tool widely accepted as a good approximation of collective allocation problems (e.g. an investment in a public good), allowing researchers to explain the phenomenon of free-riding.

However, drawing conclusions about economics students' actual cooperativeness from those experiments has a serious drawback. In their introductory microeconomics courses, the students are taught extensively about the game and are trained to solve such tasks and similar decision-making problems. Thus, students of economics know the rules of the game and the strategies to maximise the payoffs. They thus have an unfair advantage. The decisions they make during the experiments may only reflect how well they have been trained in game theory and not how they might behave in a real economic environment—an objection that makes the validity of such research questionable [cf. Frank, 1988: 226; Yezer, Goldfarb, Poppen, 1996; Cadsby, Maynes, 1998: 184; Frey, Meier, 2003: 448; Klimczak, 2005].

Instead of using the familiar games to measure economics students' opinions and attitudes towards cooperation, we used an anonymous survey without any direct reference to economic theories.

This article reports the results of a research study involving undergraduate students (N=129) of economics at the University of Lodz, Poland. The data was collected in March 2016 and April 2017. Our sample included second- and third-year students of economics, enabling us to test the indoctrination hypothesis⁴.

In addition to the assumed influence of economic education, there are other variables that may impact the students' attitudes towards cooperation. Among these, culture and cultural values seem to be of vital importance [cf. North, 1990; Greif, 1994; Landes, 2000; Hofstede, 2001; North, 2005]. There is a growing interest among economists to link cultural attitudes towards cooperation and

³ The basic version of the game is for two players who are provided with a given amount of resources (tokens) which they have to "invest" according to two strategies: "to defect" or "to cooperate." The payoffs depend on the decisions made by both players. The highest payoff may be obtained by the player who decides to "defect" while the second player "cooperates." If both choose the same strategy, the payoffs of both of them are equal. This equal amount is higher when both decide to "cooperate." However, the dominant strategy for both players is to "defect" because of the uncertainty about the strategy chosen by the opponent.

⁴ The results presented in this article are part of a broader study conducted at the University of Lodz, Poland, the Alexandru Ioan Cuza University of Iasi, Romania, and the University of Texas Rio Grande Valley in the United States. To make meaningful comparisons between students of economics we have limited our sample to 129 respondents. The results of the comparison of economics and sociology students from Poland and Romania have been presented in a separate paper [cf. Dzionek-Kozłowska, Rehman, 2017].

economic performance [cf. Alesina, Guiliano, 2016]. However, this aspect has remained mostly neglected in fast-growing empirical research into students' propensity to cooperation. We aim to focus on this dimension by comparing the attitudes of students from an individualistic culture, represented by Poland, and a collectivistic culture, represented by China [Hofstede, Hofstede, Minkov, 2010; cf. Huntington, 1996].

The research confirms the economics students' experience and shows that their overall approach to cooperation and teamwork ranges from "moderately critical" to "highly critical". Nevertheless, we found that many economics students would welcome an opportunity to work in groups. This may not be a contradiction to previous findings as the growing interest in teamwork may be attributed to globalisation and a growing awareness of the interdependence between people and nations.

Our study also shows significant differences between the attitudes of Polish and Chinese students. These findings are in accordance with the culture hypothesis. Contrary to some previous research [Frank, Gilovich, Regan, 1993; Seguino, Stevens, Lutz, 1996; Haucap, Müller, 2014], no evidence was found for the indoctrination hypothesis. Moreover, the values of the *Cooperation Index*, an indicator developed to express the respondents' attitude towards cooperation, confirm that female students are more ready to cooperate than male students.

The article begins with an overview of previous studies depicting the main theoretical stances and the results of empirical research into students' attitudes towards cooperation. The theoretical foundations of our study and the description of its design are given in the preceding section. This is followed by a section that presents the evidence we have gathered and our findings. Our conclusions and recommendations are included in the article's final part.

Debate over economics students' propensity to cooperation

The debate on the specific features of economics students, in particular their uncooperativeness, began in the 1980s with Marwell and Ames [1981], who summarised their findings from a series of 12 experiments examining the free-rider hypothesis. The basic experiment was designed so as to closely correspond to the situation of people's investments in public goods. The players could choose to invest their resources (tokens) in either a private or public fund. The private fund would let them gain a payback equal to the given sum (one cent per invested token), whereas in the case of the public fund, the resources invested by all the participants were pooled and multiplied by the given number (the more resources invested, the higher the multiplier), and the gains were equally distributed among all the participants regardless of their individual investment in the common fund [Marwell, Ames, 1981: 229–301].

