



Contents lists available at [ScienceDirect](#)

# Journal of Economic Behavior & Organization

journal homepage: [www.elsevier.com/locate/jebo](http://www.elsevier.com/locate/jebo)



## Behavioral coordination as an individual best-response to punishing role models<sup>☆</sup>

Gautam Bose<sup>\*</sup>, Evgenia Dechter, Gigi Foster

School of Economics, University of New South Wales, Australia

### ARTICLE INFO

*Article history:*

Received 4 April 2016

Received in revised form 6 March 2017

Accepted 17 March 2017

Available online xxx

### ABSTRACT

Behavioral norms vary widely across social groups, in areas as diverse as fashion, table manners, and gender roles. In spite of increasing interactions and mobility across nations, significant differences persist in norms across societies. What sustains these different norms? We demonstrate how behavioral coordination on a particular norm can result through the simple mechanism of individuals selecting rational responses to a social environment where they encounter repeated signals from anonymous members of the group that include both role-model behavior (e.g., behavior in line with the norm) and punishment (e.g., negative material consequences when the individual does not exhibit behavior in line with the norm). We explore the intuitive theoretical logic of this mechanism, and gauge its empirical strength by running experiments in which we construct this type of social environment in groups of various sizes and then manipulate the frequency with which participants in those groups encounter the role-model and punishment signals. Our results illuminate a behavioral mechanism of learning that is intuitively familiar, but has not been explicitly investigated in the literature as a driver of group-wide coordination on economic choices.

© 2017 Elsevier B.V. All rights reserved.

### 1. Introduction

Thomas Schelling (1960) and Peyton Young (1993, 1996, 2001, 2015), amongst other economists, have pointed out the power and merit of conventions in structuring social behavior. An established convention that is widely accepted and followed allows agents to reliably predict the outcomes of frequent interactions with others, and therefore reduces transaction costs. Young defines a convention as “an equilibrium that everyone expects in interactions that have more than one equilibrium” (page 105 of Young, 1996). He goes on to discern two ways in which conventions become established: by central authority, and by the “gradual accretion of precedent” (page 106). The first of these mechanisms is self-explanatory. The second refers to a process of repeated interactions, through which people learn by observation the expected way of conducting the interaction, and one way among many gains an edge over others owing to chance. The chance unfolding of the same dynamic process in different settings may therefore lead to different conventions being established in different societies.

In this paper, we explore a third mechanism through which conventions might become established: through the sustained effort of a sub-group of agents that are committed to a specific convention. We call these agents “true believers”. We argue

<sup>☆</sup> We are grateful to the BizLab for providing the venue in which these experiments were conducted. We acknowledge the excellent research assistance of Justin Cheong and Le Zhang, as well as helpful comments from Chris Gibbs, Ben Greiner, Peter Kriesler, Terra McKinnish, two anonymous referees, and participants at the 2014 SABE/IAREP joint conference.

<sup>\*</sup> Corresponding author.

that, while the choice of a particular convention is a matter of indifference to one segment of a group (whom we might call “non-believers”), another segment may deem the choice of a specific convention to be so important that they will uphold that convention, even in the face of immediate personal loss from doing so. In such a situation, if the true believers are large enough in number, they may be able to force the establishment of the convention within the whole group.<sup>1</sup> This influence happens due to a learning process similar to that sketched by Young (1993): as the non-believers interact repeatedly and randomly with each other and with the true believers, they learn about the kind of behavior practiced and found acceptable by others. Since true believers remain inflexible in their choice of actions, while the remaining agents adapt to the social expectations they perceive—essentially the process observed by psychologists when a minority is consistent in expressing its beliefs (Moscovici et al., 1969)—the non-believers are guided to converge on the convention as they repeatedly interact with members of the group.<sup>2</sup> Young’s process of “gradual accretion of precedent” is rendered more insistent and less stochastic by the individual, possibly self-sacrificial, actions of the true believers.

We study this possibility of social influence by true believers in an experimental setting. We choose this approach because the complexity and dynamism of social life makes the identification of the emergence of and conformity with conventions in the real world a formidable challenge. In a highly influential paper (Manski, 1993), Charles Manski discusses the challenge to social science that is presented by what he terms “endogenous effects”, meaning the influence of other members in a group (termed the ‘reference group’) on a particular member’s behavior. He states (p. 532): “Inference on endogenous effects is not possible unless the researcher has prior information specifying the composition of reference groups. If this information is available, the prospects for inference depend critically on the population relationship between the variables defining reference groups and those directly affecting outcomes.” Our experimental approach enables us to exert some exogenous control over the reference group, which we use to observe different trajectories of individual behavioral change as we adjust the qualities of that reference group while leaving fixed all other facets of the problem.

The convention we study in this experimental setting is value-neutral in the sense that, conditional on compliance with the convention across the group, individual payoffs are equal across all players in each round, and independent of the convention. Our approach allows us to observe the strength and type of influence of true believers in driving whole-group coordination on the convention: a special if extreme case of what Manski terms endogenous effects. We use a modification of the repeated ultimatum bargaining game with random matching, so that true believers can inform the rest of the population about their preferred conventions through their offers, and punish deviants through their responses. Our proposed mechanism works through simple individual best-response to a type of social setting which is contended in Frijters (2013) to characterize most human groups.

Our experiment simulates a range of social environments by varying the proportion of computerized players—the true believers—who consistently follow a particular decision rule. Subjects participate in 50 rounds of the ultimatum bargaining game, playing simultaneously as givers and receivers, and are sometimes paired at random with the computerized participants. We hypothesize that in groups with larger proportions of true believers, human subjects will converge more strongly towards the convention prescribed by those true believers. Our results indicate that the presence of true believers in a group can have a strong impact on human behavior, as evidenced by the substantial differences in outcomes we find across treatments. By the final rounds of play, higher offers on average are observed in settings in which true believers offer 60% of the stake and reject offers which are less than 60% of the stake. When we remove the punishment inherent in the latter rule, by programming true believers to offer 60% of the stake and accept all offers, humans make significantly lower offers on average. However, the high-offer equilibrium can be sustained amongst human participants only if the fraction of true believers in the group is sufficiently high (40% or 60% in our experiments). To have 20% of the group made up of true believers is not enough: in such a case, humans’ behavior is similar to what is observed in the equilibrium that emerges in a baseline game without interventions (namely, 30–40% of the stake offered by the first mover). A higher fraction of true believers in a group also leads to faster convergence towards the focal convention. Rejection rules, which we measure by eliciting rejection thresholds, respond less than offers to the changing social environment but still show some evidence of convergence towards the rejection rule upheld by true believers.

The remainder of the paper is organized as follows. After briefly reviewing the contributions of social science more broadly in making sense of social conventions, we proceed by introducing a conceptual framework that describes the social and economic context in which economic decisions are made in our experiment. We then show how self-interested, updating individuals can unwittingly coordinate over time when true believers are present in a group. Following this, we describe our experiment in detail, and then compare its results to what would be predicted by the individual best-response-based mechanism we propose.

### 1.1. The social role and rationale of conventions

People raised in different cultures often come to attribute value to the (different) conventions used by their cultures. This may result from socialization, which over time leads a person to believe that the convention adhered to in his or her society

<sup>1</sup> Although other economists have tackled the subject elsewhere (e.g., Benabou and Tirole, 2006), we omit from this paper a discussion of why true believers might feel committed to a particular convention.

<sup>2</sup> This is similar to the story in Chamley (2004) of how information propagation through the group creates social equilibria in pessimistic/optimistic behavior, although in our setting agents can access information only about their own interactions, not those of others.

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات