BRILL

Behaviour 150 (2013) 713–735

Behaviour
brill.com/beh

Two studies on the interplay between social preferences and individual biological features

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Accepted 6 March 2013

Abstract

Biological features and social preferences have been studied separately as factors influencing human strategic behaviour. We run two studies in order to explore the interplay between these two sets of factors. In the first study, we investigate to what extent social preferences may have some biological underpinnings. We use simple one-shot distribution experiments to attribute subjects one out of four types of social preferences: self-interested (SI), competitive (C), inequality averse (IA) and efficiency-seeking (ES). We then investigate whether these four groups display differences in their levels of facial fluctuating asymmetry (FA) and in proxies for exposure to testosterone during phoetal development and puberty. We observe that development-related biological features and social preferences are relatively independent. In the second study, we compare the relative weight of these two set of factors by studying how they affect subjects' behaviour in the Ultimatum game (UG). We find differences in offers made and rejection rates across the four social preference groups. The effect of social preferences is stronger than the effect of biological features even though the latter is significant. We also report a novel link between facial masculinity (a proxy for exposure to testosterone during puberty) and rejection rates in the UG. Our results suggest that biological features influence behaviour both directly and through their relation with the type of social preferences that individuals hold.

Keywords

testosterone, ultimatum game, fluctuating asymmetry, facial masculinity, 2D:4D, social preferences.

DOI:10.1163/1568539X-00003077

1. Introduction

In the last few years, experimental methods have been used to explore how biological features relate to individual behaviour in strategic situations. These laboratory experiments have employed a number of simple games long-studied in Experimental Economics (Smith, 1987). These games embody simplified social interactions in which the payoffs that subjects obtain depend both on their own decisions and the decisions of others. These experiments generate results which are easily measurable, quantifiable and replicable. The biological features studied in this literature include hormones and their receptors (Kosfeld et al., 2005; Burnham, 2007; Zak et al., 2007, 2009; Crockett et al., 2008; Knafo et al., 2008; Eisenegger et al., 2010), genetic differences (Wallace et al., 2007; Cesarini et al., 2008), neural factors (Fehr & Rangel, 2011), and developmental instability, proxied by fluctuating asymmetry (Zaatari & Trivers, 2007; Zaatari et al., 2009; Sanchez-Pages & Turiegano, 2010).

These studies have also shed new light on the wide array of results in economic experiments showing that many individuals care strongly about the whole distribution of income and not only about their own material payoff. This class of concerns receive the name of social preferences in Economics. These include inequality aversion (Fehr & Schmidt, 1999; Bolton & Ockenfels, 2000; Binmore & Shaked, 2010), joint welfare maximization (Charness & Rabin, 2002), and competitive preferences (Frank, 1987; Charness & Grosskopf, 2001). Social preferences have also been studied extensively in Psychology under the rubric of Social Value Orientation (for reviews see Balliet et al., 2009 and Murphy & Ackerman, 2012).

Research in Experimental Economics typically uses observed choices to uncover unobservable individual heterogeneity in social preferences. This is called the revealed preference approach. On the other hand, research in Biology uses individual heterogeneity (in physiological features, for instance) to explain observed differences in behaviour. The present paper aims at building a bridge between these two approaches. To this end, we run two studies. The first one explores the extent to which individual biological features and social preferences are independent of each other. The second study explores, within the same population, the relative importance of these two sets of variables in strategic interactions by relating them to behaviour in the Ultimatum Game (UG henceforth).