Rational utility maximisation dictates that the optimal return for an individual would come from investing the smallest possible part of the resources

in the second fund to gain access to its equally distributed payoffs, while investing the rest in the private fund. However, Marwell and Ames observed that, contrary to the above rationale and irrespective of modifications to the game (such as a different number of players, level of the stakes, repetitions of the game, information about other players' decisions), many participants invested a considerable part of their resources (40 to 60 percent on average) in the public fund. There was one exception: the only respondents who played according to the rational rules of game theory were first-year graduate students of economics. For this group, the average contribution to the public fund dropped to 20 percent [Marwell, Ames, 1981: 306–307]. Trying to explain this behaviour, Marwell and Ames formulated the indoctrination and preselection hypotheses. However, their sample consisted of only 32 graduate students of economics. The sample size limitation did not allow them to support one of these hypotheses and reject the other.

Using a simplified version of the game, Seguino, Stevens and Lutz [1996] conducted a follow-up study with a sample of 139 students. The payoffs from the public fund were calculated by simply doubling the invested sum. Another difference was that instead of taking into account a year of studies as an instrumental variable, Seguino, Stevens and Lutz considered the number of economics courses completed by a student. Their results supported the indoctrination hypothesis. They found that the number of economics courses completed was inversely correlated with the willingness to invest in the public fund [Seguino, Stevens, Lutz, 1996: 11–12]. They also reported that the females allocated 66 percent of their resources to the common fund on average, while the average contribution by the males was 49 percent. In addition, 17 percent of the male students acted according to the “strong” free-rider hypothesis (i.e. no resources contributed to the public fund), while only 2 percent of female respondents did the same.

Frank, Gilovich, and Regan [1993] examined economics students' inclination to cooperation with experiments based on the classical *prisoner's dilemma* game. Their sample was undergraduate students from each year of the four-year programme of studies. The game was played in three versions. In the first version, the participants were allowed to interact for no longer than 10 minutes; in the second version, they were allowed to interact for up to 30 minutes; and in the third variant, the participants could make promises not to “defect.” Frank, Gilovich and Regan's findings were in accord with those obtained by Marwell and Ames [1981]: economics students decided to “defect” much more frequently than other students in both the first and second versions of the game. The defection rate for economists was 60.4 percent, while it was 38.8 percent for the other students [Frank, Gilovich, Regan, 1993: 164]. Nevertheless, the difference between economists and the other students virtually vanished when the students were given the option to discuss and make promises to cooperate. The authors also reported that the longer the duration of the studies, the lower was the rate of defection. Yet, this kind of inverse relationship was the smallest in the case of economic studies. These findings were interpreted as

caused by the content of economics teaching, providing evidence in support of the indoctrination hypothesis.

However, such an interpretation is, at the very least, open to debate. First, if economics teaching is to be blamed for the economists' uncooperativeness, one should be able to trace the decline in their willingness to cooperate from one year to the next. The findings by Frank, Gilovich and Regan [1993] only revealed that there was no further lowering in the level of cooperativeness among more advanced students. Second, the decline in the defection rates of the other students may be due to a positive influence of academic training in other disciplines. This was demonstrated by Ahmed [2008] in the case of police academy cadets. To disentangle the problem, one may need to use age and overall education as intervening variables. The questions thus become: Do people become more cooperative with age regardless of the type of academic education? Are the attitudes of those who do not receive any formal academic education different?

James, Soroka and Benjafield [2001] also conducted an experiment with a basic version of the *prisoner's dilemma* game and confirmed that students of economics were less cooperative than others. However, their sample consisted of only 33 participants. The authors did not investigate the indoctrination/preselection hypotheses.

Haucap and Müller [2014] carried out their research with 577 students of economics and law. Their research design used the sequential *prisoner's dilemma* game. In this version of the game, the first player's strategy determines the possible outcome as his/her decision to "defect" ends the game and both players receive equal payoffs. If, however, the first player decides to "cooperate," the payoffs depend on the strategy employed by the second participant. His/her decision to "cooperate" once again leads to equal payoffs for both, although in this case the payoffs are higher. Yet, the second player may gain even more if he/she decides to "defect." In such a case, the payoff for the first player is less than the payoff he/she receives for defecting in the first phase of the game. Hence, the best strategy for both players is to "defect." Haucap and Müller studied variables such as gender, area of study (economics/law) and year of study (first year/advanced). Their conclusion was that the economists were less cooperative than the lawyers; gender also played a significant role in determining the level of a person's cooperativeness.

