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The role of psychology in behavioral economics: The case of social preferences

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ABSTRACT

Behavioral economics is a field of study that is often thought of as interdisciplinary, insofar as it uses psychological insights to inform economic models. Yet the level of conceptual and methodological exchange between the two disciplines is disputed in the literature. On the one hand, behavioral economic models are often presented as psychologically informed models of individual decision-making (Camerer & Loewenstein, 2003). On the other hand, these models have often been criticized for being merely more elaborated "as if" economic models (Berg & Gigerenzer, 2010). The aim of this paper is to contribute to this debate by looking at a central topic in behavioral economics: the case of social preferences. Have findings or research methods been exchanged between psychology and economics in this research area? Have scientists with different backgrounds "travelled" across domains, thus transferring their expertise from one discipline to another? By addressing these and related questions, this paper will assess the level of knowledge transfer between psychology and economics in the study of social preferences.

1. Introduction

Behavioral economics is a field of study that is often thought of as interdisciplinary, insofar as it uses psychological insights to inform economic models. Yet the level of conceptual and methodological exchange between psychology and economics is disputed in the literature. On the one hand, behavioral economic models are often presented as psychologically informed models of individual decision-making (Camerer & Loewenstein, 2003). On the other hand, they have often been criticized for being merely more elaborated "as if" economic models (Berg & Gigerenzer, 2010).[1]

The extent to which knowledge is transferred from psychology to behavioral economics is a matter of hot disagreement between the two camps. For its proponents, "behavioral economics increases the explanatory power of economics by providing it with more realistic psychological foundations" (Camerer & Loewenstein, 2003, p. 3). On the other side, however, several authors have pointed out that when economists refer to psychological assumptions they often have in mind a specific kind of psychology, one that is germane to economic discourse (Davis, 2013; Heukelom, 2014; Sent, 2004). In fact, acknowledgment of the relevance of psychologists' findings for rational choice theory has been dependent on psychologists' adoption of certain "modeling tools" that are central to economic theory (Nagatsu, 2015).

At the same time, however, it would be unfair to conclude that psychologists have had only a marginal role in the development of the field. Some of the most important contributions, which laid the foundations of behavioral economics, were in fact introduced from the outside by psychologists (e.g., Kahneman & Tversky, 1979; Lichtenstein & Slovic, 1971), who prompted a line of research that has developed since. Moreover, as behavioral economics has become mainstream, the experimental method in economics, which until that moment had always been controversial, has been finally recognized as a legitimate part of the discipline (Hands, 2010).

And yet, the interaction between psychology and economics seems to be limited in time and scope. In the case of inter-temporal discounting functions, for instance, psychology has influenced economics only to a certain extent (Grüne-Yanoff, 2016): whereas psychologists and behavioral economists converged on the formulation of hyperbolic functions, they soon diverged on measurement issues. After this brief episode, psychologists and

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[1] The question whether economic models *should* or *should not* incorporate psychological evidence, which is a different question than the one this paper addresses, has been widely debated in the literature. For a critical view, see Gul and Pesendorfer (2008).

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economists withdrew to their respective methods and epistemic desiderata.[2] Along similar lines, Braesemann (2016) shows via bibliometric studies that after an initial phase of convergence, the influence of psychology on behavioral economics in general has significantly declined. Overall, the picture that emerges from the previous two related works is that the interplay between the two disciplines has moved from an initial phase of proximity to one of differentiation.

The premises for the behavioral economics research project, however, were certainly more optimistic about the possibility that psychology could make a positive contribution to economics. In this respect, Rabin (2002) wrote: "The idea that economists should incorporate behavioral *evidence* from psychology […] is so fundamentally and manifestly good economics that I am confident it will have long-term influence in economics" (p. 658). In a similar vein, Van Damme argued: "We now have a much better understanding of what motivates people and what are the limits on actual human rationality. […] This may ultimately lead to integration into economics of *insights* from psychology, sociology and law, thus leading to a unified social science, with game theory being a main methodology" (in Van Damme et al., 2014, p. 292).[3]

Overall, the expectations for the behavioral economic program predicted a future where economics and other disciplines would complement each other, or at least would be highly influential on each other. Recent studies, as the ones mentioned above, seem to indicate instead that the level of "injection" of psychology is narrow or declining.

Sparked by these observations, the aim of this work is to extend research on the intellectual exchange between psychology and economics to the domain of social preferences. Social preferences, such as fairness, inequity-aversion and reciprocity, typically regulate decisions where self-interest is intertwined with concerns for other people's preferences and beliefs. By focusing on the case of social preferences, this study will look at the extent to which psychology has informed economics in the development of this research area. Have findings or research methods been exchanged between psychology and economics in the study of social preferences? Have scientists with different backgrounds "travelled" across domains, thus transferring their expertise from one discipline to another?

Social preferences provide a good starting point for answering these questions, for several reasons. First, social preferences are a central topic in behavioral economics; together with other main topics in the field, they are also appealed to, to explain deviations from the predictions of rational choice theory, or—to be more precise—from the assumption of self-interest that is often attached to the axioms of rational choice theory.[4]

Moreover, by their very nature, social preferences seem to be prone to psychological considerations. They may involve emotions such as empathy, sympathy, care, resentment, guilt, shame, etc. Social preferences also involve beliefs about other people's beliefs and expectations, which means that they require an individual to think from another person's perspective or to put himself in the place of someone else. Arguably, the study of these aspects may benefit from the expertise and scrutiny of psychologists, or so behavioral economists tend to claim. But, regardless of the position that one takes in this debate, to what extent do behavioral economists rely on psychology in support of their theories? In what sense are behavioral economic models, "psychologically" informed models?

To answer these and related questions, this paper will proceed as follows. The next section briefly introduces the debate concerning the role of psychology in (behavioral) economics. The main purpose of this analysis is to clarify the different senses in which psychology may enter behavioral economics and, in particular, how behavioral economists understand the role of psychology in their field.

In the following two sections, I will first introduce the debate on social preferences in economics and then compare works on social preferences that pre-date behavioral economics with some prominent behavioral economic models (Fehr & Schmidt, 1999; Rabin, 1993). The main purpose here is to assess whether changes in behavioral economic models, as compared to previous work, reveal a stronger involvement of psychology in the discipline. Afterwards, I will turn to the empirical side of the work on social preferences.

It is important to note that, even though social preferences are a crucial topic in behavioral economics, they do not cover the entire spectrum of behavioral economics. There are many other areas, prospect theory, for instance, or preference reversal, where the interaction between psychology and economics may have occurred in different ways.[5] However, at least in the domain of social preferences, this paper shows that behavioral economists have imported elements from "psychology", in a way that reflects the explanatory values that characterize the economic discipline, such as generality, simplicity, tractability, etc. In other words, behavioral economists have transferred "stylized facts" about human social psychology, that is, high general regularities of behavior that can be incorporated into models that aim to explain aggregated-level economic phenomena.[6,7]

2. Knowledge transfer from psychology to economics

What has been transferred from psychology to behavioral economics? To answer this question, it is important to clarify first what is meant by psychology in this research program. The aim of this section is thus to distinguish between the different senses in which behavioral economics may incorporate psychology into its domain of inquiry.

