

# Using Insights from Behavioral Economics for the Design of Financial Group Incentives Improving Medication Adherence - An Experimental Analysis

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## **Extended Abstract:**

Nonadherence of patients to prescribed medication constitutes a major problem for health care efficiency (Sabaté, 2003). Medical adherence is thereby most often defined as the extent to which a patient's behavior follows medical advice (Haynes, 1979). Recent studies reveal that medication adherence varies on average from 40% to 65% for chronic diseases like asthma, diabetes or heart diseases (Turcu-Stiolica et al., 2018). The resulting consequences are manifold: patients with poor adherence suffer from an increased mortality risk (Huber et al., 2016), run the risk of sustained morbidity (Engelkes et al., 2015) and in some cases even develop drug resistance (Sethi et al., 2003). Moreover, nonadherence lead to additional health care costs. For example in the United States, 33%-69% of all medication-related hospital admissions are traceable to poor adherence, which yields annual costs of more than \$100 billion (Osterberg and Blaschke, 2005).

Increasing adherence with medication therefore continues to be a primary target of efforts to improve health outcomes for patients with chronic disease. The literature has shown that medical nonadherence is not the result of a general information gap but instead is associated with patients' motivation and their capabilities (Boeni et al., 2014). In particular, patients

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balance reasons for and against medication intake and discontinue with therapy as soon as they value further adherence as a disadvantage (Yu et al., 2016).

One promising approach to motivate patients to continue with therapy is to provide financial incentives (Lewis and Block, 2016). Promoting medication adherence through monetary incentive schemes has received considerable attention within the last decades and researchers have tried to develop effective interventions to incentivize adherence (Priebe et al. 2013). However, empirical studies have shown that the effect of financial incentives on medication adherence is only moderately at best (DeFulio and Silverman, 2012).

Our study aims to correct for these mixed empirical findings by demonstrating both conceptually and empirically that financial incentives can be extremely effective in increasing medication adherence. In a first step, we use a framework based on the principles of behavioral economics to gain a profound understanding of medication nonadherence from an economics perspective and unravel the central economic reasons why patients stop taking their medicine in the course of their therapy. In a second step, based on the insights of our conceptual model, we design two financial incentive schemes based on theories of behavioral economics, health and personnel economics. In particular, social effects, guilt aversion and peer competition are incorporated into tailored group-contingent bonus schemes.

We test the effectiveness of these financial incentives by the use of a controlled laboratory experiment. We hereby abstract away from any medical treatment and design a conventional economic laboratory experiment which simulates the course of events inherent in medical treatments from an economics perspective. In total 112 student participants took part in our experiment.

We find that both incentive schemes significantly increase adherence behavior by more than 50% compared to a baseline without any financial incentives at all. These results suggest that financial incentives have to be more tailored to the specifics and characteristics of the behavioral problem of medical nonadherence in order to be effective.