Contrary to Frank, Gilovich and Regan [1993], Haucap and Müller [2014] found that in the course of their studies, students of economics became less cooperative, while law students became more cooperative. The process of education also had a noteworthy effect. The females in upper-level economics became the least cooperative in both the first and second phases of the game, whereas female law students were the most cooperative in the first phase of the game and were second to male law students in the second phase. Thus, the Haucap and Müller findings not only supported the indoctrination hypothesis but also showed that the impact of teaching was greater on female students.

Another type of trust game was used by Cadsby and Maynes [1998]. They examined the cooperativeness of two equal groups: economics students and nurses by a simple trust game with a threshold. The participants could invest any amount from their resources (tokens) in a common fund. If a threshold was reached, all members of a given group received equal payoffs regardless of individual contributions. If the group did not reach the threshold, they all lost their investments. In such a game two optimal strategies could be employed: the strong free-riding equilibrium (nobody invests anything), or the group's collective investments equal the threshold. The researchers allowed each group to play the game 25 times. The main conclusion was that while both groups (the economists and the nurses) began the game with total contributions above the threshold, as the groups gained more experience, the nurses moved towards the equilibrium close to the threshold, and the economists moved closer to the strong free-riding equilibrium (with no contributions at all). As a result, the nurses received the payoffs in 60 percent of the games, while the economists only gained in 10 percent of the games. Cadsby and Maynes, however, were not testing the indoctrination and preselection hypotheses; they were focused on the differences in the way the two groups played the game. The nurses turned out to be better collaborators than the economists.

Ahmed [2008] utilised two games, the *stag hunt* game and the classical *prisoner's dilemma* game, to assess students' cooperativeness⁵. The participants were students of economics, humanities, and police academy cadets at three Swedish universities. The subjects were recruited at two stages: at the beginning of the first semester and at the end of the second year of their studies. All six groups were of equal size (30 in each group). The small differences between those three groups at the beginning of their studies were statistically insignificant. However, the differences became more visible and statistically significant at the end of their second year of studies. The propensity for cooperation was higher among the police cadets (a 24-percentage-point difference in cooperativeness between the first-year and second-year students in the *prisoner's dilemma* game and a 20-percentage-point difference in the *stag hunt* game). Ahmed concluded that his findings supported neither the indoctrination hypothesis nor the preselection hypothesis. However, accepting the lack of statistical significance, the percentage of defecting economists was the highest in both games, and the difference between junior and senior economists' unwillingness to cooperate was noteworthy (17 percentage points in the *prisoner's dilemma* and 20 percentage points in the *stag hunt* game).

Contradicting results were reported by Hu and Liu [2003] using the classical *prisoner's dilemma* game. The researchers used 255 undergraduate

⁵ These two games are similar except their payoffs. In the *stag hunt* game, the payoffs received by each player when both choose to cooperate are higher than the payoff obtained by the player who defects while the other cooperates. In Ahmed's example, the payoff received by the player who defected while the other cooperated were equal to the payoffs received when both defected, thus there was no risk-dominant Nash equilibrium.

and graduate students pursuing economics and other disciplines. All groups of students played two rounds of the game. The participants could interact—spend some time together, talk to one another, make promises of cooperation—before the game. Thus the experiment's design could be compared with the third version of the experiment by Frank, Gilovich and Regan [1993]. However, in contrast to Frank, Gilovich and Regan's findings, Hu and Liu found that the defection rate for the economists was lower than among the other students. The defection rates in the first and second rounds for the economists were 34.8 percent and 38.5 percent respectively, while the rates for the other students were 49.6 percent in the first round and 55.3 percent in the second round. Hu and Liu also noted that the more advanced students, both the economists and the others, were more cooperative. Their study points to the power of communication. When the individuals are able to interact, engage in a conversation and have an opportunity to forge a friendship, cooperation becomes more imminent.

Yezer, Goldfarb, and Poppen [1996], dissatisfied with laboratory experiments, looked for an alternative to examine the students' actual cooperativeness. They conducted their study with a "lost letter" experiment. The experiment involved leaving envelopes with a certain sum of money in the classrooms where economics lectures and other classes were scheduled. The envelopes were addressed but were unsealed and contained a handwritten note and a small sum of money as a partial payment of money borrowed. To measure the students' cooperation, the rates of return on the lost letters were recorded. It turned out that there was a significant difference between who returned the envelopes and who kept them. Sixty-four students participated in the study. Contrary to previous studies on trust, the rate of return was higher among economics students. More than half (56 percent) of the economics students returned the envelopes compared to 31 percent for the other students—a 25 percentage points differential [Yezer, Goldfarb, Poppen, 1996: 181]. While Hu and Liu's later study [2003] lent support to the importance of communication in achieving cooperation, the Yezer, Goldfarb, Poppen [1996] study seemed to equate honesty (returning the found property to its rightful owner) with cooperation.