[2] For a comprehensive analysis of the differences between epistemic principles in psychology and economics in the literature from the 1890's to the beginning of World War II, see Goodwin (2016).

[3] Behavioral economics is not the only area of economics that welcomes contributions from psychology. For instance, Fontaine (2001) argues in favor of an increased involvement of psychology in support of economic work in welfare economics, where, e.g., the role of empathy may be relevant to interpersonal comparisons of utility.

[4] The attempt to explain anomalies, or deviations, from rational choice theory by means of "psychological" processes is characteristic of the so-called "new behavioral economics", as compared to the "old" one. This is a phase of behavioral economics that started in the seventies of the last century with the work, among others, of Amos Tversky and Daniel Kahneman, Sarah Lichtenstein and Paul Slovic, David Laibson and Richard Zeckhauser, etc. (for more on the distinction between "old" and "new" behavioral economics, see Sent, 2004). Other examples of psychological factors to account for anomalies are: risk-aversion, to explain the tendency to overestimate small probabilities and underestimate large ones; or representativeness heuristics in cases such as the base-rate fallacy or the conjunction fallacy. A more fine-grained distinction, based on the degree of deviations from rational choice theory, can be found in Rabin (1998).

[5] See, e.g., Malecka and Nagatsu (2018) for an overview of behavioral research in consumer behavior and law behavior.

[6] For arguments on the epistemic constraints that regulate exchanges within and across disciplines see Lehtinen and Kuorikoski (2007), MacLeod (2016), MacLeod and Nagatsu (2016).

[7] The concept of stylized facts has been highly discussed in the literature. For the purpose of this paper, I refer to the account by Bannock, Graham, and Baxter (1998): stylized facts are "broad generalizations, true in essence, though perhaps not in detail" (Bannock et al., 1998, pp. 396–7). For the concept of "stylized facts" in economics see Kaldor (1957), Boland (1987), Elgin (2004), Abad and Khalifa (2015).

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The task, however, is not trivial, for various reasons. First, because in the literature, the way in which psychology is supposed to inform behavioral economics is often left ambiguous: authors refer to psychological insights, psychological assumptions, psychological results, evidence from psychology, psychological literature, research in psychology, etc. These terms are often used interchangeably, even though they refer to different levels of "exchange" between the two disciplines.

Moreover, the debate concerning the role of psychology in economics is one of the most intricate debate in the literature that pre-dates behavioral economics. A controversy on this topic goes back to the half of the nineteenth century and then returns as a *letimotiv* in the history of economic thought[8] and in the philosophy of economics.[9] This debate has seen phases with opposing attitudes to psychological assumptions: there have been phases characterized by the attempt to provide economics with psychological foundations; as opposed to others guided by the attempt to "get rid" of psychological assumptions.

Over time, and according to the particular stages of both disciplines, economists have invested psychology with different tasks and provided different answers to the question of what it means to incorporate psychology in economics (Heukelom, 2014; Sent, 2004).[10] For instance, according to marginal utility theorists, *utility* was a real psychological magnitude that provided the basic unit on which to build individual utility functions.[11] Marginalism, later on, was criticized on various fronts, including with respect to its psychological foundations. Institutionalists, for instance, rejected the teleological nature of economic explanations, in favor of a wider role for psychological motives, expanding beyond hedonistic factors (Veblen, 1909). Then again, revealed preference theorists, at least in the early stage, set up a research program intended to focus on choice behavior,[12] and to remain silent on the underlying psychological factors.[13]

These are just a few examples of a complex methodological debate, but this brief historical reconstruction serves here to set the theoretical background against which behavioral economics has built its research program. It is generally acknowledged in the literature that at least one of the main methodological rivals of behavioral economics is a view of economic theory, according to which the justification of economic models can be assessed on the basis of their predictive power, in a way that is independent of the realism of the assumptions (Heidl, 2016). Against this view, the aim of behavioral economics is to provide explanations of economic phenomena, by formulating causal-mechanistic models that identify the role of beliefs and desires in determining choice behavior (Hausman, 2008).

In the light of these premises, the "psychology of behavioral economics" initially refers to the psychological factors that **beliefs** and **desires** bring into causal-mechanistic explanations of economic phenomena. It may be asked, why beliefs and desires rather than other psychological factors? Why not, for instance, emotions, cues or frames? Surely, there are several other important ways in which our psychology affects choices beyond beliefs and desires. To anticipate an answer that will be expanded further below, one reason is that this psychological framework dovetails neatly with the building blocks of expected utility theory, i.e., probabilities and utilities. By incorporating beliefs and desires into the picture, economists took from psychology what was compatible with their theory, while filtering out other psychological aspects that could not be so easily accommodated to their framework.

It might be argued that this "psychological" turn was still revolutionary: by introducing beliefs and desires into the picture, behavioral economists were actually opening the door to psychology, and more specifically to results obtained in areas of research such as social psychology, cognitive sciences or neurosciences. But in practice, to what extent and in what ways has it been possible to do so, at least so far?

The previous point may be framed as a question: has behavioral economics moved beyond psychological introspection, in favor of a more substantial involvement of psychological results or research methods? Or has it mainly formulated models based on beliefs and desires as they may be derived from introspection?[14]

To answer this question, in the rest of the paper, I will distinguish between: 1) a *narrow* interpretation of psychological influence, according to which behavioral economics mainly relies on folk psychology; and 2) a *wide* interpretation, according to which behavioral economics intends to involve psychology in more substantial ways, incorporating psychological theories or psychological experiments.

For various reasons, behavioral economists seem to endorse the wide interpretation. In the introduction to the edited volume *Advances in Behavioral Economics* (2003), Camerer and Lowenstein wrote: "All economics rests on some sort of implicit psychology. The only question is whether the implicit psychology is good or bad. We think it is simply unwise, and inefficient, to do economics without paying some attention to *good psychology*" (p.42, italics added). On similar lines, Rabin (1998) claimed: "Because psychology systematically explores human judgment, behavior, and well-being, it can teach us important facts about how humans differ from the way they are traditionally described by economists" (p. 11).

Let us now assume that behavioral economists do endorse the *wide* interpretation. There are still various, compatible ways in which this could be done. Psychology may offer economics a way to ground economic models in psychological theories. Or it may provide economics with a method, based on experimental analysis, that allows economists to test the predictions of the models against empirical evidence.

In what follows, I will focus on the case of social preferences, in order to assess the role that theories, models or research methods from psychology have played in the area of social preferences in behavioral economics. The next section will start with a brief excursus on social preferences and their origin within economics.

