Self-Evaluated Learning Efficiency of Group Work Depends on Personality Traits

Marc Klemp

Department of Economics, University of Copenhagen

Objectives

This study explore the hypothesis that:

- Student's self-evaluated learning efficiency of group work depends on personality, and in particular,
- more introverted students experience a lower gain in learning from group work.

Introduction

Teaching by collaborative learning methods such as group work are *in vogue* [1]. Some existing research has found positive effects on various learning outcomes of cooperative learning methods [2]. However, little research has investigated the impact of student personality on the experienced gains of collaborative learning methods.

In this project, I estimate the association between an introverted personality type and self-evaluated learning efficiency of group work.

I focus on self-evaluated, or experienced, learning. I do not study actual learning directly. However, some studies suggests that self-evaluated learning is correlated with actual learning [3].

Materials

I asked students in the obligatory Economics bachelor's course "Philosophy of Social Science" to anonymously respond to a survey designed to identify student personality type as well as attitudes towards group work and traditional teaching methods. The present analysis is based on responses from 68 students out of 275 enrolled students (25%). The survey ended after this preliminary analysis, and a few more students are expected to be included in the final analysis.

The survey consists of 39 questions divided into two parts:

- The first parts consists of 32 questions from the Danish translation of the 30 IPIP-NEO-120 Facet Scales [4, 5]. The questions cover the following *a priori* hypothesized most relevant factors: extraversion facets friendliness, gregariousness, and assertiveness, the agreeableness facets trust, altruism, and cooperation, and the conscientiousness facets self-efficacy and self-discipline.
- The second part consists of 7 questions designed to identify student attitudes towards teaching methods, including a free-text entry where the respondee can describe their teaching methods attitudes.

Based on the reported answers, multiple useful measures are calculated. An introversion score is calculated on the basis of the answers to the extraversion-related questions using the scoring system laid out in the IPIP-NEO-120 Facet Scales. Various group work preference indices are calculated on the basis of students rating (on a scale from 0 to 100) of the efficacy of group work and solo studying as well as a yes/no question asking if the student find group work to be enjoyable.

Results

The main result is that individuals who score higher on the introversion scale rate group work as significantly less productive compared to other individuals who score lower on the scale (i.e., students who are more extraverted).

Table 1: Simple regressions

	Group work preference indices[a]		
	(1)	(2)	(3)
Introversion index (standardized)	-0.240**	-0.248**	-0.268**
	(0.113)	(0.124)	(0.124)
Observations	68	68	68

Notes: this table reports the results of simple regression models with group work preference indices as the outcome variables and a standardized introversion index as the explanatory variable.

