Journal of Economic Behavior & Organization 93 (2013) 363–366

Contents lists available at ScienceDirect

Journal of Economic Behavior & Organization

journal homepage: www.elsevier.com/locate/jebo

The heritability of moral standards for everyday dishonesty

Peter J. Loewen[a,*], Christopher T. Dawes[b], Nina Mazar[c], Magnus Johannesson[d], Philipp Koellinger[e], Patrik K.E. Magnusson[f]

[a] Department of Political Science, University of Toronto, 3294 Davis Building, Mississauga, Ontario, Canada L6L 1C6
[b] Wilf Family Department of Politics, New York University, 19 West 4th Street, 2nd Floor, New York, NY 10012, United States
[c] Joseph L. Rotman School of Management, University of Toronto, 105 St. George Street, Toronto, Ontario, Canada M5S 3E6
[d] Stockholm School of Economics, P.O. Box 6501, Sveavägen 65, SE-113 83 Stockholm, Sweden
[e] Department of Applied Economics, Erasmus School of Economics, 3000 DR Rotterdam, Netherlands
[f] Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, SE-171 77 Stockholm, Sweden

ARTICLE INFO

Article history:
Received 2 May 2013
Accepted 5 May 2013
Available online 24 May 2013

Keywords:
Ethics
Genetic
Individual differences
Heterogeneity
Variation

ABSTRACT

Previous research on the acceptability of dishonest actions has focused on the role of social norms and internal reward mechanisms. Using a sample of over 2000 Swedish adult twins, this manuscript examines whether there exists another source that is driving differences in perceptions of the acceptability of dishonest actions: genetic variation. We find that much of the variation in perceptions of the acceptability of dishonest actions is attributable to genetic variation between individuals.

1. Introduction

Individuals regularly commit dishonest actions, such as cheating on taxes, accepting bribes, skipping on public transit fares, and claiming sick days when they are not ill. While seemingly small in isolation, such actions impose substantial externalities. More than $1 trillion of global GDP is paid annually in bribes, to the detriment of economic growth (The World Bank, 2004). Governments lose trillions to tax evasion (Werdigier, 2011). Businesses are equally harmed, with as many as half of service sector employees in the United States committing theft against their companies (Wimbush and Dalton, 1997).

Why do some individuals feel it is acceptable to engage in everyday dishonesty while others do not? A standard economic model of dishonesty suggests that decisions to be dishonest are like any other decision; they are based on an analysis of the externally given costs such as the risks of being caught and magnitudes of punishments and the benefits of the dishonest act (Becker, 1968). Thus, to the extent that all individuals are selfish maximizers there should not be any individual differences. However, a more comprehensive rendering in the behavioral economics literature and related fields that considers individuals' social context and internal states suggests that factors such as identity (e.g. gender; see Croson and Gneezy, 2009; Dreber and Johannesson, 2008), cultural, social and religious norms (see e.g., Bénabou and Tirole, 2011; Mazar and Aggarwal, 2011), and people's internal reward mechanisms (for the role of consequences see Gneezy, 2005; Sutter, 2009; for justification and awareness see Mazar et al., 2008; Schweitzer and Hsee, 2002) shape individuals' decisions and behaviors

* Corresponding author. Tel.: +1 647 232 7335.
E-mail addresses: peter.loewen@utoronto.ca, peter.john.loewen@gmail.com (P.J. Loewen), cdawes@nyu.edu (C.T. Dawes), nina.mazar@rotman.utoronto.ca (N. Mazar), magnus.johannesson@hhs.se (M. Johannesson), koellinger@ese.eur.nl (P. Koellinger), patrik.magnusson@ki.se (P.K.E. Magnusson).

0167-2681/$ – see front matter © 2013 Elsevier B.V. All rights reserved.
http://dx.doi.org/10.1016/j.jebo.2013.05.001

and can lead to differences between individuals. For example, previous research has shown that feelings of unfairness in an interaction with another person or organization can lead individuals to suspend their moral beliefs and willingly cause harm to the other party (Fehr et al., 1993; Greenberg, 1990; Henrich et al., 2010).

