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Misery loves company: Social regret and social interaction effects in choices under risk and uncertainty

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ABSTRACT

Extensive field evidence shows individuals' decisions in settings involving uncertainty depend on their peers' decisions. One hypothesized cause of peer group effects is social interaction effects: an individual's utility from an action is enhanced by others taking the same action. We employ a series of controlled laboratory experiments to study the causes of peer effects in choice under uncertainty. We find strong peer group effects in the laboratory. Our design allows us to rule out social learning, social norms, group affiliation, and complementarities as possible causes for the observed peer group effects, leaving social interaction effects as the likely cause. We use a combination of theory and empirical analysis to show that preferences including "social regret" are more consistent with the data than preferences including a taste for conformity. We observe spillover effects, as observing another's choice of one risky gamble makes *all* risky gambles more likely to be chosen.

1. Introduction

There is often a strong relationship between the decisions of an individual and the choices they observe their peers making. Peer group effects have been identified for many important decisions including saving and investment decisions, criminal activity, drug use, divorce, out-of-wedlock fertility, educational attainment, and welfare use.[1] Choice under risk and uncertainty is an important element of many of these decisions, such as criminal activity and out-of-wedlock fertility, and is central in the case of savings and investment choices (Duflo and Saez, 2002, 2003; Madrian and Shea, 2000; Kelly and Ó Gráda, 2000; Hong et al., 2004).

Many possible causes have been identified for peer group effects. A particularly intriguing possibility is that an individual's utility from an action is enhanced by others taking the same action. To fix terms, we refer to the empirical phenomenon that an individual's choices are correlated with the choices of his peers as a "peer group effect." As a potential explanation for peer group effects, the possibility that others' actions appear directly in an individual's utility function is referred to as a "social interaction effect." The primary goals of this paper are to use laboratory experiments to cleanly identify the existence of social interaction effects in choices under risk and uncertainty and, most importantly, to understand the nature of social interaction effects in such settings. We focus on *social regret* as a plausible source of social interaction effects in choices

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[1] Notable examples include Crane (1991), Sacerdote (2001), Hoxby (2000), Lalive and Cattaneo (2005), Case and Katz (1991), Glaeser et al. (1996), Katz et al. (2001), Ludwig et al. (2001), Kling et al. (2005), Bertrand et al. (2000), Aizer and Currie (2004).

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under risk and uncertainty. "Regret" refers to disutility experienced when an action not taken would have led to higher payoffs ex post (Loomes and Sugden, 1982; Bell, 1982, 1983). "Social regret" means that regret is less intense if others have chosen the same. In other words, misery loves company.

Identifying social interaction effects in observational data is notoriously difficult due to suspicions of omitted variable bias (Manski, 1993, 1995). Peers whom we might expect to influence one another are likely similar in ways not fully captured by observable characteristics. If peers are similar in their unobserved taste for risk taking behavior (possibly due to self-selection into peer groups) or are subject to unobserved common shocks that affect their decisions, we would expect to observe positive behavioral correlations even in the absence of social interaction effects. Adding to these difficulties, social learning (e.g. Banerjee, 1992; Bikhchandani et al., 1992) and knowledge spillovers also provide good explanations for many examples of peer group effects.[2] Little work has been done on separating these informational stories from social interaction effects. The controlled environment in laboratory experiments allows us to cleanly identify the existence of social interaction effects in choices under risk and uncertainty. Using a combination of theory and empirical analysis, we show that these social interaction effects are better explained by preferences including social regret than preferences including a taste for conformity.

We focus on choice under risk and uncertainty for two reasons. First, as noted previously, this is a common element linking many situations in which peer group effects have been observed. Second, we are interested in documenting a specific cause of social interaction effects, social regret, which has not been identified in previous studies of peer group effects. Choice under risk and uncertainty is a setting in which social regret is natural. In other settings in which peer group effects have been observed, social regret is a less likely mechanism.[3]

Going into the details, participants make a series of choices between pairs of gambles that vary in expected value, risk, and ambiguity. The series of choices between gamble is repeated three times, with the order randomly scrambled and no feedback about realized outcomes. Critically, subjects are randomly divided into groups of six. In the "private feedback" treatment, subjects receive information about the choice they made the last time they faced the same pair of gambles in a previous round. In the "social feedback" treatment, subjects receive this information as well as information about the other group members' choices the last time they chose between the same two gambles. We refer to this information about others' decisions as "social feedback."

To help us understand the possible effects of social feedback, we develop a model of decision making for our experimental environment. The predictions generated by this model allow us to separate between possible causes of peer group effects. Assume preferences include social regret. Averaging across groups, subjects are predicted to be more likely to switch away from risky gambles in the social feedback treatment. If we assume preferences for conformity rather than social regret, social feedback is not predicted to change the likelihood of switches away from risky gambles. Instead, averaging across groups, individuals with social feedback are predicted to be more likely to switch to the more popular gamble *across groups*. The same prediction holds if peer group effects are due to pure imitation driven by bounded rationality.[4]

Data from the social feedback treatment exhibits strong peer group effects. Controlling for reversion to the mean, the likelihood of switching gambles increases by fifteen percentage points if the majority of the social feedback disagrees with the subject's lagged decision. This is a large effect since the overall frequency of switching is only twenty percentage points. Compared with the private feedback treatment, social feedback causes subjects, averaging across groups, to be more likely to switch away from choosing riskier gambles. No tendency is observed for popular gambles, averaging across groups, to become more popular over time. Given our theoretical results, these observations indicate that social regret is a better explanation for the observed peer effects than preferences for conformity or pure imitation. This establishes social regret as a new source of social interaction effects, one which should be particularly relevant in situations that involve choice under uncertainty and risk.

Ambiguous gambles were included in the design as an additional tool for identifying the roles of social learning and imitation in generating the observed peer group effects. Models incorporating social learning and imitation predict that the response to social feedback will vary depending on the presence and type of ambiguity, but these predicted effects are absent in the data. Although not conclusive by themselves, these results provide additional evidence that the peer group effects in our data reflect social regret rather than social learning or pure imitation due to bounded rationality.

As noted previously, elements of risk and uncertainty are present in many settings where peer group effects have been observed. This raises an interesting question: if peer group effects share a common link across many settings, how context specific are these effects. Specifically, if I observe my peers taking a risky action in one situation does this make me more likely to take risky actions in other situations as well? Our theory of social regret implies this and our data supports this

[2] Social learning and knowledge spillovers both involve gaining information from peers, but differ in whether information is acquired indirectly or directly. See Section 3 for detailed descriptions of social learning and knowledge spillovers.

[3] There are a number of existing experimental papers on peer group effects: see Falk and Ichino (2006) on work effort, Falk and Fischbacher (2002) on reciprocity and crime, Falk et al. (2002) and Großer and Sausgruber (2007) on public goods provision, Fortin et al. (2007) on tax evasion, and Thöni and Gächter (2008) on gift exchange. These are settings where we would not expect social regret to play a central role.

[4] Predicting that individuals with social feedback are more likely to switch to the more popular gamble *within their group* need not imply a shift of the average *across groups*. As an illustration, consider a pair of gambles where individuals are indifferent *ex ante* and hence equally likely to choose either gamble. With social feedback, suppose subjects are more likely to switch to a gamble previously favored by the majority of others in their group, with the size of the effect independent of which particular gamble was more popular. Across groups the feedback effect is equally likely to favor either gamble, so average play *across groups* does not shift with social feedback.