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Persistance of Social Ties from Informal Group Interactions

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Extended Abstract

Introduction There has been a long-standing discussion about the relevance of social networks in higher education for student outcomes. To date, a large body of literature exists that points towards a substantial role of peer effects in academic achievement (e.g. Sacerdote, 2001; Kremer and Levy, 2003; Zimmerman, 2003; Carrell et al., 2009; Mehta et al., 2019), social behavior (e.g. Duncan et al., 2005) and occupational choice (e.g. Marmaros and Sacerdote, 2002). However, to leverage peer effects in the design of effective policies to, e.g., reduce achievement gaps, detailed knowledge about the underlying causes and mechanisms of peer effects is necessary. Studying these has traditionally been hard, as most data available to researchers lacks information about the actual social interactions among students. Existing work has had to rely on either organizational assignment, e.g. to dorms or rooms (Sacerdote, 2001; Marmaros and Sacerdote, 2002; Kremer and Levy, 2003; Zimmerman, 2003), or self-reported connections (e.g. Mehta et al., 2019) for determining peer groups.

In our study, we investigate how group assignment effects both in-person and online social interactions. We leverage a novel dataset that combines high-resolution measures of social interactions (including physical proximity, calling/texting, and Facebook friendship data) with organizational assignment information. To measure the immediate and persistent effects of group assignment, we exploit an initial random placement of the participating students into groups upon admission to college.

Data and Context We use social interaction data from the Copenhagen Network Study (Sapiezynski et al., 2019) in combination with administrative data from the Danish Technical University. The majority of students admitted to the university in 2013 were randomly assigned to informal social groups within their study program shortly after students had accepted their admission. These groups, which are known as 'vector groups' would meet with a joint 'group mentor' throughout the first semester and be central for social introduction activities. Certain students would only accept the offers later and enroll with some delay into the study program. This led to groups being reconfigured. To address this issue we collected data on actual group assignments to gauge compliance with the random assignment.

Our measures of social interaction comprise measures of physical proximity from Bluetooth scan counts, number and duration of phone calls, text message counts, and information on Facebook friendships. The dataset we use has observations of between 200 and 100 students (depending on social interaction measure of interest and semester) who have both data on group assignment and social interaction.

Methodology To estimate the effect of random group assignment on actual interactions we consider the following two-stage dyadic model, similar to Harmon et al., 2019:

$$SameGroup_{ij} = \gamma_0 + \gamma_1 * SameStudyProgram + \gamma_2 * SameAssignedGroup_{ij} + v_{ij} \quad (1)$$

$$Interactions_{ijt} = \beta_0 + \beta_1 * SameStudyProgram + \beta_2 * \widehat{SameGroup_{ij}} + \varepsilon_{ijt} \quad (2)$$

where $SameStudyProgram_{ij}$ is a dummy for whether individual i and j have been in the same study program. Similarly, $SameGroup_{ij}$ and $SameAssignedGroup_{ij}$ are indicate whether i and j have been assigned to the same vector group and been part of the same vector group throughout the fall semester of 2013, respectively. $Interactions_{ijt}$ is the number of weekly average interactions during semester t within a certain channel (i.e. Bluetooth interactions outside of class, calls, sms) or, in the case of Facebook friendship, a binary indicator for the existence of a link between individuals i and j.

Results Our models show that there is a significant effect of random group assignment on real-life social interactions as well as communication via phone. This effect seems to be consistent but decreases over time. All in all, this suggests that assignment to social groups is an effective policy to influence with whom university students interact and form bonds.

Our results contribute to the understanding of how social networks form and to the credibility of using organizational assignment as 'peer group proxies'. In particular, although the groups only had an organizational purpose during the first semester, we find an effect that lasts beyond this time.

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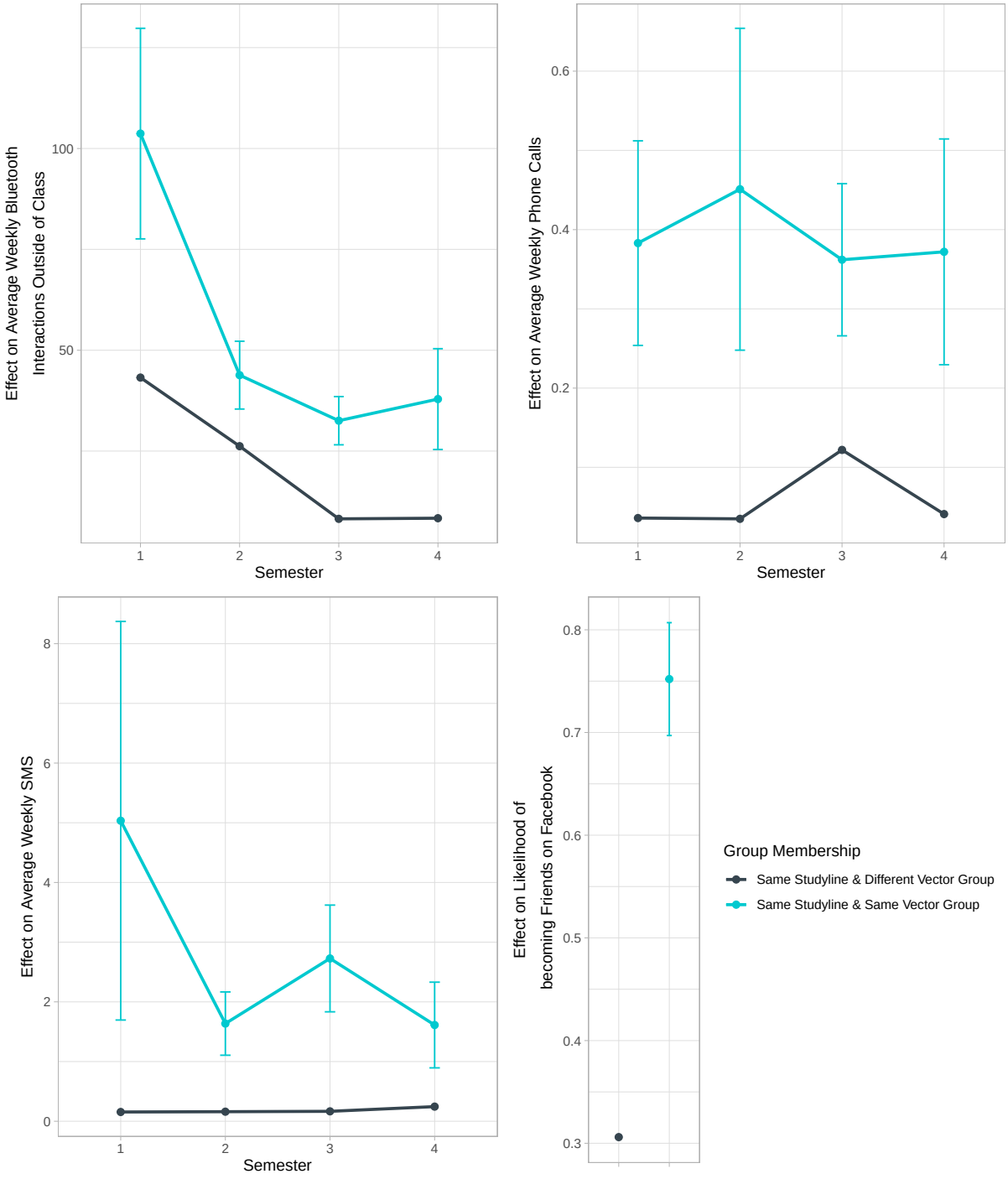

Figure 1: Effects of group membership on social interactions across different channels