[8] For the history of economic thought literature on this topic, see Caldwell (1986), Goodwin (2016), Hands (2010, 2013).

[9] Some of the most important papers in this area are: Bruni and Sugden (2007), Hausman (2008, 2012), Sen (1973).

[10] A revived interest in the interplay between psychology and economics is attested by a recent special issue entirely dedicated to the topic in the History of Political Economics (2016). Before that, in 1986, two special issues centred on the role of psychology for economics in the so-called *old behavioral economics* phase: Hogarth and Reder (1986) and Gilad and Kaish (1986).

[11] On this point, see Hands (2010), p. 634: "The traditional characterization of […] neoclassical theory is that it was a marginal utility-based choice theory employing a *cardinal* and *hedonistic* notion of utility. Cardinal in the sense that differences in the valuation of various bundles of goods took on numerical values and hedonistic in the sense that levels of utility were associated with the amount of pleasurable (or painful) psychic feeling the consumer received from the bundle in question".

[12] Samuelson (1938, 1948), Friedman (1953).

[13] Note, however, that the role of psychology in revealed preference theory, as well as the proper nature of preferences within that framework, has been, and still is, debated in the literature. See, e.g., Hands (2010).

[14] There is a tradition of authors in economics according to whom introspection is essential to economic theory, without this implying the need to resort to psychological observations via experimental methods. Robbins (1952), for instance, has argued in favor of this view: "We do not need controlled experiments to establish the validity [of the postulates of the theory of value]: they are so much the stuff of our everyday experience that they have only to be stated to be recognized as obvious" (p.79).

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In the rest of the paper, the underlying goal will be to assess whether, in the case of social preferences, the *wide* interpretation is warranted.

3. The economic roots of the social preferences hypothesis

A classical formulation of the social preference hypothesis in behavioral economics states that "a substantial number of people exhibit social preferences, which means they are not solely motivated by material self-interest but also care positively or negatively for the material payoffs of relevant reference agents" (Fehr & Fischbacher, 2002, p. 1). This hypothesis was originally formulated to explain some deviations from the predictions of game theory, which were observed in experiments such as the prisoners' dilemma game, the public goods game and the ultimatum game.[15]

To illustrate with an example, in a standard ultimatum game, two players take part in a bargaining experiment. One player, the proposer, is given a certain amount of money and asked to divide that amount between himself and the other participant, the responder. If the responder rejects the offer, nobody gets anything; otherwise, each player receives the respective amount of money. Rational choice theory predicts that the responder will accept any offer, since the game is not repeated and individuals maximize payoff. Across a variety of experimental settings, however, these predictions have not been met: proposers typically split fairly the initial sum of money and responders tend to reject offers that are below thirty percent of the initial endowment (Cameron, 1995; Güth, Schmittberger, & Schwarze, 1982; Roth, Prasnikar, Okuno-Fujiwaras, & Zamir, 1991). Overall, the rejection of an offer has been explained by a preference for fairness, which leads the participant to renounce an immediate earning, in view of the effect that this choice will have on the other player.

At first sight, the hypothesis that individuals have social preferences may hardly look surprising: intuitively, almost all of us can admit that we rarely behave as completely self-interested actors. Indeed, the idea that social preferences play an important part in influencing individual behavior outside the economic domain was never really questioned by economists. Since its origin, the debate on social motives has been about whether such motives are *consistently* exhibited in economic-related decision-making, insofar as economic decision-making, as against for instance affective decision-making, usually concerns the sphere of an individual's own welfare. But if there are exceptions to this principle, are they regular enough to be clustered as social preferences? Do such preferences mainly affect decisions that involve family members or kinship groups, or do they also extend to strangers and society at large? Overall, these and related questions ask under what conditions individuals can be said to be fair, just or unselfish in their economic activities.

In the light of these premises, the social preference hypothesis in behavioral economics represents a recent contribution to a debate that predates the advent of behavioral economics. The interest of economists in unselfish behavior emerged with the quickening of interest in the legitimacy of its main counterpart, i.e., the assumption of self-interest, which had been seen as a motivating force of economic behavior at least since the neoclassical revolution in the 1980's. The assumption of self-interest continued to be central to rational choice theory, where together with rationality and utility maximization, it constituted one of the distinguishing features of *homo economicus*. This does not mean that economic theory, and neoclassical economics in particular, do not admit the possibility that individuals have unselfish preferences, in any of the forms they can take. In practice, however, the assumption of self-interest permeates economic models, at least as an organizing principle. The analysis of social preferences, by contrast, rejects this assumption and it does so by questioning both its normative validity and its descriptive accuracy.

Throughout the twentieth century, normative criticisms of the assumption of self-interest were to be found in a normative stance on principles such as fairness or equality, which were seen as normative goals that should guide research areas such as welfare economics and social choice theory. In parallel with the normative side of the debate, criticisms started to be directed at the descriptive accuracy of the assumption of self-interest (see Medema, 2015). Against the view of economic man as a self-interested agent, economists began to explore the impact of *economic* consequences of non-selfish behaviors, both in the economy of family but also, e.g., in contract theory (as in Edgeworth, 1881).

To include social preferences in their analysis, economists had to deal with both *formal* and *empirical* challenges. Formal issues concerned how to develop formal models that incorporate social preferences; empirical issues concerned their empirical testing. It was believed that, even if social motives affect economic behavior, they may not be stable enough to generalise into a "law" that leads to reliable predictions, whose effects can be measured (Marshall, 1920).[16] The history of the development of models of unselfish behavior and their empirical analysis represents attempts to address these and related tasks, which in what follows will be referred to as *formal* and *empirical* challenges. In the next section, the way in which (behavioral) economists progressively dealt with these issues will be addressed.

Before moving to the next section, however, it is worth mentioning a precursor in the study of unselfishness in economics, the British economist Francis Edgeworth (1845–1926).[17] Edgeworth is relevant here because of the way he anticipates some relevant issues that will also illuminate the analysis of behavioral economics later on.

In his book *Mathematical Psychics* (1881), Edgeworth introduces the concept of **sympathy** in the context of contract theory in imperfect markets, as a coefficient that affects price formation between contractors. According to Edgeworth, agents maximize their own utility plus a factor λ that stands for the effect of "sympathy with each other's interests".[18] In doing so, Edgeworth precedes, in certain aspects, a strategy adopted by behavioral economists, which is to introduce into utility functions, certain parameters that represent psychological factors.

More than the strategy itself, it is interesting to see how he explained this move. A few years after the publication of *Mathematical Psychics*, Edgeworth wrote an entry for the Palgrave Dictionary of Economics (s.v. "Pareto", vol. 3), where he compares the work of Vilfredo Pareto with his own: "The *Manuale* is distinguished by the original idea of treating the laws of demand and supply […] as objective, capable of being ascertained by external observation without the *psychological knowledge* obtained through the sympathy" (Edgeworth, 1926, p.711 italics added).