The juxtaposition of the outcomes obtained by Hu and Liu [2003] and Ahmed [2008] with the findings of Marwell and Ames [1981], Frank, Gilovich and Regan [1993], Seguin, Stevens and Lutz [1996], Cadsby and Maynes [1998], James, Soroka and Benjafield [2001], and Haucap and Müller [2014] shows that empirical research based on laboratory experiments is at best inconclusive. The trust game experiments have not offered support to the preselection hypothesis⁶, whereas the indoctrination hypothesis has been confirmed by some [Frank, Gilovich, Regan, 1993; Seguin, Stevens, Lutz, 1996; Haucap,

⁶ The preselection hypothesis has been supported by some studies focused on examining other differences between students of economics and other disciplines [Carter, Irons, 1991; Frey, Pommerehne, Gygi, 1993; Frank, Schulze, 2000; Frey, Meier, 2003; Gandal *et al.*, 2005; Dragne Hole, 2013; Krick *et al.*, 2016].

Müller, 2014]. Thus far, the evidence gathered in those experiments fails to support the claim that the differences in cooperativeness actually do exist.

Theoretical foundation, survey design, and data

Siding with the criticism of the validity of conclusions about economics students' cooperativeness based on controlled laboratory experiments and being uncertain about the validity of the "lost letter" study regarding cooperation, we decided to stay clear of laboratory experiments or of inviting unethical conduct through "found" money among the respondents. Instead, we opted to investigate the students' attitudes with a survey that allowed the respondents to express their sentiments and opinions related to working in groups and team efforts without any reference to the content of economic theory texts. Thus, using a self-administered questionnaire, we asked the participants to recall and write about their experience of working in groups, and their opinions and objections regarding collaborating with others.

Being cognizant of the fact that attitudes towards cooperation (and attitudes in general) are formed by a vast array of variables besides university education, and drawing from the works of Hofstede [1997; 2001] and Hofstede, Hofstede, and Minkov [2010], we recognise that culture and cultural values are significant factors in shaping people's willingness or unwillingness to cooperate. Social scientists studying cultures make a distinction between individualistic and collectivist cultures [cf. North, 1990; 2005; Greif, 1994; 2006; Huntington, 1996]. According to Hofstede [1997: 49–78], individualism and collectivism express the degree to which individuals in a given society are integrated into groups. Individualistic cultures place importance on attaining personal goals, while collectivist societies place a greater emphasis on group goals. It might be expected that people raised in collectivist cultures are more predisposed to cooperating and their overall approach to cooperation is more positive than the attitude of people in individualistic societies. To examine this dimension, we chose groups of students coming from two vastly different countries: China, a collectivist culture, and Poland, an individualistic culture⁷.

The focus of the study was (1) to investigate the indoctrination hypothesis by analysing responses given by students at various level of advancement in their economics education and (2) to compare attitudes towards collaboration among economics students from the two countries. As to the first issue, we assumed that an economic education exerts an influence on students' attitudes. Therefore, we expected to empirically confirm the indoctrination hypothesis. In regard to the second issue, our assumption was that differences in students' willingness to cooperate may be attributed to cultural differences between China and Poland. We hypothesised that the attitudes towards group

⁷ According to calculations by Hofstede, Hofstede and Minkov [2010], China scores 20 (out of 100) on the dimension of individualism vs. collectivism, while Poland scores 60.

work would not be the same for the students from the two countries. We also hypothesised that gender would have no impact on attitudes towards group work and collaboration.

We were unable to test the preselection hypothesis as we did not have access to the students before they began their university studies.

The data and the instrument

The data for the study were collected at a public university in Poland. The sample consisted of 129 respondents, 79 Polish students (27 men, 52 women), and 50 Chinese students (27 men, 23 women). The numbers of the second- and third-year students were similar (65 and 64 respectively). All the participants were studying economics at the undergraduate level according to the same curriculum⁸. The questionnaires were collected in two waves: in March 2016 from the Polish students and in April 2017 from the Chinese ones.

The paper-and-pencil instrument contained four types of items. Three items were designed to collect demographic data, i.e., gender, year of studies, and country of origin. Five Likert-scale items were used to gauge the students' attitudes towards cooperation. The response on these items varied from "strongly disagree" as 1 to "strongly agree" as 9. Two open-ended items asked about the students' previous experience in teamwork. A final item with three choices asked about the completion of group assignments in the past.

The responses on these 9-point Likert-scale items were recorded and collapsed into three categories: Agree (6, 7, 8, 9), Disagree (1, 2, 3, 4) and Neutral (5). After eliminating neutral answers, Chi-square statistics were employed to determine the statistical significance of any differences.

