Journal of Economic Behavior & Organization 119 (2015) 364–374

Contents lists available at ScienceDirect

Journal of Economic Behavior & Organization

journal homepage: www.elsevier.com/locate/jebo

Health club attendance, expectations and self-control☆

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ARTICLE INFO

Article history:
Received 25 October 2014
Received in revised form 30 July 2015
Accepted 25 August 2015
Available online 21 September 2015

JEL classification:
D00
D12
D91

Keywords:
Self-control
Gym attendance
Expectations

ABSTRACT

We use a unique dataset on health club attendance from Montreal (Canada) to look at the relationship between actual and expected attendance, and how these relate to a reported measure of self-control problems at the time of contract signing. Consistently with previous studies, a vast majority of contract choices are unlikely to be compatible with time-consistent behavior. For 56.83% of members, the actual cost per visit with the contract is higher than the pay-per-visit option. Conditional on paying more with a subscription, we calculate that the median cost of choosing a long-term contract over the per-visit option is $346.45, excluding any commitment value. However, we compute that nearly all members would have paid less with the long-term contract if they had exercised as often as they initially planned. We study how actual attendance following contract choice is related to baseline reports of self-control. We find that reports of self-control problems are associated with low future attendance and with faster decrease in attendance, in particular after New Year, but not with expected attendance. Our results are consistent with a model of health club participation where agents underestimate the severity of their self-control problems. We find that individuals with a large gap between expected and realized attendance have a lower probability of contract renewal which has implications for mechanism design to retain customers.

1. Introduction

Many tasks require individuals to exert immediate effort in exchange of delayed benefits. Activities that involve prevention or investments, such as exercising at the gym, fall into this category (Andersen, 1999). As one would expect, these tasks are prone to procrastination and individuals often fail to perform them timely, even if doing so would be in their own long-run interest.

As pointed out by O'Donoghue and Rabin (1999), time-inconsistent preferences and the lack of immediate gratification may explain delays, procrastination, and lack of willpower (Metcalfe and Mischel, 1999). These may entail significant welfare costs, even when the present-bias is small. In the context of gym attendance, time inconsistency may also come at a significant

☆ We thank Jean-Yves Duclos, Marie-Louise Leroux and Pierre Lefebvre for their comments, participants at the Canadian Economic Association Meetings in Montreal 2013 and two anonymous referees for their comments and suggestions, and David Boisclair for editorial assistance.

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http://dx.doi.org/10.1016/j.jebo.2015.08.015
0167-2681/

financial cost if individuals are not sophisticated enough to predict their future self-control problems. In particular, systematic over prediction of future attendance may lead them to choose a long-term contract.

DellaVigna and Malmendier (2006) look directly at these issues in the context of gym membership and attendance. The authors collected data from three health clubs in New England. They found that the average price per visit for individuals with a membership was much higher than the price they would have paid without being a member. A key explanation was that members were too optimistic regarding future attendance at the time of choosing their type of membership. They collected additional data from a smaller sample of gym members in California to obtain information on attendance expectations and found that expectations appeared much higher than actual gym attendance. However, as they could not survey the respondents of the health clubs for which they had data on attendance, this precluded them from analyzing the relationship between expectations and actual attendance at the individual level. In two field experiments, Charness and Gneezy (2009) analyzed how the frequency of gym attendance is influenced by monetary incentives. They found a large increase in participation, entirely driven by self-reported low-attendance individuals. Using an experimental design with students, one can interpret their results as evidence of both self-control problems and habit formation. In another experiment involving students, Acland and Levy (2013) provide direct evidence of over-prediction in the frequency of workouts, which strongly supports the hypothesis of time-inconsistent behavior.

In this paper, we provide new evidence on expected and actual gym attendance using a novel data set which contains measures of expected and actual visits at the gym. We also obtain reports of self-control problems at the start of the contract period for the same members. We make use of administrative and self-reported data from a large network of health clubs in Montreal (Canada) to provide direct evidence of naiveté in a commercial setting. Given that we have data on subsequent renewals, we are also able to study whether a lack of sophistication reduces the likelihood of contract renewal, in the absence of an automatic renewal mechanism or targeted efforts to retain customers. In contrast with Acland and Levy (2013), we have data of individuals purchasing health club memberships on the marketplace, along with unincentivized measures of expected and actual attendance.

We find that members typically over-estimate their attendance when initially choosing the year-long contract. Purely on financial grounds, we find that 56.83 percent of them end up paying more per visit with than without a contract. On the other hand, if all individuals had worked out as often as they expected initially, nearly all of them (99.3%) would have ended up paying less with a contract. Considering only those whose average cost per visit was higher than the pay-per-visit option, the median (mean) annual excess cost is $346.45 ($398.25).

Systematic over-estimation of workout frequency, coupled with the fact that individuals end up paying more per visit with the long-term contract than with the per-visit fee, appear incompatible with time-consistent behavior. Under time-consistent preferences, optimally choosing a long-term contract would necessarily entail a lower cost per visit. Contrastingly, unsophisticated individuals with self-control problems can end up paying more because they over-estimate how often they will attend the gym. Finally, members who are partially sophisticated still make this type of mistake, but they also recognize that taking the contract will reduce their daily cost of going to the gym. If they prefer paying up front as a commitment mechanism, they may end up paying more per visit (DellaVigna and Malmendier, 2006).

We find that reported self-control problems correlate negatively with actual attendance, but not with expected attendance. Our analysis suggests that someone who declares having problems of self-control also visits the gym less often, but fails to anticipate their low attendance (they expect the same attendance as those not reporting problems of self-control). Our reported measure of self-control problems may possibly be correlated with the level of self-control problems, but also with sophistication and with an individual's particular distribution of immediate costs to workout. We show that our evidence is consistent with a setting in which those who report self-control problems are less sophisticated than those who do not. However, we cannot separate whether they also have lower self-control or a higher frequency of high-cost days.

In Section 2, we present a model that allows us to derive predictions regarding the relationship between expectations, actual attendance and self-control problems. In Section 3, we introduce the data and methods used in the empirical analysis. Section 4 presents the results, and discusses how they may be rationalized using the standard quasi-hyperbolic model with partial sophistication. Section 5 concludes.

2. Heath club contracting and expectation formation

To understand the determinants of expected and actual attendance, we present a simple model where individuals possibly underestimate their degree of self-control. We build on the quasi-hyperbolic discounting framework of DellaVigna and Malmendier (2006), which applies the framework of O'Donoghue and Rabin (1999) in a context of gym attendance using quasi-hyperbolic discounting (Laibson, 1997).

An individual acts for a large number of periods indexed by $t = 0, 1, \ldots, n$. One period represents a single opportunity to exercise at a health club, for example, every two days. The timing of the problem is as follows: at $t = 0$ the agent signs a membership contract with the health club. For all subsequent periods $t > 0$, he sequentially decides whether he exercises.

We denote a contract by a triple $(n, \theta(n), \gamma(n))$ where n is its duration, $\gamma(n)$ is the fee that must be paid upon signing it, and $\theta(n)$ is a per-visit fee. In the case of long-term contracts, θ is typically zero and γ represents the present value of the (fixed) cost on the contract, which does not depend on the number of visits. This is the case with all long-term contracts that were offered to individuals in our dataset. Since almost 100% of them chose that contract, we impose $\theta = 0$.