[15] The social preference hypothesis, however, has also been severely criticized by some prominent economists. See Binmore (2007, 2010) and Binmore and Shaked (2010).

[16] For an analysis of Marshall's view on other-regarding behavior, see Medema (2009).

[17] See Boulding (1962), Fontaine (2007), Bruni and Zamagni (2007).

[18] From Edgeworth (1881): "Here may be the place to observe that if we suppose our contractors to be in a sensible degree not "economic" agents, but actuated in effective moments by a sympathy with each other's interests (as even now in domestic, and one day perhaps in political, contracts) we might suppose that the object which X (whose own utility is P), tends—in a calm, effective moment—to maximize, is not P, but $P + \lambda$, where is a coefficient of effective sympathy".

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What is important to note is that Edgeworth considers *psychological knowledge* as obtained through the sympathy, as if sympathy was the crucial element of "psychological" content to add to economic theory. Psychological knowledge—at least in the context of contract theory—is essentially a factor that enters a maximization function. Note, however, that sympathy, as much as self-interest, is a self-evident notion, a psychological state that can be ascertained from introspection without the need to rely on psychological theories or methods.

Edgeworth was a precursor in the study of social preferences, not only because he introduced the interpersonal dimension into contract theory, but also for his view that psychological factors, such as "sympathy", can be translated into parameters to be introduced into maximization models, something that will return later on in behavioral economic models. But, as the next section will show, between Edgeworth and more recent authors, there are a number of contributions to the literature on unselfish behavior in economics, which also paved the way for the behavioral economists' work.

4. Formal models of social preferences

In this section, we will see how throughout the sixties and the seventies of the last century, a narrow group of economists, who were not behavioral economists and developed their theories independently of psychologists, began to work on the formulation of interdependent utility functions to study philanthropic and altruistic behavior.[19]

This family of work shows important conceptual similarities with behavioral economists' more recent work. Their modeling strategy is indeed the same, namely to introduce into a utility function certain factors that express a concern for the welfare of other individuals. To illustrate the similarity between the two research groups, this section compares some of the most prominent works that pre-date behavioral economics (Vickrey, 1962; Boulding, 1962; Becker, 1974), with some of the most famous works in that field, in particular Fehr and Schmidt (1999) and Rabin (1993).

One of the first studies on philanthropic behavior is by the Nobel Laureate William Vickrey. In his 1962 paper, *One Economist's View of Philanthropy*, Vickrey describes a "neighborhood effect", which indicates the degrees of satisfaction that an individual derives from contributing to the welfare of other individuals located on different points on an income scale. Individuals feel **empathy** or **rivalry** towards others, depending on whether the other's income is slightly lower or higher than their own, and decide accordingly whether or not to contribute to their welfare.

In the same special issue in which Vickrey published his work, another Nobel Laureate, Kenneth Boulding, contributed a paper, *Notes on a Theory of Philanthropy*, where he develops a theory of altruism and exchange as two forces that complement each other in the distribution of goods in society. According to Boulding, the utility of individuals increases in accordance both with the accumulation of our own wealth and the accumulation of the wealth of others. However, when others have far too much, or far too little, as compared with us, our utility starts decreasing. In other words, utility is a comparative notion: personal accumulation of wealth matters, but also in relation to that of others.

Despite significant differences, these ideas closely resemble the underlying principles of some of the most famous behavioral economic models of social preferences, such as Fehr and Schmidt's model of inequity-aversion (1999) or Ockenfels and Bolton's ERC model (2000). Fehr and Schmidt (1999) assume that individuals are averse to unequal distributions, but prefer inequalities that are to their own advantage to inequalities that are to the advantage of others. Ockenfels and Bolton (2000) assume that individuals prefer a payoff that is close to the average and are willing to sacrifice part of their income to get closer to that. Fehr and Schmidt (1999) and Ockenfels and Bolton (2000) belong to a set of models where fairness depends on the outcome of an exchange; as we will see below, Rabin (1993), on the other hand, develops a model where fairness depends on the intentions of the individuals.

At the beginning of their paper, Fehr and Schmidt (1999) say that they aim to provide a simple, tractable model that accommodates the variety of results achieved in the experimental game-theoretic literature until that moment. To do so, they formulate a model with two parameters that represent the psychological factors that modulate inequity-aversion, namely **envy** and **pity**. To see how the model works, suppose that two individuals participate in an ultimatum game, where they have to divide a common good, such as a cake. The main idea is that their utility depends on the amount of cake they get, but also on how much cake others get. If the division is not equal, then the utility of the participants will decrease; moreover, it will decrease more when others have a larger share of the cake (envy) than when they themselves have a larger share of the cake (pity).

Fehr and Schmidt's model presents some important similarities with pre-behavioral economic models, but is it worth illustrating some relevant differences too. First, as discussed above, Fehr and Schmidt intend to explain a variety of results that come from the experimental literature; by contrast, this was not the target of pre-behavioral economic models. Secondly, according to Fehr and Schmidt, and behavioral economists in general, social preferences tend to apply to a significant fraction of individuals across circumstances. Conversely, Vickrey and Boulding believed that philanthropy had only a marginal role in the redistribution of income in society; in this respect also, their work differs from that of behavioral economists.

That said, however, behavioral economic models, at least with respect to the psychological dynamics that enter into an individual's utility function, are very similar to models formulated by economists, who however had no intention of providing psychologically informed models or of drawing on results from psychology to build their economic theories. The reason why this similarity is important is that it shows the role of the methodological tools that economists bring with them, even when they extend their field of research to new areas of inquiry; as we will see again below, the need to provide general, tractable models imposes at the same time significant constraints on the way in which psychology can be incorporated into economic models.

Another crucial example of a pre-behavioral economics work on unselfish behavior is Gary Becker's article *A Theory of Social Interactions* (1974).[20] Medema (2015) reconstructs the process that led Becker to formulate his model of other-regarding behavior. With respect to the stability of the phenomenon, Becker believed that other-regarding behaviors should be part and parcel of the economic discipline, because of their systematic influence on economic decision-making. Units such as the family or the household are classic examples of situations where individuals act in consideration of other people's interests and welfare. In turn, the same formal machinery to describe behavior within the family could be

[19] In what follows, I will draw on Fontaine (2007), who provides a thorough reconstruction of the history of philanthropy and altruistic behavior in economics between 1961 and 1975.

[20] Even though Becker (1974) paper is considered to be the starting point of Becker's work on social interaction, he began to work on this topic already in 1961, in the same year as Vickrey and Boudling. For more on this, see Fontaine (2007).

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transferred to society at large, as for instance when "the rich" incorporate "the poor" in their utility function.

