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Get thee to the gym! A field experiment on improving exercise habits

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ABSTRACT

We explore the efficacy of a combination of interventions to encourage exercise in a field experiment hosted at a large public university. The experimental groups include individuals and teams and those with and without information about peers. We find that team incentives are associated with greater behavior modification (e.g. more gym visits) than individual incentives. Information on peers' gym attendance (either in a team or individual setting) also promotes more frequent gym use relative to a simple individual incentive. In addition, being in a team and receiving information on peers are effective in changing a non-user of the gym to a user. We also observe that periodic information feedback has a longer-lasting impact on gym attendance than other interventions. Our findings provide insight for any organization seeking to incentivize behavior change in the most efficient, and cost effective, manner.

1. Introduction

We investigate the efficacy of incentives to exercise across a variety of treatment groups, including individuals, teams, and those with or without information feedback on peers' exercise behavior. The results of our field experiment suggest a greater efficacy of incentives when (a) people are part of a team, and (b) information feedback is provided on the performance of peer individuals and teams. The latter suggests that a competitive effect among peers exists and may be harnessed to augment the efficacy of an incentive without need of additional financial cost. In addition, we find that team incentives and information motivate people to become gym users, and information feedback has smaller, yet longer-lasting effects on gym attendance when all incentives are removed.

Exercise has numerous benefits. Exercise increases cognitive brain functions and improves mental clarity, which are positives for productivity whether in the workplace or higher education (Esteban-Cornejo et al., 2015; Howie and Pate, 2012; Steiner et al., 2011; Fox et al., 2010; Hillman et al., 2008). Additionally, exercise can improve health outcomes, reducing both absenteeism and health costs. Yet only 49% of American adults get the recommended amount of aerobic activity and 20% engage in the full recommended physical activity each week (Center for Disease Control and Prevention, 2014). Given the myriad of reasons to exercise and the lack of physical activity among adults, we conducted a field experiment to investigate the efficacy of various treatments to incentivize gym use among college students.

Our experimental design includes mechanisms that have a potential peer influence aspect on exercise decisions. First, we test the efficacy of team incentives versus individual incentives. Second, we provide information on other participants' gym attendance periodically, and analyze the role of information in individuals and teams. Lastly, we use lottery incentives instead of direct payments in exchange for exercise.

We find that individual lottery incentives alone are ineffective in changing participants' behavior. But when incentives are combined with team membership and/or information, gym attendance increases significantly. The highest improvement occurs for teams who receive information on other teams. In addition, being in a team and receiving information regularly, increase the probability of a non-user of the gym to become a user. Notably, our findings show that individuals who receive information on their peers' gym use exercise more than others after the experiment.

Given the short duration of our study, more research is warranted to see whether the information intervention indeed leads to habit formation. However, our findings are encouraging. The application of information and team membership can yield superior outcomes without increasing financial incentives, and is a result that should have widespread appeal. We believe these findings may be of interest to public and private institutions when designing wellness programs. Finally, our paper provides important insights for fitness and health clubs. Poor membership retention is a major challenge for fitness establishments in addition to

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increased competition in the industry (de Wild, 2015). Some of the common retention strategies are reaching out and engaging with the customer, offering discounts and organizing occasional group activities. But we believe the interventions suggested in this paper could be more effective by instilling an internal desire to exercise. The methods used in this paper can help increase the number and the duration of memberships in fitness clubs.

2. Background

Most behavioral economists would agree that financial incentives and behavioral interventions can motivate people into adopting desired behavior in important matters such as health, education, consumption and saving. They would also agree that finding the right incentive to motivate long-lasting change is a challenge behavioral research has yet to overcome. Although incentives may encourage improvements in the short run, we are still in search of mechanisms that lead to successful habit formation.

Whether extrinsic or intrinsic motives should be targeted is an ongoing debate; although any type of incentive can have adverse effects if not designed or implemented carefully (Gneezy et al., 2011; Schroeder and Fishbach, 2015). Several economic experiments test the efficacy of monetary rewards, the duration of treatments and combinations of both. For example, Charness and Gneezy (2009) find in one of the most prominent field experiments that longer interventions and higher financial rewards lead to increased attendance rates at the gym by previously non-active users. In a replication of this study, Acland and Levy (2015) report similar findings in the short run, however post-study improvements are significantly lower in the long run, especially after Winter break.

