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Cognitive dissonance, pessimism, and behavioral spillover effects

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ABSTRACT

A two-stage experiment was designed to examine spillover effects of a type of optimism/pessimism. We first exploit cognitive dissonance to induce optimism/pessimism by random assignment of high/low piece rates for performing a task. Subjects receiving the low piece rate are significantly more pessimistic with respect to performance. In Stage 2 individuals participate in an ultimatum game. Pessimistic subjects have significantly lower minimum acceptable offers, though pessimism was randomly generated in an unrelated environment. These results reveal behaviorally and economically important spillover effects – for example, pessimism regarding one's initial conditions (e.g., living in poverty) may have spillover effects on one's future labor market outcomes.

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1. Motivation

Individuals' expectations play an important role in most decision environments. As such, the presence of any bias in subjective expectations can affect many economic outcomes. Two of the most common types of biases affecting expectations (and hence outcomes) are the tendencies towards optimism or pessimism in individuals' beliefs and attitudes. Optimism or "over-confidence", for example, can take on many forms (see Babcock & Loewenstein, 1997; Rabin, 1998). Over-confidence may increase the likelihood of dispute in a bargaining environment (Babcock & Loewenstein, 1997; Dickinson, 2006), affect the manner in which individuals make financial decisions (Barber & Odean, 2001; Odean, 1998), or increase the likelihood of careless decisions if the over-confidence is with respect to one's driving skills (Svenson, 1981) or one's health (Weinstein, 1980). However, in a task domain more relevant to this present paper, Clark and Friesen (2009) find a higher prevalence of underconfidence or pessimism with respect to one's forecast of absolute ability in an unfamiliar task.² Thus, the direction of belief bias is likely context specific and, as we suggest, can be manipulated at some level.³

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E-mail addresses: dickinsondl@appstate.edu (D.L. Dickinson), oxoby@ucalgary.ca (R.J. Oxoby).¹ Tel.: +1 403 220 2586.² Hoelzl and Rustichini (2005) find individuals optimistic with respect to their own abilities, though their results suggest that pessimism is more prevalent during difficult tasks when money is at stake.³ It is important to note that in many circumstances over-confidence in one domain often imply pessimism in another: over-confidence in the information one receives (as in Rabin & Schrag, 1999) or in the advice received from others (as in Rabin, 2002) implies pessimism regarding one's own private information and relative abilities.

This present paper examines expectations in a unique environment in which we explore first how a type of optimism or pessimism can be induced and, secondly, how these induced beliefs in one area can affect behavioral outcomes in another unrelated environment. To avoid confusion with the numerous uses of the terms optimism/pessimism, we specifically consider an individual's beliefs about her own absolute abilities on a cognitive task—namely, a letter-ordering task. We induce optimism or pessimism via the ex-post random assignment of a high or low piece rate wage for performing this cognitive task. We observe significantly more pessimism (i.e., expected output less than actual output) among subjects who are randomly assigned a low piece rate wage. The opposite occurs (i.e., optimism) for subjects paid the high piece rate wage. Our ability to manipulate or induce optimism or pessimism in this environment can be explained by theories of cognitive dissonance (e.g., Aronson, 1992), where the generation of an optimistic or pessimistic belief can reduce an inherent conflict between cognitions. We then conduct a second stage to the experiment in which these same subjects engage in a simple, yet unrelated, bargaining (ultimatum) game.

Our results highlight two important conclusions: First, consistent with cognitive dissonance theory, we are able to induce a specific type of optimism/pessimism with the initial random wage assignment. This implies that we can successfully manipulate an important psychological construct in the lab, at least at a micro-level. Secondly, subjects who received this low piece rate were willing to accept lower offers in the second-stage ultimatum game. This finding is striking, demonstrating that random shocks to a component of one's psychological capital can lead to spillover effects onto behavioral outcomes in an entirely unrelated experimental environment. This supports other research demonstrating how motivations developed in one decision environment (e.g., rationality, altruism) can spillover and affect decisions in other environments (Cason, Savikhin, & Sheremeta, 2009; Cherry, Crocker, & Shogren, 2003; Cherry & Shogren, 2007). However, this paper is the first, to our knowledge, to demonstrate such a spillover effect caused by a *random* shock in such a fundamentally distinct arena (i.e., individual task versus interactive bargaining environment).