Becker arrived at his theory of social interactions from his previous work on discrimination (Becker, 1974; Fontaine, 2007; Medema, 2015). In fact, just as discriminatory factors can be included in someone's utility, so can benevolent factors. As Medema points out, one innovative aspect of Becker's work is that he translated non-pecuniary attributes, such as psychological factors, into pecuniary terms. This constitutes a key move towards formal analysis and empirical testing. In fact, once it is possible to observe the economic consequences of certain psychological factors, economists have their standard methodological tools at their disposal. By providing a formal machinery and a way of observing the indirect, monetary consequences of psychological traits, Becker indicated possible ways of solving the formal and empirical challenges that had previously hampered research on unselfish behavior.

Medema, however, highlights how Becker's aim was not to complement psychology or sociology in the analysis of unselfish behavior. Becker was interested in exploring the *economic* consequences of unselfish behavior, and not in contributing to other disciplines' understanding of this phenomenon. Moreover, Becker's model of social interaction was not grounded in psychological theory or models. Becker provides a novel way in which to include other people's utility in someone else's utility function; however, the main assumption for the model to work is that there is at least someone who is **benevolent** or **generous**, in the sense that his utility depends partly on the well-being of others. For instance, in the case of households, the premise is that the head of the family cares about other family members and thus is willing to redistribute income among them; similarly, in the case of the poor, the donor has to be benevolent so as to make the poor's income part of his own wealth as well. With respect to social preferences, this is all that Becker introduces in terms of "psychological" content.

Yet, Becker (1974) and the family of papers on unselfish behavior that were published in those years are considered to be the precursors of behavioral economic models. Becker's article indeed is often listed among the early models of other-regarding behavior (see Camerer, 2003). With respect to their psychological import, they are restricted to making assumptions about human psychology, which are aligned with our intuitions, even though they do not necessarily rely on psychological theories or experiments.

Moving twenty years ahead, the last model for this section is Rabin's fairness equilibrium model (1993). In this work, Rabin assumes that individuals tend to reciprocate other people's behavior: they are fair with people who are fair with them and mean with people who are mean. More specifically, an individual has beliefs about other players' intentions and such beliefs influence the way in which he will play the game.

To see how Rabin's model works, suppose that two players, *i* and *j*, participate in an interactive game. The decision of player *i* depends on three factors: 1) his strategy; 2) the strategy that he believes that the other will play; and 3) the strategy that he thinks that the other thinks that he will play. The underlying idea is that an individual *i* considers another individual *j* to be fair or unfair depending on how *i* believes that *j* will act in response to *j*'s belief about *i*'s strategy. When player *i* believes the intentions of the other player to be unfair, *i* will respond with an unfair strategy. A negative answer to a negative strategy corresponds to a positive outcome (nobody is deceived). In the model, the combination of two individuals' "negative" fairness will result in an overall positive utility. Conversely, when *i* considers the intentions of the other player to be fair, *i* will respond fairly, which again will result in an overall positive utility. In this way, both strategies are equilibria of the game.

Contrary to standard game theoretic models where utilities depend only on actions, in Rabin's case they also depend on the intentions that individuals attribute to other players. Modeling intentions, however, required new formal tools that were not part of the standard game-theoretic framework. Their inclusion meant that players' behavior could not be "directly modelled by transforming the payoffs so that one could analyse this transformed game in the conventional way" (1993, p. 1285; see also Guala, 2006). In this respect, Rabin's work represents a significant departure from previous work: it includes individuals' intentions in models of strategic behavior and it does so by employing new formal tools.[21] This, however, does not tell us yet whether social preferences, such as for instance reciprocity in the way Rabin models it, are a plausible or stable psychological trait, in the sense that they are supported by psychological theories or research methods.

Is it here that psychology has had a more prominent role, i.e., in supporting the psychological dispositions modelled in the behavioral economists' work? Is the dynamics of intention formation that Rabin uses, or the inequality aversion of Fehr and Schmidt, supported by psychological studies? The aim of the next section is to address these questions, in order to assess whether this is where psychologists may have had a more prominent role.

5. Empirical analysis of social preferences

In the previous section, we saw how a key development in modeling unselfish behavior was the elaboration of interdependent utility functions, which expanded standard utility functions. This step marked a theoretical shift, which extended the field of study of economics to domains that were usually considered to be the territory of other disciplines; this shift was prompted by economists and occurred by and large within the economic discipline.

Even if psychologists did not have a direct role in the elaboration of interdependent utility functions, they may still have taken part in the behavioral economic project to support other aspects of the work. Indeed, in his 1993 paper, Rabin writes: "Armed with well-founded *psychological assumptions*, economists can start to address the nonmaterial benefits and costs of the free market and other institutions" (1993, p. 1283 italics added). What does it mean to work with well-founded psychological assumptions? That psychologists supported economists in the design and execution of laboratory experiments? Or that psychological findings informed economic models, in this way increasing confidence in the validity of such assumptions?

To answer these questions, this section looks again both at Rabin (1993) and Fehr and Schmidt (1999) and at the literature that each paper provides in support of the psychological dynamics or parameters adopted in their models. In order to evaluate the role of psychology on the experimental side of behavioral economics, this section will also briefly consider the interdisciplinary milieu that prompted the experimental work on social preferences. Let us start with this second part.

5.1. Interdisciplinary milieu in behavioral economics

With respect to several central topics in behavioral economics—such as preference reversal, prospect theory or time-discounting functions—it is generally acknowledged that psychologists had a crucial role in the field. In the case of preference

[21] As Rabin acknowledges, his model hinges on a framework developed by three economists, namely Geanakoplos, Pearce and Stacchetti (1989), who first expanded the tools of game theory to deal with cases where players' beliefs affect preferences.

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reversal, Sarah Lichtenstein and Paul Slovic, both psychologists by education, were pioneers in the design of experiments that revealed divergences from the predictions of rational choice theory. Similarly, prospect theory originated in the work of two psychologists, Daniel Kahneman and Amos Tversky. Finally, it was a psychologist, George Ainslie, who brought an hyperbolic time-discounting function to the attention of economists. These examples are often presented as emblematic in showing the strong commitment to psychology in behavioral economics. Are they also representatives of other research streams?

Amnon Rapoport, a psychologist by education and an influential contributor to this literature, addresses this question in the introduction to his (1990) book, *Experimental Studies of Interactive Decisions*. Rapoport's claim is quite direct: "With the exception of research on individual choice behavior—where psychologists like Tversky, Kahneman and Slovic have played a major role—-psychologists have not contributed in any significant way to the growing research in experimental economics" (p.ix, 1990). Rapoport ascribes the reasons for this to the lack of the theoretical tools in psychology that would be needed to develop a rigorous and systematic analysis, and to psychologists' aversion to the maximization framework. Rapoport's claim is fairly strong and may even be intentionally provocative, with a view to persuading psychologists to resume their leading role in the field. In any event, he emphasises as surprising that psychologists have not had the role that we could expect of them, given their expertise in experimental practice. His analysis in part reflects the picture that emerges from experimental game theory and social preference research.

