

Organizations should know their people: A behavioral economics approach

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Abstract

Public and private organizations are increasingly applying behavioral economics methods to a variety of issues such as mechanism design and incentive architecture. However, there has been little focus on how experimental tools used in behavioral economics can help companies learn more about their (current or prospective) workforce and, more specifically, about their employees' tastes and inclinations. This has important implications for broader organizational performance since some designs/incentives are likely to affect only individuals with a particular disposition (e.g. risk averse or fairness oriented) but not others, or can even have opposite effects on individuals with different sets of preferences. In this commentary, we point out a number of promising avenues for the application of a behavioral economics lens to understand and manage people within organizations. A comprehensive case study is also provided.

Keywords

preferences — behavior — motivation — human resources — personnel economics — teamwork

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Introduction

Behavioral economics refers to the integration of psychological and social insights into economic analysis. This informal (and deliberately rough) definition underscores the potential of such an approach for the understanding of organizational performance. Given that organizations are basically groups of interdependent people, it follows that people's psychology and social concerns are key elements in the functioning of organizations.

In the last years, both public and private companies have shown an increasing interest in the application of behavioral insights to several areas of the business, such as the design of choice and incentive architecture (e.g. Thaler and Benartzi (2004), Thaler and Sunstein (2008), Goldstein et al. (2008), Ariely (2009)); the results appear to be promising¹. Many behavioral economics prescriptions for organizations (as well as for public policy) are based on previous scientific knowledge regarding the limits of human greed, willpower and rational calculation (Camerer and Malmendier 2007), which entails, for instance, that the way in which options are presented may influence choices and that revealed preferences often do not coincide with normative preferences (e.g. Thaler and Sunstein (2008), Ariely (2009), Kooreman and Prast (2010), Frey (2017), Sunstein (2017)).

¹ Gallup research shows that "a study group of 10 companies that applied these principles outperformed peers by 85% in sales growth and more than 25% in gross margin during a recent one-year period" Fleming & Harter (2009).

These organizational applications are typically carried out under the assumption of homogeneous agents. To put it differently, behavioral applications are generally thought for an "average", representative individual. For instance, since behavioral research shows that people display inconsistent (i.e. present biased) intertemporal preferences, allowing employees to base their pension schemes on pre-commitment devices can increase savings (Thaler and Benartzi 2004) and, as a consequence, long-term organizational efficiency (Lazear 1979). Also, since people have prosocial preferences, piece-rate incentives may lead to higher productivity than relative-performance incentives because the latter impose negative externalities on peers (Bandiera, Barankay, and Rasul 2005).

However, not all individuals display present bias or social concerns, at least, not to the same extent or in the same way. Indeed, one key lesson from behavioral experiments is that people are highly heterogeneous (e.g. Holt and Laury (2002), Cornet et al., (2015), Charness and Rabin (2002), Frederick et al. (2002), Fischbacher et al. (2001)). This means that, as happens with more "traditional" personnel economics prescriptions (Lazear and Shaw 2007), some behavioral solutions are likely to have a positive effect on the performance of employees with a particular thinking style or set of preferences but can be innocuous or even overtly harmful for individuals with different dispositions.

More specifically, extrinsic motivations (e.g. monetary or award incentives) may either crowd-in or crowd-out the employees' intrinsic motivations depending on their tastes

and dispositions (Gagné and Deci 2005, Burks, Carpenter, and Goette 2009, Frey 2017, Falk and Kosfeld 2006). Understanding when and why certain interventions can be effective thus requires understanding the psychology of employees at the individual level. For instance, extrinsic incentives linked to team performance, which align personal and group benefits and are thus thought to increase overall team productivity, might increase the cooperativeness of relatively self-interested individuals but, at the same time, be counterproductive for intrinsically cooperative employees who cooperate with their peers without any need of external enforcement. This means that this type of incentives should probably not be used in groups of (previously identified) cooperative individuals. In the section “Practical applications of basic insights”, we provide a number of similar examples.

The next two sections are devoted to general ideas about the application of experimental techniques used in behavioral economics to measure characteristics of the workforce. In the last two sections, respectively, we provide practical (hypothetical) examples of possible solutions to basic problems and a comprehensive case study showing how behavioral economics measures can contribute to understand issues in different areas of the business. For the case study, we offer a brief summary of the assessment procedures proposed in the project. However, we are not allowed to show the specific results and recommendations. In addition, the text has been anonymized to preserve the identity of all parties involved. We chose this case study because it touches off a considerable number of topics for the application of behavioral economics measures to human resource (HR) management.

Predicting performance, what is being done?

The measurement of employees’ attitudes in a systematic and theory-based manner is fundamental to be able to predict their job performance. This is not new for companies’ managers, especially in the domain of HR management, where assessments of people are ubiquitous. Many HR departments have now methods to measure the cognitive abilities (e.g. fluid, numerical or verbal intelligence) of their companies’ workers (Schmidt and Hunter 2004). More recently, employees’ non-cognitive attributes (often referred to as “soft skills”), such as “Big-Five” personality traits, are also being increasingly assessed, especially for top level jobs in large firms (Sackett and Walmsley 2014). Not in vain, cognitive skills and personality traits have been extensively validated as predictors of job performance (Sackett and Walmsley 2014, Schmidt and Hunter 2004).