The Cooperation Index

To express students' attitude towards cooperation by a single indicator, we created a *Cooperation Index* (CI)⁹. Three of the Likert-scale items are unfavourable towards cooperation. These statements are:

1. If you want something done, do it yourself. (Do It Yourself, *DIY*)
2. Group work is wasteful when it comes to really important issues. (Waste of Time, *WT*)
3. I work much better by myself. (Alone, *A*)

⁸ During their first year of studies, the Chinese students are taught by Polish lecturers at their home university; all second- and third-year classes are taught in Poland. The programme content is available from: http://www.eksoc.uni.lodz.pl/wgrane_pliki/program-economics-bachelor3.pdf (accessed on May 20, 2017).

⁹ As far as we are aware, no other indices of cooperation have been created or employed to investigate students' attitudes towards cooperation. However, we have used our Cooperation Index in the previously mentioned study examining (alleged) differences in opinions about cooperation between students of sociology and economics [Dzionek-Kozłowska, Rehman, 2017].

One item is in favour of group work. It reads:

I welcome the opportunity to work in groups. (Like Group Work, *LGW*)

Table 1. Statements included in the Cooperation Index

No.	Statement	Variable	Attitude towards cooperation
1.	<i>If you want something done, do it yourself.</i>	<i>DIY</i>	Negative
2.	<i>Group work is wasteful when it comes to really important issues.</i>	<i>WT</i>	Negative
3.	<i>I work much better by myself.</i>	<i>A</i>	Negative
4.	<i>I welcome the opportunity to work in groups.</i>	<i>LGW</i>	Positive

The *Cooperation Index* was calculated as:

$$CI = LGW - (DIY + WT + A)/3 \quad (1)$$

Each of the variables, i.e. *LGW*, *DIY*, *WT*, and *A*, could range from 1 to 9. Therefore, expressed numerically, *CI* could vary from -8 to $+8$. A person whose attitude towards cooperation would be perfectly neutral would have a *CI* equal to 0. The higher the *CI*, the more positive an individual's attitude towards cooperation.

The fifth Likert-scale item, the one not included in the Cooperation Index, refers to students' opinions about the benefits of training in group work. The statement reads: *Most group work will be ineffective unless people know how to work in groups.*

The results

The responses to the open-ended questions revealed that there was a rather negative sentiment towards group work. Nearly 80 percent of the students pointed to more than one problem related to cooperation. Issues such as "unequal input from team members", "free-riding", "indifference", "procrastination", "unwillingness to collaborate", and a general suspicion of the intentions and abilities of other group members were commonly reported. However, referring to their past group projects, 87 percent of the respondents admitted that the projects were completed.

The most frequently reported problem, listed by 57.4 percent of the respondents, was that the end result could have been better. When the same grade was assigned to all the group members regardless of their input, the respondents saw that as unfair. Slightly more than 10 percent of participants revealed that their relationship with other team members worsened as a consequence of that experience. Therefore, we may safely assume that the respondents (economics students) were mindful of the challenges inherent in cooperation.

Indoctrination hypothesis

Are there any significant differences in students' attitudes during the course of their economic studies? Does their economic education affect their opinions about collective actions? A comparison of responses gathered from second- and third-year students does not reveal any significant changes in opinions about cooperation (see Table 2). In all of the Likert-scale items, the distribution of answers in both groups was strikingly similar. Therefore, no statistically significant differences were found.

Our findings are at odds with those of Haucap and Müller [2014], who reported that economics students became less cooperative in the course of their studies. Our findings also contradict the results of Frank, Gilovich and Regan, who claimed that the rate of defection in the *prisoner's dilemma* game declined during economics studies by 0.07 per year [Frank, Gilovich, Regan, 1993: 166].

Table 2. The results of the Chi-square statistics (χ^2) testing the existence of a relationship between the advancement of economic studies and attitudes towards cooperation

No.	Statement	N	χ^2	p
1.	<i>If you want something done, do it yourself.</i>	111	0.665	0.415
2.	<i>Group work is wasteful when it comes to really important issues.</i>	109	0.261	0.610
3.	<i>I work much better by myself.</i>	101	0.004	0.951
4.	<i>I welcome the opportunity to work in groups.</i>	108	2.420	0.120
5.	<i>Most group work will be ineffective unless people know how to work in groups.</i>	112	0.534	0.387

Table 3. The Cooperation Index for second- and third-year students (N=129)

	Second-year students (N=65)	Third-year students (N=64)	Difference
Average	+1.09	+0.40	-0.69
Chinese students (N=50)	+1.77	+2.54	+0.77
Polish students (N=79)	+0.46	-0.51	-0.97
Males (N=50)	+ 1.37	-0.33	-1.70
Females (N=79)	+0.83	+0.80	-0.03

There is a noticeable difference in the average values of the Cooperation Index between second- and third-year students (see Table 3). However, interpreting this slight difference as a piece of evidence supporting the indoctrination hypothesis may be unjustified. A comparison of the CI values for the individual subsamples reveals that there is no general tendency towards a decline in cooperativeness in the course of economic studies. Admittedly, the average values of the CI for the Polish students decreased while the average values for the Chinese students increased by 0.77. Moreover, in the case of women they remained almost stable (a drop by 0.03).