If we look at the genesis of the experimental work from which the study of social preferences stems, we find that the contributions of economists and psychologists are intertwined, in a way that makes it difficult to identify exactly what contribution each of them made.[22]

The prisoner's dilemma game (or a slightly different version of it) was designed in the 1950's by two mathematicians, Melvin Dresher and Merrill Flood, who first observed divergences from the predictions of game theory. Other early experiments were designed to test certain anomalous results on bargaining behavior obtained by Fouraker and Siegel (1963). Siegel was a psychologist, who contributed in many ways to the development of behavioral economics. For instance, together with Donald Davidson and Patrick Suppes, Siegel worked on highly influential projects on the experimental measurement of utility and subjective probability (1955, 1957). Furthermore, Siegel made important contributions to the development of the experimental method in economics; in the context of bargaining experiments, his contributions concerned methodological aspects, such as the introduction of variations in experimental tasks so as to avoid subjects' distraction or boredom (see Innocenti, 2010).

In order to test Fouraker and Siegel's results, Güth et al. (1982), three economists, designed the ultimatum game, an experiment that had an unparalleled success in the field, so much so that it has been called paradigmatic (Guala, 2008). Güth was a student of Reinhard Selten, a Nobel Laureate in economics who throughout his career worked at the intersection between economics, mathematics and psychology. Together with other experimental games, the ultimatum game also served as a testbed for the inequity-aversion model of Fehr and Schmidt (1999).

Finally, experimental work on the public goods game originated from an interdisciplinary community, in particular from three research groups in sociology, psychology and political science (see Ledyard, 1995). The results of their work captured the attention of economists, especially of Mark Isaac and Mark Walker, who focused on the role of repetition as a way to restore equilibria on rational choice theory predictions.

This brief overview shows that, in experimental game theory, we do not find any leading figures from psychology playing a key role in the development of the field, as they did in the case of prospect theory, preference reversal or time discounting.[23] In experimental game theory, experiments were designed by economists, sometimes with the help of psychologists, sometimes by scholars who had an interest in psychology. Note, also, that the social preference hypothesis was introduced only later on, with the purpose of explaining certain anomalies in the game theory predictions. Let us move on that side of the story.

5.2. Psychological findings informing social preference models

Collaboration between scientists with different backgrounds is not the only way in which knowledge can be transferred across disciplines. Behavioral economists may have drawn on psychological findings or results to support their work and the literature that the authors provide in their papers may offer a preliminary indication of this kind of influence.

In support of reciprocity as a psychological trait, at the outset of his paper Rabin writes that he will "briefly present some of the evidence from the psychological literature" (p. 1282). Rabin describes three "stylized facts" that inform his fairness equilibrium model. The first is that "people are willing to sacrifice their own material well-being to help those who are being kind". In support of this, about fifteen papers are quoted as providing results confirming its psychological accuracy. Of these, however, only a few are written by psychologists. The majority are by economists, and a few others are by sociologists and political scientists (see Table 1).

The second stylized fact he presents is that "in some situations people will sacrifice themselves to hurt others who are being unfair". Here, seven papers are quoted from a total of fourteen authors, and again the majority of them are economists (see Table 2). Finally, the third stylized fact states that "individuals tend to give in to the temptation to pursue their interests at the expense of others in proportion to the amount of earning available". For this fact, the most important role is attributed to two papers by Kahneman, Knetsch and Thaler (1986a,1986b)—a psychologist and two economists (see Table 3).

Even though Rabin's paper cites relatively few psychological sources, this analysis allows us to derive some indications about the way in which he conceives of the psychology of behavioral economics. First, he seems to associate psychological findings with results from laboratory experiments. Secondly, he identifies "well-founded psychological assumptions" with "stylized facts" about human social psychology.

With respect to the first point, the epistemic standards that behavioral and experimental economics have developed differ in some important ways from the epistemic standards of experiments in psychology. The use of monetary incentives, the role of scripts, repetition and deception are examples of typical matters of contention between the two scientific communities.[24] Without going into the details of the controversy, what is important to note

[22] On similar lines, Moscati (2016) observes that there was no strict division of labor between economists and psychologists in the experiments on utility measure conducted by Mosteller and Nogee (1951) and Davidson, Suppes, Siegel (1957).

[23] This is not only the case for the field of social preferences, as there are other important domains that developed without the psychologists' drive. Vernon Smith, for instance, is an economist by education and by affiliation, who shared the Nobel Prize in economics with Kahneman for his role in establishing laboratory experiments as a methodological tool in economics.

[24] See Read (2005) for an analysis of the controversy on monetary incentives and Hertwig and Ortmann (2001).

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Table 1
Rabin (1993) papers quoted in support of the first "stylized facts" among the three discussed in the paper. The discipline from which the author received his/her PhD identifies the disciplinary affiliation.

Authors	Paper	Journal	Year	Affiliation
J. Orbell R. Dawes A. van de Kragt	Explaining Discussion Induced Cooperation	Journal of Personality and Social Psychology	1978	Political Science Mathematical Psychology
G. Marwell R. Ames	Economists Free Ride, Does Anyone Else?: Experiments on the Provision of Public Goods, IV	Journal of Public Economics	1981	Sociology
W. Güth R. Schmittberger B. Schwarze	An Experimental Analysis of Ultimatum Bargaining	Journal of Economic Behavior and Organization	1982	Economics
A. van de Kragt J. Orbell R. Dawes	The Minimal Contributing Set as a Solution to Public Goods Problems	American Political Science Review	1983	Political Science Mathematical Psychology
M. Isaac K. McCue C. Plott	Public Goods Provision in an Experimental Environment	Journal of Public Economics	1985	Social Sciences Economics
O. Kim M. Walker	The Free Rider Problem: Experimental Evidence	Public Choice	1984	Economics
J. Andreoni	Privately Provided Public Goods in a Large Economy: The Limits of Altruism — Why Free Ride? Strategies and Learning in Public Goods Experiments	Journal of Public Economics	1988a,b	Economics
M. Isaac J. Walker	Group Size Effects in Public Goods Provision: The Voluntary Contribution Mechanism — Communication and Free-Riding Behavior: The Voluntary Contribution Mechanism	Quarterly Journal of Economics — Economic Inquiry	1988a,b	Economics
R. Dawes R. Thaler	Anomalies: Cooperation	Journal of Economic Perspectives	1988	Mathematical Psychology Economics
R. Goranson L. Berkowitz	Reciprocity and Responsibility Reactions to Prior Help	Journal of Personality and Social Psychology	1966	Psychology
M. Greenberg D. Frisch	Effect of Intentionality on Willingness to Reciprocate a Favor	Journal of Experimental Social Psychology	1972	Psychology
E. Hoffman M. Spitzer	The Coase Theorem: Some Experimental Tests	Journal of Law and Economics	1982	Economics
D. Kahneman J. Knetsch R. Thaler	Fairness as a Constraint on Profit Seeking: Entitlements in the Market — Fairness and the Assumptions of Economics	American Economic Review — Journal of Business	1986a,b	Economics Psychology

Table 2
Rabin (1993) papers quoted in support of the second "stylized facts" among the three discussed in the paper. The discipline from which the author received his/her PhD identifies the disciplinary affiliation.