Offering larger financial rewards coupled with extended intervention periods prove to be more effective in outcomes such as quitting and abstaining from smoking (Volpp et al., 2009) than for weight loss or body mass index (BMI) reductions (e.g. Pope and Harvey-Berino, 2013). One of the reasons for this is that the latter are more complex goals and take more time and energy than others such as going to the gym or smoking one less cigarette (Cawley and Price, 2013; Loewenstein et al., 2016). Using a real-world workplace wellness program, Cawley and Price (2013) analyze the impact of financial incentives on weight loss, and observe high attrition rates and moderate changes in weight. The authors offer the suboptimal and confusing incentive design as a possible explanation for the results and recommend lottery incentives as an alternative payment method. More recently, in a large field experiment of 40 elementary schools, Loewenstein et al. (2016) study increased fruit and vegetable consumption in children, a goal that is less complex, by providing incentives over a long treatment period. The results show that even small incentives can promote healthy eating habits in children.

Cash and prizes through lotteries can indeed be more effective than direct payments since people tend to overestimate the likelihood of winning a prize (Kessler and Zhang, 2014). In a workplace health risk assessment initiative, Haisley et al. (2011) find that lottery incentives work better than direct payments to spur participation. Prize incentives have also been just as effective in school age children's healthy eating behavior and physical activity (Cuffe et al., 2012; Just and Price, 2013).

Another line of related research combines financial incentives with a social influence component, building on behavioral motives such as loyalty, shame, guilt, willingness to conform or compete with others. It is possible that such incentive structures are more effective than solely offering money to individuals. For example, Charness and Sutter (2012) find that teams make more rational choices than individuals. In the context of college students, Babcock et al. (2015) report that team based incentives increase the number of visits to the library and to the gym since most students wish to avoid disappointing their partners.

Further, a number of studies on energy consumption show that providing information about others' choices and relative feedback help people save more energy (Schultz et al., 2007; Allcott, 2011; Ayres et al., 2012). In a study of professional tennis players, Wozniak (2012) reports more efficient choices by players following relative performance feedback. In terms of schooling, Azmat and Iriberri (2010) find an increase in high school students' grades when the students receive information about whether their academic performance is above or below average. Though it is worth noting that such information treatments may have different short-run and long-run impacts; and information feedback may need to be discontinued for a while to allow for successful habit formation (Allcott and Rogers, 2014).

In this paper, we focus on exercise decisions of college students, in particular the number of weekly visits to the student recreation center. Some of the well-known studies in this field analyze direct financial incentives, different treatment durations (Charness and Gneezy, 2009; Acland and Levy, 2015), bundling instantly gratifying activities with exercise (Milkman et al., 2013), self-imposed commitment contracts (Royer et al., 2015; Vigna and Malmendier, 2006) and team incentives (Babcock et al., 2015) on gym use among adults.

Our experiment explores the efficacy of peer effects on exercise decisions through (a) team memberships and (b) regular information feedback on other participants, separately and in combination. In addition, we offer a weekly lottery to each intervention group instead of direct payments. The findings of our experiment are promising and to the best of our knowledge, this is the first experimental study to use an information based intervention on college students in the context of health behavior.

3. Experimental Design

West Chester University of Pennsylvania (WCU) is a public university in the southeast region of Pennsylvania. Enrollment exceeds 15,000 students. In June of 2012 WCU opened the Student Recreation Center (SRC): a state-of-the-art exercise facility on the main campus. The 71,800 square foot facility contains a wide range of exercise and sports opportunities (including a jogging track, group exercise studios, rock-climbing wall, racquetball courts, and a multi-activity gymnasium). All students have access to the SRC via their identification card (ID) at no additional cost after paying tuition and fees. The students swipe their card upon entry to the SRC. This provides a time stamp associated with their ID. We used this information to capture records of gym visits.

We recruited students during the fall semester of 2015. An online survey was circulated by email to the student body soliciting volunteers for the study. Eligible participants were identified as undergraduates currently enrolled at the institute between the ages of 18 and 23 and who self-reportedly used the recreation center 0–2 times a week. Thus, we targeted the non-frequent gym users for our study.

The final sample of eligible students who completed the informed consent on time was 181. Every student received a $10 gift card for completing and returning the informed consent form. Then the students were randomly assigned to one of five groups, as described below (Table 1).

Lottery

Each experimental group (except Control) had a weekly lottery draw for those who were eligible. The winner(s) received $80 Amazon gift cards and were still eligible for future weeks' lotteries.