The most common practice in firms using this type of assessments is to gather key performance indicators (KPIs) of their workers and see how the assessed individual variables correlate with those KPIs. This serves to place, or hire, the “correct” persons (i.e. those displaying the characteristics that better predict performance) in the correct positions. Other common practices are to hire only people that “fit” the com-

pany or the boss, in the sense of having similar attributes (Sackett and Walmsley 2014). In this commentary, we make a case for experimental tools used in behavioral economics to complement these extensively-used measurements of people’s attitudes within organizations². We consider that such an approach, while sharing some of the inherent limitations of workers’ assessments (e.g. how to encourage employees to participate, self-selection issues, etc.), offers a number of advantages that deserve exploration.

Nowadays it is possible, for instance, to systematically assess the intertemporal, risk and social preferences of a large number of individuals quite easily, while also keeping a relatively high level of control over external confounding factors. Applying these procedures within companies allows managers to classify people into categories such as short-run/long-run oriented, risk averse/seeker, loss averse, cooperative or egalitarian. Being able to classify people is a value in itself for companies and these measures can be used in a similar fashion as more traditional ones – i.e., to predict performance, to hire persons who fit the team or the boss, etc.

Moreover, these classifications are based on measures (typically given by numerical values) which are fairly comparable across individuals. Instead of asking someone how forward looking or risk seeking she is, behavioral measures rely on real decisions that reveal the decision maker’s true preferences. Even if we abstract from the obvious influence that factors such as socially-desirable responding and self-misrepresentation may exert on self-reported measures³, the interpersonal comparability of such measures is also compromised by the subjective perception of respondents about what levels of a particular personal attribute can be considered low, medium or high. Peer assessments are not free of these biases either. Behavioral measures, on the other hand, are able to provide economically meaningful values (or ranges of values) based on formal models. For example, the annual subjective discount factor of worker A has been estimated to be between 0.94 and 0.95, whereas for worker B it is estimated to be in the 0.97-0.98 range. The discount factor is a measure of the relative importance the individual gives to later versus sooner rewards and is therefore economically meaningful and interpersonally comparable. In the case of the example, we can infer that worker B is more patient or long-run oriented than worker A (more precisely, she values rewards that will be received one year later 2-4% more than worker A). This means that worker A and worker B could differ in their response to a particular incentive scheme if the associated rewards/penalties are sufficiently delayed: therefore, worker A should be offered incentives with shorter realization times in order to reach

² For reviews and discussions on the relationship of behavioral economics measures with cognitive and non-cognitive personality measures, see Borghans et al. (2008), Almlund et al. (2011), and Becker et al. (2012)

³ Please note that behavioral measures based on choices with real consequences reduce these biases with respect to traditional techniques such as surveys or personality self-reports but cannot completely avoid them. This is particularly important in the context of organizations given that responses can be observed by managers and this might affect the employees’ choices.

the same motivation level as worker B (the exact preference values obtained offer valuable quantitative information that can be used to calibrate the appropriate incentives for each worker). Similarly applies to other behavioral economics measures such as those assessing risk or social preferences. Please see the section “Practical applications of basic insights” for potential practical uses of the information obtained.

Measurement and its robustness

In the typical tasks/games of behavioral economics experiments, the individual is asked to make decisions over different outcomes involving real monetary stakes. For instance, to elicit someone’s discount factor, the individual typically faces a series of decision problems of the form, “do you prefer receiving \$100 today or \$104 in month? The option you choose will be implemented for real and you will receive the money (at the particular date) specified in it”. The advantages of monetary stakes compared to other types of experimental rewards have been discussed in depth and are nowadays broadly accepted (see Camerer and Hogarth (1999) and Read (2005), for meaningful discussions). Real monetary incentives are of course costly to implement but there are ways in which one can get a good cost-benefit balance, for instance, through the use of probabilistic rewards (e.g. Exadaktylos et al. (2013)). In addition, technology makes it now possible to pay participants using mobile phone apps that protect personal data, which simplifies the procedure. It is true, however, that the use of real monetary incentives in some assessment projects can be problematic, especially in those involving hiring new employees.

Also, in the context of real organizations, experimental tasks/games must be easy but meaningful with the objective of minimizing complexity while maximizing the quality of the information gathered. There are several reasons why assessments should not be very long. These include preserving respondents’ engagement in the task (too long/complex tasks might be boring and exhausting) and avoiding contamination between participants if the assessment length requires a break during which participants can communicate to each other.

Two fundamental concepts here are “validity” and “reliability”. It is true that the validity of behavioral economics measures to explain behavior and performance in the workplace needs yet to be evaluated more deeply. Although there is increasing interest, research addressing the capacity of these measures to predict job behaviors and performance is still in its infancy. Since in contrast to cognitive ability and personality measures (e.g. Sackett and Walmsley (2014), Schmidt and Hunter (2004)), there is a lack of meta-analytical evidence of the validity of behavioral measures in the world of work, predictions often have to be built on individual studies. A number of independent studies have indeed found evidence of the predictive validity of intertemporal, risk and social preferences measures in this context (Barr and Serneels (2009), Carpenter and Seki (2011), Fehr and Leibbrandt (2011), Burks et al. (2012, 2016), Leibbrandt (2012), Fouarge et al. (2014),

Fiala (2015), Bodnaruk and Simonov (2016)).

