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Economic Theory

Journal of Economic Theory 165 (2016) 179-208

www.elsevier.com/locate/jet

# Interdependent preference models as a theory of intentions

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Received 30 March 2016; accepted 11 April 2016

Available online 22 April 2016

#### Abstract

We provide a preference framework for situations in which "intentions matter." A behavioral type describes the individual's observable characteristics and the individual's personality. We define a canonical behavioral type space and provide a condition that identifies collections of behavioral types that are equivalent to components of the canonical type space. We also develop a reciprocity model within our framework and show how it enables us to distinguish between strategic (or instrumental) generosity and true generosity. © 2016 Elsevier Inc. All rights reserved.

JEL classification: D110

Keywords: Interdependent preferences; Reciprocity

#### 1. Introduction

In many economic settings, knowing the physical consequences of the interaction is not enough to determine its utility consequences. For example, Blount (1995) observes that experimental subjects may reject an unfair division when another subject willingly proposes it and yet might accept it when the other subject is forced to propose it. Hence, individuals care not just

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about physical consequences but also about the intentions of those around them. In this paper, we develop a framework for modeling intentions and how they affect others' behavior.

We call our descriptions of intentions *interdependent preference models* (IPMs). In an IPM, a person's ranking of social outcomes depends on the characteristics and personalities of others. Characteristics are attributes such as the individual's wealth, education or gender. Personalities describe how preferences respond to the characteristics and personalities of others. Thus, personality defines a person's altruism, his desire to conform, his willingness to reciprocate or his inclination to be spiteful. To understand how our theory works, consider the following example:

Two individuals can either receive a gift or pay a penalty. Both the spiteful preference, S, and the generous preference, G, rank receiving a gift above paying a penalty, but S prefers that the *opponent* pays a penalty whereas G prefers that the opponent receives a gift. S and G are the only possible preferences.

There are 3 possible types for each person. Each type has the same characteristic and therefore types differ only in their personalities. Type 1 has the spiteful preference irrespective of the opponent's type and type 3 has the generous preference irrespective of the opponent's type. Type 2 has the generous preference unless the opponent is type 1. The table below summarizes the mapping from type profiles to preference profiles:

	1	2	3
1	S, S	S, S	S, G
2	S, S	G, G	G, G
3	G, S	G, G	G, G

Example 1: Generous or spiteful.

We call such a table an IPM. Levine (1998) introduces the first example of an IPM and uses it to address experimental evidence in centipede, ultimatum and public goods experiments.

Three features of IPMs are noteworthy: first, a type describes relevant personality attributes rather than information. These attributes determine both the person's and his opponent's preferences over outcomes, not their beliefs over an uncertain state of nature. To put it another way, IPMs do not incorporate asymmetric information (or interactive knowledge); they only model interactive preferences. Each entry in the table describes the preference the two individuals would have if they knew the other's type; the IPM does not address the question whether an individual knows the others' type.

Second, an IPM does not describe the available strategic choices; it is not a game. We can study how Persons I and II above would play many different games. We can also use this IPM as the preference model for a competitive economy. Hence, IPMs describe only the preference environment not the institutional setting.

Third, in an IPM, individuals have preferences over *physical outcomes* and these preferences depend on the persistent personalities and characteristics of everyone involved, not on observed or predicted behavior or beliefs. Hence, the interaction of these fixed personalities determines whether each person is generous or spiteful. Whether or not a person *acts* generously on a given day or believes the other will act generously is relevant only to the extent that these actions affect the physical outcome.

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