a) The outcome in the first column is the log of the ratio of the scores of academic yield of studying alone versus studying in a group. The outcome in the second column is a weighted average of answers to three questions relating the efficiency and enjoyability of group work as well as the efficiency of solo work. The outcome in the third column is the first principal component of the factors used in the index in the second column. This measure is also the measure used in the figure.
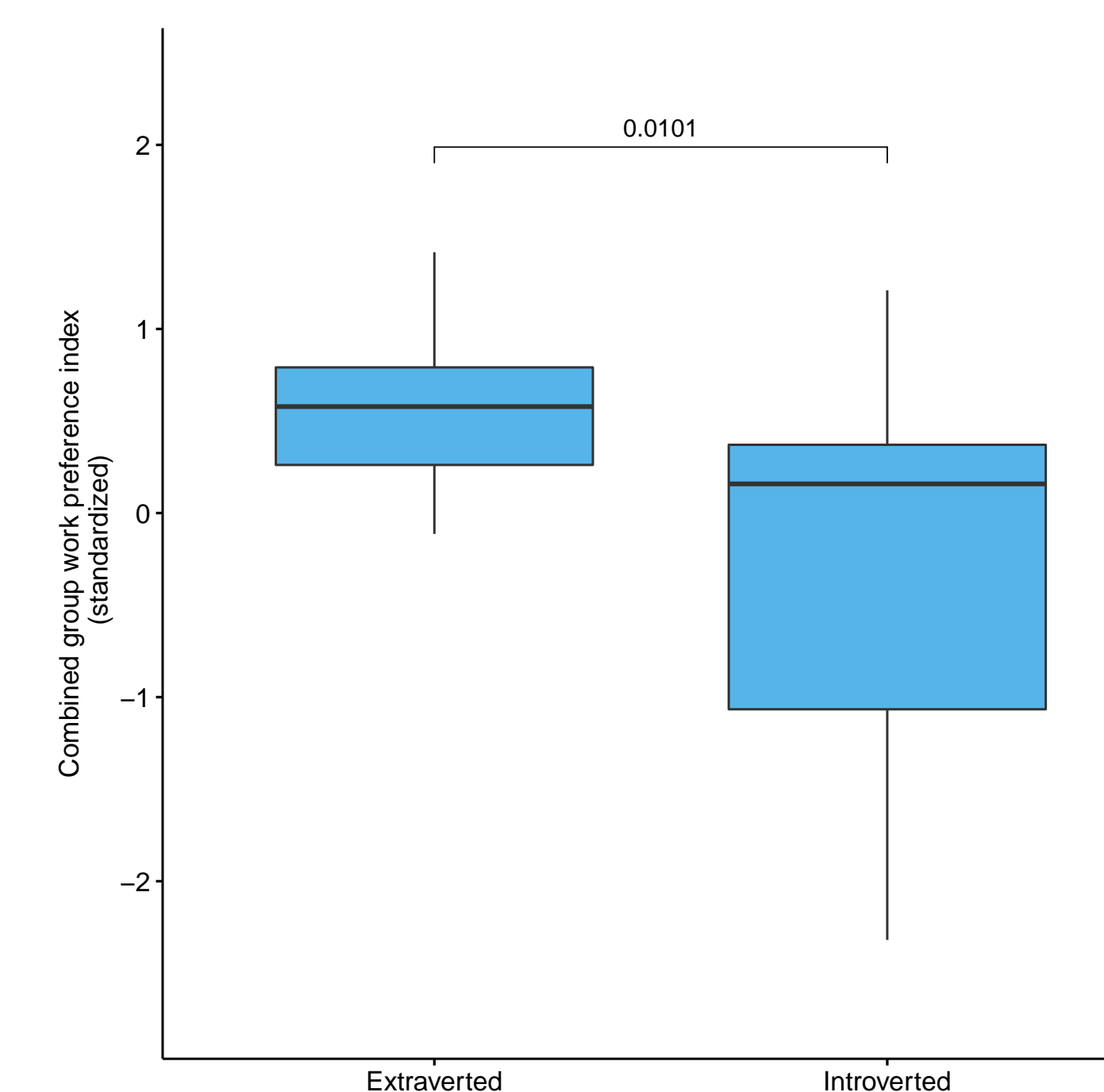
** significant at the 5% level.

Figure 1: Group work preference index in individuals scoring below the average on the introversion scale ("extraverted" individuals) and in individuals scoring above the average on the introversion scale ("introverted" individuals).

Conclusion

Self-evaluated learning efficiency of group work depends on personality in this sample. In particular, more introverted students rate group work significantly lower on various indices capturing the efficiency of group work compared to solo work. Group work may be less efficient and may generate more discomfort in more introverted students.

Perspectives

This study may suggest that the potential benefits of collaborative learning are outweighted by the associated discomfort and reduced learning experienced by students with certain personality traits. Since most collaborative learning activities can easily be conducted voluntarily, outside of the formal teaching system, higher learning institutions and their students could potentially benefit from avoiding collaborative learning in the formal teaching settings. Instead, institutions could facilitate the voluntary formation of groups, exchange of contact details, or even digital tools, that can help some students conduct collaborative learning outside of the formal teaching setting.

Planned Work

The present analysis uses only a subset of the available information. In the final analysis, I plan to control for the other personality measures included in the data and to explore the remaining outcomes.

References

[1] M Arvaja and P Häkkinen. Social aspects of collaborative learning. In Penelope Peterson, Eva Baker, and Barry McGaw, editors, International encyclopedia of education, volume 7, pages 685–690. Academic Press, Oxford, 2010.

[2] Lenis Saweda O. Liverpool-Tasie, Guigonan Serge Adjognon, and Aaron J. McKim. Collaborative learning in economics: Do group characteristics matter? International Review of Economics Education, 31:100159, 2019.

[3] Gary R Pike. Using college students' self-reported learning outcomes in scholarly research. New directions for institutional research, 2011(150):41–58, 2011.

[4] John A Johnson. Measuring thirty facets of the five factor model with a 120-item public domain inventory: Development of the ipip-neo-120. Journal of Research in Personality, 51:78–89, 2014.

[5] Anna Vedel, Oluf Gøtzsche-Astrup, and Peter Holm. The danish ipip-neo-120: A free, validated five-factor measure of personality. Nordic Psychology (Online), 71(1):62–77, 2019.