There is increasing evidence that one's beliefs regarding future outcomes (so-called “dispositional optimism–pessimism” in the psychology literature) are a dimension of personality that affects life-choices and outcomes (Heinonen, Raikkonen, & Keltikangas-Jarvinen, 2005). Oxoby (2004) notes that attention to such psychological constructs is important in order to understand behavior of the societal “underclass”. Recent evidence in Clark, Bonggeun, Poulton, and Milne (2006) highlights the role that expectations can play in future consumption and investment decisions, and they conclude that low expectations (i.e., “pessimism”) play a causal role in future behaviors such as hazardous consumption and health choices. The important implication is that optimism/pessimism in one environment may not be independent from optimism/pessimism in another (see also Pyszczynski, Holt, & Greenberg, 1987). In a sense, one might say that there are no truly unrelated decision environments since psychological constructs are portable. If dispositional pessimism at one point in time can significantly predict one's tendency to be passive or withdraw effort (Scheier & Carver, 1985), and if such a disposition is persistent and stable, then an event that affects one's disposition will have spillover effects with potentially important economic consequences (e.g., job search, bargaining behavior, investment choice, etc.). For example, Goldsmith, Veum, and William Darity (1997) shows that one's “psychological capital” significantly affects labor market earnings. Specifically, an investment in one's psychological capital is estimated to increase wages by even more than a comparable investment in human capital. Thus, whatever initially contributes to an individual's stock of psychological capital has important spillovers into measurable labor market outcomes.

The presence of dispositional optimism and pessimism can be directly related to emotions and self-esteem. For example, a recent review in psychology concludes that positive emotions are a causal factor in successful life outcomes of various sorts (Lyubomirsky & King, 2005). While separable from positive emotion or affect, Lucas, Diener, and Eunkook (1996) find that optimism is nevertheless related to positive affect. This result is consistent with those of Charness and Levin (2005) who find that “emotional reinforcement” induced by payment can explain deviations from Bayesian updating. From the standpoint of Lucas et al. (1996), this suggests that the affect created by emotional reinforcement impacts the optimism and pessimism that individuals may have in their decisions, thus leading to non-Bayesian behaviors. Generalizing, this literature suggests that optimism and pessimism may play causal roles in many outcomes that have significant longitudinal effects, such as work absenteeism, health habits, marital well-being, charitable giving, and judgment accuracy, among others (see also Lyubomirsky & King, 2005). Our results suggest that these effects may arise even in cases where pessimism/optimism is generated by random shock in an unrelated environment, thus supporting the notion that such beliefs can be insidious.

Psychologists argue that certain events or environments can ascribe self-esteem (Glietman, 1991; Lane, 1991), which relates to dispositional optimism/pessimism. Self-esteem and dispositional optimism/pessimism are considered clear contributors to one's outlook and outcomes in life (Lyubomirsky & King, 2005; Scheier & Carver, 1985). Indeed, the effect of optimism on one's outlook on life may explain the effects reported in Gardner and Oswald (2007): individuals who won medium-size lotteries report significantly better psychological health than do non-winners. This effect persists for at least 2 years after the time of their lottery win. This suggests that the effects of shocks to optimism/pessimism can have important welfare and outcome effects by altering decision-making across environments, offering some field evidence in support of our laboratory results. Here, we recreate a useful microcosm of this relationship in a simple lab environment where beliefs spill over into separate but meaningful behavioral differences that can have economically significant consequences. Though our protocol only examines short-run effects, it contributes to our understanding of psychological spillovers in a novel way that suggests the laboratory can play a role in future research.

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