



Self-control and peer groups: An empirical analysis



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ABSTRACT

We exploit the exogenous variation in peer groups generated by high school to college transitions to study the theoretical predictions of Battaglini et al.'s (2005) model of self-control in peer groups. We find evidence consistent with the two key predictions of this theory regarding the relationship between an agent's expected level of self-control and the size and composition of his or her social circles: (i) students embedded in social circles have more self-control than those who are alone and their self-control is increasing in the size of their social group; (ii) students' self-control is, however, a non-monotonic hump-shaped function of the average self-control of their friends.

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1. Introduction

In the majority of the theoretical literature on peer effects, the existence of peer influences is treated as a starting point. Instead of explaining the origins of the peer effects, the literature focuses on studying their implications for individual choices.¹ An exception is Battaglini et al. (2005), who propose a theory of social influences on self-control. The key question they address in the paper is: in the presence of self-control problems, is it beneficial to be exposed to the choices made by another player? In their model, no individual's action directly enters into other agents' payoffs. Instead, agents care about other agents' actions because of their informative content, and externalities arise endogenously from inferences among peers who observe each other's behavior.

The advantage of Battaglini et al.'s (2005) approach is that it provides testable predictions on the nature of the peer effects. Two theoretical predictions emerge from the analysis. First, observing how another agent deals with impulses and

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¹ See Jackson and Zenou (2015) for a recent survey.

temptation can be beneficial or detrimental, since this news can improve or damage the agent's ability to control his own impulses. The sign of the peer effect depends, in a predictable and endogenous way, on the expected type of the peer: observing another agent improves self-control when agents have at least a minimum level of expected self-control; it has the opposite effect when agents have a low expected level of self-control.

Second, when agents are heterogeneous in their expected levels of self-control, they generally value the “quality” of their peers non-monotonically. The ideal friend is someone with a slightly worse self-control problem than one's own: this makes one's own successes more encouraging and own failures less discouraging. Intuitively, there is little benefit from having a friend who is too self-controlled or a friend who is too impulsive. This fact is in contrast with the standard assumption that peer effects are monotonic and, indeed, linear in other players' actions.

In this paper, we use data from the National Longitudinal Survey of Adolescent to Adult Health (Add Health) to test these predictions. This panel is an ideal data set to test this theory since it provides information on self-control both for the individuals and for their friends. As a result, besides providing evidence on a specific model of social interaction, this paper contributes to the literature on peer effects by providing new evidence on the nature of peer influences in the presence of self-control problems.

The main challenge encountered in empirical studies on peer effects is the endogeneity stemming from the fact that individuals choose peers as well as actions.² Our analysis exploits the longitudinal nature of the Add Health panel, which follows six cohorts of individuals and their friends from adolescence to adulthood (from Grades 7–12 through ages 24–30) from the years 1994–1995. The central regression of our paper investigates whether, and to what extent, a student's ability to deal with her own impulses changes when the student's social circle is affected by the loss of an older friend who terminates the school program. The key assumption of our identification strategy is that, when a student graduates, social ties with younger schoolmates are terminated or attenuated.³ Graduation/termination of the school program, therefore, provides an exogenous shock to the social circle of the other members in lower grades who remain enrolled. To our knowledge, this dynamic feature of Add Health has not been exploited before in this way as a source of exogenous variation to test for peer effects.

Specifically, our analysis consists of regressions looking at individual self-control as a function of a set of socioeconomic characteristics and proxies for social influences. We first investigate whether people with strong social circles have more self-control than those without ties to peers. Next, we investigate whether self-control varies with the level of self-control of peers, allowing for non-linear effects. Our results show that, consistent with the theory described above: (i) students embedded in social circles have more self-control than those who are alone, and their self-control is increasing in the number of their peers; (ii) an agent's self-control increases with the average peers' self-control if the agent's self-control is sufficiently above the peers' average self-control, but it decreases if the agent's self-control is below the peers' average self control; (iii) having similar friends can be good, but too much similarity can be bad. These results are confirmed when we exploit an exogenous variation in the composition of the peer group.

Our work fits in a recent literature empirically studying the link between self-control and peer effects following Battaglini et al.'s (2005) theoretical work. Early contributions in this literature have focused on the possibility of contagion of self-control problems through peer effects. Contagion effects in obesity and smoking problems are found by Christakis and Fowler (2007) and Christakis and Fowler (2008), respectively. These results have, however, been disputed by Cohen-Cole and Fletcher (2008) who, after controlling for endogeneity issues, find no statistically significant contagion. A different approach is used by Buechel et al. (2014), who rely on laboratory experiments to explicitly study Battaglini et al. (2005) predictions. Similar to our work, they find a positive correlation between self-control in the study habits of undergraduates at Hamburg University and the quality of their social circles.

With respect to this and previous papers, our work distinguishes itself in two ways. First, while we exclusively rely on field data, we are able to use high school graduation as a source of exogenous variation in peer groups to identify causality. Second, we are the first to find non-monotonic peer effects on the self-control problem, a key prediction in Battaglini et al. (2005).

The paper is organized as follows. In Section 2, we discuss the theoretical predictions and the data in greater detail. Section 3 contains an exploration of the correlations that emerge from our data, while in Section 4, we exploit the exogenous variation in social networks described above to identify peer effects on self-control. In Section 5, we collect additional evidence to provide further confidence in the results of our analysis. Section 6 concludes.

² The other critical issue is the identification of the behavioral mechanism underlying peer effects (see Liu et al., 2014). For surveys of the recent empirical literature that incorporates network analyses into studies of peer effects and behavior, see Jackson (2014) and Jackson et al. (2014).

³ Although it is true that students may still be in contact after high school, it seems plausible to assume that the strength of social interactions is reduced. Online communication among adolescents was not as common during the years of the survey as it is now. There were just 5 and 16 internet users per 100 people in the US in 1994 and 1996, respectively, in contrast to the almost 90 per 100 we have today (World Bank, 2016). As psychologists postulate, a constant level of interaction is essential for people with self-control or addiction problems to find relief in self-help groups like Alcoholics Anonymous, Narcotics Anonymous, and similar organizations that are predicated on the mutual sharing of experiences. As a result, a shock to the intensity of social interactions would affect the transmission mechanism, even if interactions are not reduced to zero.

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