Authors	Paper	Journal	Year	Affiliation
R. Dawes R. Thaler	Anomalies: Cooperation	Journal of Economic Perspectives	1988	Mathematical Psychology Economics
R. Goranson L. Berkowitz	Reciprocity and Responsibility Reactions to Prior Help	Journal of Personality and Social Psychology	1966	Psychology
J. Greenberg	Effects of Reward Value and Retaliative Power on Allocation Decisions: Justice, Generosity or Greed?	Journal of Personality and Social Psychology	1978	Psychology
W. Güth R. Schmittberger B. Schwarze	An Experimental Analysis of Ultimatum Bargaining	Journal of Economic Behavior and Organization	1982	Economics
D. Kahneman J. Knetsch R. Thaler	Fairness as a Constraint on Profit Seeking: Entitlements in the Market — Fairness and the Assumptions of Economics	American Economic Review — Journal of Business	1986a,b	Economics Psychology
A. Roth V. Prasnikar M. Okuno-Fujiwara S. Zamir	Bargaining and Market Behavior in Jerusalem, Ljubljana, Pittsburgh, and Tokyo: An Experimental Study	American Economic Review	1991	Mathematics Economics

here is that designing and conducting experiments does not imply that such results are psychological ones. For this to happen, the two disciplines will have to go beyond a certain domain of study and share methodological standards of experimental analysis. Until this methodological dispute can be resolved, the results achieved in one domain do not necessarily count as results in the other domain.[25]

With respect to the second point, the view that well-founded assumptions are akin to stylized facts needs some qualification. Stylized facts are not in themselves inaccurate, but it is doubtful whether they require a sophisticated psychological theory to back up them. Stylized facts are designed for inclusion in formal models that are themselves constrained by limits of mathematical tractability, which is why they have to be stylized. As we have seen before, this in part explains the resemblance between the early models, such as Vickrey (1962), Boulding (1962) and Becker (1974), and the more recent ones. In other words, when Rabin defends the realism of the psychological underpinnings of his model, what this indicates is that the model is based on stylized facts about human social psychology. Stylized facts may be a legitimate source for economic modeling, but it is a matter of disagreement whether realism in a psychological sense is what distinctively characterizes them.

The way in which Fehr and Schmidt (1999) situate their work in the context of the relevant scientific literature resembles Rabin's strategy. On the one hand, Fehr and Schmidt present certain results from psychology in support of the preference of individuals for equitable outcomes. On the other hand, they compare their own model and experimental results with those of other studies in behavioral economics.[26]

[25] See Edwards (2016) for a similar argument applied to the period when behaviorism emerged in economics and psychology. In Edwards' words: "Behaviorists experimented on behavior in ways that were fundamentally different from the economists' (ordinalist) project of deducing preferences and utility functions from observed choices" (p.172).

[26] This analysis is in line with the study of Braesemann (2016) according to which, after an initial phase of convergence, the influence of psychology on economics has progressively declined.

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Table 3
Rabin (1993) papers quoted in support of the third "stylized facts" among the three discussed in the paper. The discipline from which the author received his/her PhD identifies the disciplinary affiliation.

Authors	Paper	Journal	Year	Affiliation
G. Leventhal D. Anderson	Self-Interest and the Maintenance of Equity	Journal of Personality and Social Psychology	1970	Psychology
R. Dawes R. Thaler	Anomalies: Cooperation	Journal of Economic Perspectives	1988	Mathematical Psychology Economics
D. Kahneman J. Knetsch R. Thaler	Fairness as a Constraint on Profit Seeking: Entitlements in the Market – Fairness and the Assumptions of Economics	American Economic Review – Journal of Business	1986a,b	Economics Psychology

More specifically, the psychological literature to which the authors refer in support of their model is **social comparison theory** and **loss aversion**. The former shows that individuals tend to evaluate their welfare by comparing their own status with that of others (inequity-aversion). The authors point out that the relevance of social comparison processes has been observed for a long time in social psychology and in sociology and quote a number of psychological studies in this area (See Table 4). The literature on loss aversion indicates that individuals tend to evaluate losses more than earnings, i.e., inequities are perceived differently if they are in the domain of gains than in that of losses. The work on loss aversion quoted by the authors is Tversky and Kahneman (1991).

Psychologists are quoted again as providing laboratory evidence that individuals cooperate more than is assumed in self-interested models; and also in support of fairness motives (Kahneman, Knetsch and Thaler 1986a,1986b). Overall, this is roughly the psychological literature to which Fehr and Schmidt refer in their paper. Otherwise, the authors describe the main experimental results on the ultimatum game with reference to behavioral economics and compare their own fairness models with that of other behavioral economists, in particular they quote Rabin (1993), Levine (1998) and Bolton and Ockenfels (1997), but also other economists.[27]

By looking at the citations of their papers, it is possible to note the contrast between those aspects that the authors believe require support from psychology and those that they believe do not. In this respect, both in Fehr and Schmidt (1999) and in Rabin (1993), psychological findings (whether or not they are actually from psychologists) are provided in order to give firmer grounds for the assumptions of the models. For the modeling and the experimental part of the work, however, the debate is mainly internal to the discipline of economics.

A few years after the publication of their paper, Fehr and Schmidt published a follow-up article, in which they replied to a critique by Binmore and Shaked (2010) concerning, among other aspects, the calibration of the parameters of the inequity-aversion model. In their response, Fehr and Schmidt (2010) defend the methodology behind their work and present their view of the future of the discipline more in general. In their own words: "We anticipate that a complete characterization of the distribution of different social preference types in the population may introduce *so much complexity at the individual level* that models that attempt to capture this complexity may become *analytically intractable*. For this reason, a simple model such as the theory of inequity aversion may still be useful, even though there is evidence that *it does not provide a full description of other-regarding preferences*" (p.102 italics added).

In their response to Binmore and Shaked, Fehr and Schmidt come back to their original work and reflect on its strengths and limitations. By doing so, they highlight the kind of "negotiations" they had to make so as to incorporate "psychology" in their theory. As they themselves admit, the key to their success was to trade complexity and accuracy with some other *goods* of high quality to economists, i.e., epistemic values such as simplicity, generality and tractability.[28,29] The analysis supports the argument outlined in this paper before, that the epistemic lens through which economics filters the observations of the phenomena also affects the way in which psychology is incorporated in the theory.