The difference between the values of the CI for the male and female students contradicts the findings by Haucap and Müller [2014], who reported that an economic education's influence on females was stronger than on males. In our research, a certain worsening of attitudes towards cooperativeness during economic studies was perceivable only in the case of men.

Culture hypothesis

The differences in responses to the Likert-scale items by participants from different cultures deserve a note. In three cases out of five, the differences between the two groups assessed by the Chi-square test were statistically significant. The results are presented in the ensuing three tables.

Table 4. The evaluation of the statement: *If you want something done, do it yourself* (N=111)

	Disagreed	Agreed	Total
Chinese students	22 (54%)	19 (46%)	41 (37%)
Polish students	23 (33%)	47 (67%)	70 (63%)
Total	45 (41%)	66 (59%)	111 (100%)

$$\chi^2 = 4.6412; p\text{-value}.0312; p < .05$$

Since the difference is significant at the .05 level, it may be concluded that a higher percentage of the Polish students agree with the statement. Therefore, the value attached to individual work is higher among the Polish students than their Chinese counterparts.

Table 5. The evaluation of the statement: *Group work is a waste of time* (N=109)

	Disagreed	Agreed	Total
Chinese students	31 (74%)	11 (26%)	42 (39%)
Polish students	35 (52%)	32 (48%)	67 (61%)
Total	66 (61%)	43 (39%)	109 (100%)

$$\chi^2 = 5.0288; p\text{-value}.0249; p < .05$$

As the difference is significant at the .05 level, it may be said that a greater percentage of the Polish students agree with this statement. Inversely, a greater percentage of the Chinese students disagree that group work is a waste of time. Thus, once again, the Chinese students' assessment of cooperation is better than that of the Polish students.

The analysis reveals that a larger percentage of the Chinese students (86%) would like to work in a group, while only 69% of the Polish students welcome such an opportunity. The difference between the two groups is significant at the .05 level.

Table 6. The evaluation of the statement: *I welcome the opportunity to work in groups* (N=108)

	Disagreed	Agreed	Total
Chinese students	6 (14%)	37 (86%)	42 (39%)
Polish students	21 (31%)	44 (69%)	67 (61%)
Total	27 (25%)	81 (75%)	108 (100%)

$$\chi^2 = 4.65; \text{p-value}.03106; \text{p} < .05$$

The differences in the assessments of two other Likert-scale statements used in the instrument (i.e. *I work much better by myself* and *Groups will be more efficient if the students are trained in group work*) were not statistically significant. However, it may be reported that more than 70 percent of the Polish and the Chinese students stated that they work better by themselves. Similarly, a majority of both groups expressed their support for the statement that being instructed in how to work as a member of a group would help increase the efficiency of collective actions.

The values of the Cooperation Index confirm the difference between the Chinese and Polish students. The Chinese students' attitude towards cooperation was more positive as the average value of the CI for the overall sample was +2.07, while for the Polish students it was only -0.09.

An analysis based on gender allows us to conclude that gender exerts a certain influence on students' attitudes towards cooperation and their readiness to work individually. A statistically significant difference was found in the assessment of the statement *I work much better by myself*. The outcomes are presented in Table 7 below:

Table 7. The evaluation of the statement: *I work much better by myself* (N=102)

	Disagreed	Agreed	Total
Males	8 (19%)	35 (81%)	43 (42%)
Females	20 (34%)	39 (66%)	59 (58%)
Total	28 (27%)	74 (73%)	102 (100%)

$$\chi^2 = 2.92; \text{p-value}.087426; \text{p} < .10$$

The results indicate that men are more prone to working alone than women. The difference is significant at the .01 level.

The slight differences in the males' and females' attitudes towards collaboration are confirmed by the values of the Cooperation Index. The scores for the men and women from both countries are presented in Table 8.