Extending the existing body of work on individual differences in moral decision making, in this short note, we argue that heterogeneity in the perceptions of the acceptability of dishonest actions is the result not only of environmental differences, but also of a more fundamental difference: genetic variation between individuals. In doing so, we add to a growing body of evidence in related fields demonstrating that variation in a large number of individual preferences, behavior, and traits are attributable to genetic variation. Examples from economics include risk preferences (Cesarini et al., 2009, 2010), preferences for fairness in an ultimatum game (Wallace et al., 2007), and rates of cooperation in trust games (Cesarini et al., 2008). Results from psychology and behavior genetics abound, such that *stylized* laws of behavior genetics have emerged (Turkheimer, 2000), the first of which is that every behavioral outcome is heritable. However, to our knowledge, this is the first study to establish the heritability of moral standards.

Based on a classic twin study-design with over 2000 Swedish adult twins, we show that genetic variation is a significant source of heterogeneity in perceptions of the acceptability of dishonest actions. Indeed, we find that nearly a third of the variance in such perceptions is attributable to genetic variation. In what follows, we discuss the design of our study, present our results, and discuss their implications.

2. Twin study design

A classic twin study design (for a review, see Benjamin et al., 2012) relies on the fact that monozygotic (MZ) twins share ∼100% of their genetic material while dyzygotic (DZ) twins share ∼50% on average. Greater similarity of the behavior of MZ twins versus DZ twins can thus be attributed to genetic influences, provided the twins are drawn from a common environment.

We estimate heritability using a standard ACE model, where A estimates additive genetic effects, C estimates common environment effects (this includes the family environment in which both twins were raised and any other factor to which both twins were exposed, such as, for example, cultural norms) and E estimates unique environment effects (i.e. influences not correlated within twins) and noise. This method has enjoyed wide, fruitful use in the study of various behavioral and psychological traits (e.g., Bouchard et al., 1990; Plomin, 1990).

Since the ACE model requires strong functional form and independence assumptions, it has been the object of criticism (Kamin and Goldberger, 2002). A linear functional form implies that there are no gene–environment or gene–gene interactions. Violations of this assumption have implications for heritability estimates. A unique environment interaction downwardly biases heritability whereas a shared environment interaction upwardly biases heritability. An omitted gene–gene interaction upwardly biases heritability. The independence assumption implies there is no gene–environment correlation. Interactions can be incorporated into the ACE model (for example a GXE model), however, a hypothesis of how and why genes and environment interact, as well as a direct measures of environmental factors, is required.

The standard ACE model assumes random mating, which implies that DZ twins share on average 50% of their segregating genes. Assortative mating would increase the resemblance of parents and thus DZ twins, meaning the estimate of heritability is downwardly biased.

The assumption that is the most controversial, however, is the equal environments assumption (EEA). Identification of the ACE model requires the assumption that differences in MZ and DZ twins for a particular trait are not due to similarity in the exogenous environmental conditions facing MZ twins. Based on this definition, exposure to environmental conditions that are the result of genetic endowments does not violate the EEA. For example, MZ twins may be treated more similarly by others than DZ twins because they look alike. MZ twins may also select into more similar environments due to their genetic similarity. However, the EEA is violated if genetic similarity affects within-pair behavior. This would be the case, for example, if due to genetic similarity an MZ twin became better at playing the piano by observing their sibling's experiences than a DZ twin would (see Benjamin et al., 2012). In terms of ACE model estimates, a violation of the EEA would mean that the estimate of genetic influence was overstated and the estimate of common environmental influence was understated.

One way to theoretically avoid relying on the EEA is to analyze twins reared apart since by definition there would be no shared environmental factors. However, studies of twins reared apart yield similar heritability estimates for cognitive ability and personality traits (Bouchard et al., 1990) suggesting that the EEA is valid for those traits. In addition, scholars have attempted to test the EEA by comparing the similarity of twins as a function of perceived rather than actual zygosity. The EEA suggests that only actual zygosity should matter, which has been shown to be the case for intelligence, social attitudes, personality, and psychiatric disorders (Scarr, 1968; Scarr and Carter-Saltzman, 1979; Kendler et al., 1993; Xian et al., 2000).

3. Procedure

We queried 2273 individuals that belonged to a same-sex twin pair from the Swedish twin registry (45.8% males; M(age) = 60, SE = 0.05) on the acceptability of four everyday dishonest behaviors: claiming sick benefits while healthy (1.4% thought it totally or fairly acceptable), avoiding paying for public transit (2.8% thought it totally or fairly acceptable), avoiding paying taxes (9.7% thought it totally or fairly acceptable), and accepting bribes on the job (6.4% thought it totally or fairly acceptable). Internal consistency between these measures was relatively high (Cronbach's alpha = 0.68). As previous work