In conclusion, the aim of this section was to complement the previous one on formal models of social preferences, with an analysis of the empirical work that has been done in this area. What has emerged here is that economists draw on psychological literature to give empirical grounds for their social preference models. On the one hand, this is not completely unexpected: given that formal models of social preferences present only a few modifications to standard expected utility theory, this also explains the reasons why psychology may play a minor role in this field. On the other hand, however, it is worth noticing that in the design and execution of experiments, economists became independent of psychologists fairly soon and developed their own experimental techniques. More in general, this episode resembles previous episodes in the history of interaction between psychology and economics, for instance the case of the debate on beliefs and desires, or Edgeworth's contract theory. The same tendency appears here too: the attempts of economists to get closer to psychology have been modulated by those epistemic values, such as generality or tractability, which are at the core of the discipline. Rather than being a criticism, this might be a relevant condition for knowledge transfer across disciplines: a discipline's theoretical backbone at the same time enables and constrains what is exchanged from one discipline to another.

6. Conclusion

Social preferences are a central topic in "new" behavioral economics and, at the same time, they exhibit certain crucial differences from other central topics in the field.[30] The usual story of the development of "new" behavioral economics starts with the discovery by experimental psychologists of certain systematic departures from the predictions of rational choice theory; in turn, the

[27] The other cited papers are: Falk and Fischbacher (1998); Dufwenberg and Kirchsteiger (1998); Andreoni and Miller (1995).

[28] The authors continue: "Even if most subjects choose actions that differ more or less from the prediction of a particular model, it is still possible that the model *generates good predictions at an aggregate level* and that it can be used to better understand important forces that are driving behavior in the experiment. […] We do not claim […] that these results [1999 paper] are evidence in favor of the existence of inequity aversion *as a motive*. […] We believe that simple models […] that deliberately abstract away from some empirically observed facts in order to maintain tractability will continue to play a role" (pp. 106–107 italics added).

[29] See MacLeod (2016), MacLeod and Nagatsu (2016).

[30] According to Sent (2004): "New behavioral economics drew primarily on the work of Kahneman and Tversky in the 1970s and their insights on deviations from the benchmark of rationality" (p.747).

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Table 4
Papers quoted by Fehr and Schmidt (1999) in support of social comparison theory, fairness and cooperation.

Authors	Paper	Journal	Year	Affiliation
D. Kahneman J. Knetsch R. Thaler	Fairness as a Constraint on Profit Seeking: Entitlements in the Market	American Economic Review	1986a	Economics Psychology
R. Dawes R. Thaler	Anomalies: Cooperation	Journal of Economic Perspectives	1988	Mathematical Psychology; Economics
L. Festinger	A Theory of Social Comparison Processes	Human Relations	1954	Psychology
S. Stouffer	The American Soldier	Princeton: Princeton University Press	1949	Sociology.
G. Homans	Social Behavior: Its Elementary Forms	New York: Harcourt, Brace & World	1961	Sociology
S. Adams,	Toward an Understanding of Inequity	Journal of Abnormal and Social Psychology	1963	Psychology
J. Davis	A Formal Interpretation of the Theory of Relative Deprivation	Sociometry	1959	Sociology
N. Pollis	Reference Groups Re-examined	British Journal of Sociology	1968	N/A
W. Runciman	Relative Deprivation and Social Justice	New York: Penguin	1966	Sociology
G. F. Loewenstein, L. Thompson, M. H. Bazerman	Social Utility and Decision Making in Interpersonal Contexts	Journal of Personality and Social Psychology	1989	Economics Psychology
A. Tversky D. Kahneman	Loss Aversion in Riskless Choice: A Reference-Dependent Model	Quarterly Journal of Economics	1991	Psychology

attempt is made to capture such departures in utility functions that better describe the behavior of "real" individuals, as compared to *homo economicus*.[31]

The case of social preferences is peculiar, however, for various reasons and in particular for the way in which psychologists have contributed to the field. The interest for economists in the descriptive accuracy of the social preferences hypothesis goes back to the first decades of the twentieth century. Back then, the study of social preferences opened up a number of formal and empirical challenges. In the sixties and seventies of the last century, a group of economists started to work on interdependent utility functions, thus providing the basis for the formal analysis of social preferences. Later on, behavioral economists made important progress in the formal analysis of this phenomenon, in particular by introducing new formal tools to model intentions in utility functions.

An important difference between pre-behavioral and behavioral economic models is that the latter were tested experimentally. Interestingly, however, the difference in goals between the two groups did not greatly affect the general features of their respective frameworks. This suggests that, even when the experimental literature "entered" economic models, it did so in a way that reflects certain epistemic standards of the economic discipline.

[31] Certainly, there is more to behavioral economics than finding anomalies or deviations from rational choice theory: there have been several important contributions to the field that do not have to do with modifications to standard utility functions: heuristics for instance, or Simon's bounded rationality program.

Moreover, since the time when the experimental method became part of the toolkit of economics, behavioral and experimental economists have developed their own epistemic standards of success. Such standards are nowadays discipline-specific, with important differences from those in psychology. Ultimately, as we have seen above in the case of Rabin (1993) and Fehr and Schmidt (1999), psychology entered the field in order to support the kind of social preferences underlying the economists' models.

The aim of this paper was to track the recent contribution of psychology to the study of social preferences in behavioral economics. In the literature, it is acknowledged that one of the main reasons for the success of behavioral economics is that it preserved the normative benchmark of rational choice theory. The purpose of this paper was to move one step forward and to look more closely at the way in which departures from the rational framework have been instantiated in the field.

On the one hand, the role of psychology in the study of social preferences turned out to be less conspicuous than one might expect when approaching the field with the idea that behavioral economics distinguishes itself from "mainstream" economics for its psychological input. On the other hand, however, this might be less unexpected, if we consider that the work on social preferences has only required some minor adjustments from the previous paradigm. It might well be the case that other areas of behavioral economics would lead to different conclusions. Moreover, authors such as Ken Binmore, Werner Güth and Vernon Smith have always been critical of the social preference research program, while at the same time valuing the scientific relevance of behavioral and experimental economics in other areas. That said, it remains true that several economists working on social preferences, such as Rabin, Fehr and Schmidt, are some of the most influential scholars who have contributed to the field of behavioral economics and their papers have prompted a stream of research that is still alive nowadays.

What the works analysed in this paper show, is that the role of psychologists has mainly been to support the assumptions at the basis of the economists' models of social preferences and that economists have incorporated from psychology stylized facts about human social psychology. The *wide* interpretation concerning the influence of psychology on economics is thus partially warranted: psychology offered justifications for the intuitions of the economists, to the extent that this was possible in a formal analysis of social interaction and its empirical testing.

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