The difference between men and women expressed by the average CI values is nearly indistinguishable (+0.46 and +0.82 respectively). However, in both countries the females have a more positive attitude towards cooperation than the males. Considering the scores for all the subsamples, it is apparent that the greatest difference exists between the Polish male students, whose evaluation

of cooperation is negative (-0.46), and the Chinese females, whose attitude is the most positive ($+2.45$).

Table 8. The Cooperation Index for the Chinese and Polish students (N=129)

	Chinese students (N=50)	Polish students (N=79)	Average
Average	2.07	-0.09	-
Males (N=57)	1.74	-0.46	0.46
Females (N=75)	2.45	0.10	0.82

Our sample of 127 participants permits us to test hypotheses concerning indoctrination, cultural differences, and gender socialisation. However, we realise that the sizes of both subsamples put certain limitations on our ability to run rigorous statistical tests. To complement our research and test the self-selection hypothesis, it would be necessary to replicate the study with samples of beginning students from both countries. Also, more data on students from different countries would be needed to fine-tune the Collaboration Index. Running similar studies comparing different disciplines of study and different cultures would provide empirical evidence needed to increase our understanding of different cultures and differences, if any, among the individuals' choices for career paths.

Conclusions and recommendations

Cooperation Index tabulation and the Chi-square tests reveal that the economics students' willingness to cooperate does not change significantly during their studies. Thus, no support for the indoctrination hypothesis was found.

The alleged influence of an economic education on weakening the students' willingness to cooperate is commonly explained by the fact that economic textbooks are filled with images of rational individuals seeking personal gain [cf. Frank, Gilovich, Regan, 1993; Ghoshal, 2005; Boylan, 2015: 238; Etzioni, 2015], the *hominis oeconomici* being the rational utility/profit maximisers based on a model initially proposed by Mill [1836(1967); 1843(1967)] and adopted by the marginalists in the 1890s [Pantaleoni, 1898(1889); cf. Veblen, 1899/1990]. This image is so vital for mainstream economics that it is frequently regarded as a component of the "hard core" of the dominant economic paradigm [Lazear, 2000; cf. Dzionek-Kozłowska, 2016]. However, the roots of positive connotations associated with seeking one's own good reside much deeper. Embedded in the classical economic thought with Smithian theory is the notion that people's drive for seeking social benefits stems from an economic system grounded in the market allocation mechanism that encourages economic actors to pursue their self-interests [Smith, 1776(1904), bk IV, ch. II].

The most influential message from the classics is simply this: Even if we assume that all individuals are focused on their own good, the existing resources

will be used most efficiently, i.e., producing the greatest output and benefits for all the people. The notion is strengthened by the 20th-century theorists of economic development arguing that the wealth and poverty of nations depended on individual values, and that individualist societies were more successful in improving their economic performance than collectivist societies [North, 1990; Greif, 1994, 2005]. Knowing about such economic theories and ideologies, it is easy to imagine why so many students of economics may be convinced and indoctrinated into believing that uncooperativeness would be the most efficient path to prosperity. For some, economics is an individualism-praising discipline.

However, a more fundamental problem related to the formation of our values and attitudes arises from a hypothetical inquiry: Is any kind of academic education influential enough to modify the attitudes of adults? The answer offered by developmental psychologists is unsettling as they claim that our personalities are formed as early as at the age of five [Erikson, 1950]. Others have suggested that personality changes may occur until the age of 30. William James, the father of American psychology, in a 1890 text, *The Principles of Psychology*, wrote that personality stabilised in adulthood. According to him “[i]n most of us, by the age of thirty, the character has set like plaster, and will never soften again” [James, 1890]. For most people, a university education takes place between the ages of 18 and 30. Costa and McCrae [1997] have argued that from about age 18 to 30, people tend to become more neurotic and less open to new experiences, and after age 30, the rate of change dips. They claim that what one sees in a 35-year-old person will also be there when this person is 85. The belief that an academic education has no impact on students’ moral development has been supported by the empirical research of Hummel, Pfaff and Rost [2016]. Evidence gathered from more than 2,000 students let them form a thought-provoking conclusion that a university education does not exert any influence on students’ values and attitudes [Hummel, Pfaff, Rost, 2016: 16–17]. Considering these theories and findings, it is not surprising that testing the indoctrination hypothesis has turned out to be inconclusive so far¹⁰.

Additional problems with finding convincing empirical evidence supporting the indoctrination hypothesis stem from the fact that there are two opposite tendencies reported in the literature about economics students’ cooperativeness. On the one hand, the alleged indoctrination by economic theories is reported to have a negative influence on students’ cooperativeness. On the other, researchers such as Frank, Gilovich and Regan [1993] point out that cooperativeness grows with age. If the second effect is stronger, finding empirical support for a strong version of the indoctrination hypothesis (i.e. de-

¹⁰ It is remarkable that all the research supporting the claim that an education in economics has an influence on the cooperativeness of students was based on games known to students of economics.

clining cooperativeness in the course of economics studies) seems to be hardly possible¹¹.

The influence of culture on people's attitudes and behaviour is much less debatable. Our study lends support to treating culture as an important factor in shaping people's views and in how they perceive others. The higher level of willingness to work together among the Chinese students may be attributed to their collectivistic culture, while the greater uncooperativeness of the Polish students may have roots in the individualistic culture of Polish society. Our data backs the individualistic vs. collectivistic dichotomy posited by Hofstede [1997]. We retain the culture hypothesis, which explains why the Chinese students are more inclined to engage in group work than the Polish students.

The differences noted among the males and females may be attributed to the socialisation of girls and boys. Parents in all cultures tend to treat children of different genders differently, not only in dressing them in different "boy" and girl" colours, but also in encouraging them to play different games. Boys are encouraged to take part in competitive (win-lose) games while girls are encouraged to share their toys, collaborate, and play together [Albert, Porter, 1988; Martin, Eisenbud, Rose, 1995; Witt, 1997; Van Volkom, 2003]. As a result, women from many cultures are more willing to work in groups and collaborate.

An interesting finding of our study is related to the students' responses to the question about their willingness to work in a group. Despite their awareness of the problems related to cooperation, the groups of respondents from both countries expressed a readiness to work in a team. Such an attitude was more common among the Chinese students, yet more than half of the Polish students declared it too. Confronting this finding with their overall positive opinion about the advantages of training in group work, we argue that students of economics could benefit from formal training in teamwork. Our position finds support in the fact that an ability to work in a team is regarded as the most valuable skill by employers (NACE Job Outlook 2016). Being aware of the limited influence of economic teaching on students' attitudes, we do not pretend to claim that providing such training will change their individualistic stance. However, we are optimistic that such training could foster a more positive attitude towards cooperation and teamwork.

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¹¹ A weak version of the indoctrination hypothesis would involve a slower pace at which cooperativeness increases.

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INDOKTRYNACJA, PRESELEKCJA CZY KULTURA? EDUKACJA EKONOMICZNA A PODEJŚCIE DO WSPÓŁPRACY

Streszczenie

Studenci kierunków ekonomicznych są częstokroć przedstawiani jako mniej skłonni do współdziałania niż studenci innych kierunków. Zwykle metodą badawczą wykorzystywaną by potwierdzić istnienie tej różnicy stanowi przeprowadzanie eksperymentów laboratoryjnych, podczas których studenci uczestniczą w tzw. „grach w zaufanie”. Jednak analiza tego rodzaju gier stanowi komponent kursów z zakresu mikroekonomii. Z tego względu wysuwanie wniosków na temat faktycznego zachowania studentów na podstawie decyzji podejmowanych przez nich w trakcie tego rodzaju eksperymentów budzi poważne wątpliwości. Artykuł stanowi wkład w dyskusję na temat podejścia studentów kierunków ekonomicznych do współpracy. Podstawą do formułowania wniosków są wyniki ankiety przeprowadzonej wśród studentów ekonomii na Uniwersytecie Łódzkim (N=129). W odróżnieniu od prowadzonych dotychczas badań koncentrujących się wokół hipotez o preselekcji i indoktrynacji, przedmiotem analizy jest również hipoteza kulturowa. By przyczynić się do wyjaśnienia wpływu kultury na skłonność studentów do współpracy, respondenci rekrutowani byli spośród mieszkańców dwu państw – Chin i Polski – krajów istotnie różniących się pod względem wartości kolektywistycznych/indywidualistycznych. Zgromadzony materiał empiryczny potwierdza hipotezę kulturową, nie daje zaś podstaw do potwierdzenia hipotezy o indoktrynacji. Co więcej, wartości *Indeksu Kooperacji*, wskaźnika stworzonego dla wyrażenia postaw respondentów wobec współpracy, potwierdzają większą skłonność kobiet do współpracy. Wziąwszy pod uwagę to, że zdolność do pracy w zespole jest obecnie postrzegana jako jedna z kluczowych kompetencji poszukiwanych przez pracodawców (NACE Job Outlook 2016), uzyskane wyniki uzasadniają potrzebę traktowania szkoleń z pracy zespołowej jako integralnej części programów realizowanych na studiach ekonomicznych.

Słowa kluczowe: edukacja ekonomiczna, kooperacja, praca zespołowa, studia ekonomiczne, płeć a skłonność do współpracy

Kody klasyfikacji JEL: A22, A23, Z13
