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Sequential decision-making with group identity

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ABSTRACT

In sequential decision-making experiments, participants often conform to the decisions of others rather than reveal private information – resulting in less information produced and potentially lower payoffs for the group. This paper asks whether experimentally induced group identity affects players' decisions to conform, even when payoffs are only a function of individual actions. As motivation for the experiment, we show that U.S. Supreme Court Justices in preliminary hearings are more likely to conform to their same-party predecessors when the share of predecessors from their party is high. Lab players, in turn, are more likely to conform to the decisions of in-group members when their share of in-group predecessors is high. We find that exposure to information from in-group members increases the probability of reverse information cascades (herding on the wrong choice), reducing average payoffs. Therefore, alternating decision-making across members of different groups may improve welfare in sequential decision-making contexts.

1. Introduction

A large literature in the social and behavioral sciences has documented how biases in favor of one's group and against outsiders play a substantial role in human social relations (Hogg, 2013). In behavioral economics, research has focused on how group identity bias affects social preferences and outcomes in public goods games (Eckel & Grossman, 2005). This paper asks whether group identity affects individuals' decisions to conform to the actions of others in sequential decision-making contexts, where our main evidence comes from a controlled lab experiment.

As motivation for the lab experiment, we first explore whether group identity affects real-world decision-making in a high-stakes context. We analyze the voting decisions of U.S. Supreme Court Justices in preliminary case hearings, where judges sequentially announce their votes for each case on the docket. Our empirical approach uses the political party of the appointing president as a proxy for group membership (Segal & Spaeth, 2002), and quasi-experimental variation in voting order induced by judge absences, turnover, and recusals.

We find that judges are more likely to herd when they follow more of their in-group members in the voting order, consistent with Spenkuch, Montagnes, and Magleby (2018) on herding in U.S. Senate roll-call votes. Arguably, U.S. Supreme Court decisions are some of the most important policy choices in the United States. The fact that voting order can induce more conformism by group in the Court's preliminary hearings speaks to the potential relevance of group identity in these contexts.

To better understand these mechanisms in a controlled setting, we use a laboratory experiment that isolates the effect of group identity on sequential decision-making when payoffs are not a function of collective actions. Our experiment builds upon Anderson

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and Holt's (1997) classical information cascades experiment in which players publicly guess a random state of the world after being shown a private informative signal. Because players act sequentially and observe the actions of their predecessors, they often ignore their private signals, conform to the actions of their predecessors, and form information cascades (Anderson & Holt, 1997).[1] However, previous experimental studies have shown that players form cascades less often than theory would suggest (Cao, Han, & Hirshleifer, 2011; Cipriani & Guarino, 2005; Huck & Oechssler, 2000; Hung & Plott, 2001; Goeree, Palfrey, Rogers, & McKelvey, 2007; Kraemer, Noth, & Weber, 2006; Kubler & Weizsacker, 2004; Spiwoks, Bizer, & Hein, 2008; Weizsacker, 2010; Ziegelmeyer, March, & Krugel, 2013). Our contribution is to instill feelings of group identity in lab players to help explain why information cascades are more likely to occur in some settings, but not in others.[2,3]

We find that group identity affects the probability that cascades occur in our experiment. Relative to players in control rounds (where group identities are hidden), players in treatment rounds (where group identities are revealed) are more likely to conform to the actions of in-group predecessors and less likely to conform to the actions of out-group predecessors. Social welfare is 15 percentage points lower in rounds where players observe the actions of only in-group predecessors compared to rounds where players observe the actions of only out-group predecessors. Welfare is reduced in these rounds because players are more likely to ignore their private signals, particularly on "tie-breaking" turns, and to form cascades on incorrect actions (i.e., reverse cascades).

We also find an asymmetry in how group identity affects players' choices. On turns in which players draw signals that do not match their predecessors' actions, players are more likely to ignore their private signals and conform to their predecessors' actions when their predecessors are members of their group. In contrast, on turns in which players draw signals that match their predecessors' actions, players are equally likely to choose actions that match their signals regardless of the group identities of their predecessors. This result suggests that in-group identity bias induces players to conform, but only when they receive contradictory information.

Our results imply a simple yet powerful policy recommendation. Committees and other sequential decision-making bodies should adopt an alternating-groups rule, where the voting sequence is deliberately ordered to alternate between groups. With this rule, individual members may be more likely to reveal their private information and therefore less likely to form information-destroying cascades. An alternating-groups rule might result in more efficient revelation of information and therefore better decision-making in courts, committees, and other collective decision-making bodies.

2. Group identity literature

This paper contributes to previous work on induced group identity in experimental economics. However, this literature mostly finds that in-group favoritism improves the welfare of in-group members. For example, Eckel and Grossman (2005) find that in-group bias can reduce free-riding in public goods games. Charness, Rigotti, and Rustichini (2007) find that players play more aggressively against out-group members in Battle of the Sexes and Prisoners' Dilemma games, and the effect is strongest when group membership is rendered salient. Using a broader selection of games, Chen and Li (2009) produce evidence consistent with higher altruism toward in-group members relative to out-group members, while Masella, Meier, and Zahn (2014) find that performance incentives can crowd out in-group altruism. All of these papers describe how group identity affects players in strategic settings where players have the opportunity to help or hurt others. The equilibrium outcome, in-group favoritism in social dilemmas, can be rationalized in an evolutionary game-theoretic framework (Fu et al., 2012). In our setting, however, there is no social dilemma, no scope for cooperation or conflict. Yet we still find that group identity affects decision-making, and we find that in-group bias can make players worse off.

Our results are consistent with a burgeoning literature on how group identity affects information processing and revelation. Le Coq, Tremewan, and Wagner (2015), for example, find that players matched from different groups persist longer in centipede games because players believe that out-group members are more likely to act randomly, rather than act strategically. Lee, Hosanagar, and Tan (2015) find that movie-goers are more likely to herd on movie reviews following their friends' reviews compared to strangers' reviews. Previous literature in social psychology has also shown that group membership affects information processing via social projection (Acevedo & Krueger, 2005; Ames, Weber, & Zou, 2012; Robbins & Krueger, 2005). The novel result of our study is that group identity affects information processing even when players do not have incentives to consider group identities when updating their beliefs.

3. Preliminary hearings of the U.S. Supreme Court

To motivate the importance of group identity in sequential decision-making contexts, we analyze vote data from preliminary case

[1] Celen and Kariv (2004) distinguish between herds and information cascades. Herds form when an infinite sequence of agents choose the same action, while information cascades form when an infinite sequence of agents choose the same action *and* their signals differ from the actions that they chose (Celen & Kariv, 2004). Therefore, information cascades are a special case of herding. We focus on information cascades because they are more likely to have negative consequences for player welfare.

[2] Our strategy for instilling feelings of group identity follows the literature on group identity and social preferences (Chen & Li, 2009; Masella et al., 2014).

[3] Fahr and Irlenbusch (2011) take a different approach to adding groups to the information cascades experiment: they compare decisions made by small groups to decisions made by individuals and they find that small groups are more likely to choose actions according to Bayes' Rule. (Fahr & Irlenbusch, 2011).