Similarly applies to the stability of the measurements (i.e. their reliability). Although the tastes elicited through behavioral methods are not conceptually different from other more “standard” types of tastes (i.e. for a particular food, sport, car, etc.), it is important to enhance our understanding about the temporal stability of these measurements. The stability of intertemporal and risk preference measures has received considerable interest, with evidence suggesting that they display medium-to-high reliability and test-retest correlations in the range typically observed for personality traits (e.g. Kirby (2009), Harrison and McKay (2012), Wölbelt and Riedl (2013), Beauchamp et al. (2015)). Nevertheless, while a number of studies analyzing the stability of other measures such as social preferences have yielded similar (positive) findings (e.g. Murphy et al. (2011), Falk et al. (2016)), further research is clearly needed here.

Practical applications of basic insights

One key application of the information obtained with the mentioned experimental tools is to compare the characteristics of different groups. It is of great interest to know which are the variables that distinguish, for example, consulting from financial sector workers, one’s own workforce from that of competing companies, or people at top management levels from people at secondary management levels⁴. Depending on the circumstances, a company could want to hire the types of employees which are, or are not, in its standard workforce (as compared to competing companies for instance) or reassign people between departments in order to reach the desired combination of types.

At a more individual level, let us put an example of how simple measurements can help managers design appropriate incentives. In a group of 20 salesmen, a new compensation scheme has been implemented but the results are not as good as expected and some workers even decreased their sales after its implementation. The novel incentive consists of a €200 reward for the worker with the top sales in the last month. A correlational analysis between the productivity change (i.e. sales after *minus* sales before the implementation, which represents here the KPI under scrutiny) and the assessed measures of time, risk and social preferences can result in the following outcomes, which allow to understand the reasons for the unsatisfactory results and, therefore, intervene:

- Is the incentive too delayed? If the individuals with worse KPI values are those displaying more short-run orientation, the incentive can be changed from monthly to weekly realization (e.g. €50 for the one with top sales in the last week).

⁴ These differences arise, at least in part, due to self-selection of people into occupations or sectors. Self-selection (that can compromise the validity of particular findings; see Exadaktylos et al. (2013)) can in this way be taken advantage of.

- Is the incentive too volatile? If the individuals with worse KPI values are those displaying more risk aversion, the probability of someone getting the incentive can be increased (e.g. €20 to the 10 workers with top monthly sales).
- Is the incentive too unequal? If the individuals with worse KPI values are those displaying more inequality aversion, the incentive can be made more equitable (e.g. €10 for every worker if the sales exceed last month's sales).

Case study: Firm A

Firm A is a consulting company with about 500 employees. The managers of Firm A want to understand the drivers of information flows between departments. They have identified dysfunctions in the relationship between a number of departments since critical information (about practices, protocols and projects) often does not flow as it should from one to another. When individuals belonging to the different departments are debriefed regarding such cooperation failures, the answer tends to be that it is the fault of the other department's people. For a behavioral economist, this appears to be a problem of between-group cooperation and intergroup bias (i.e. the tendency to favor members of one's own group in detriment of members of other groups). The proposed assessment thus focused on the relationships between individuals within and across departments in Firm A.

The planned evaluation consisted of having the employees participate in an online experiment lasting for about 40 minutes. One out of every ten participants would be randomly selected to receive the real payment associated with one of his/her decisions (also randomly chosen) through bank transfer. The expected payoff of the *selected* employees was nearly €100. Employees would never learn the decisions made by other employees (i.e. a single blind procedure).

Note that a random sample of workers is often enough to obtain reliable evaluations, in particular, when the goal is to infer which employees' attributes are able to predict one or several KPIs. In this case, however, all workers should be assessed since one of the project main goals is to figure out if some specific individuals represent information (i.e. cooperation) bottlenecks so that intervention recommendations can put the focus on them.

Based on previous literature, the key measures to be obtained from the participants are the following: intertemporal preferences, social networks, social preferences and intergroup bias. These measures allow to infer characteristics of the individuals involved, learn about the nature of their relationships, and therefore help design interventions to reduce between-group conflict and increase cooperation.

Intertemporal preferences are included in the assessment because there is evidence that within-group cooperation and coordination (i.e. group synergy) is higher in groups of long-run oriented, patient people (Espín, Correa, and Ruiz-

Villaverde 2015, Curry, Price, and Price 2008, Al-Ubaydli, Jones, and Weel 2013). The distribution of types (roughly speaking, patient vs. impatient individuals) within departments may, therefore, be a key element of within- and between-department cooperation (Espín, Correa, and Ruiz-Villaverde 2015). Most likely, between-department conflict imposes long-term costs on the employees involved. Thus their intertemporal preferences may partially explain their conflict behavior⁵. We refer to the section "Measurement and its robustness" for an example of decision in typical intertemporal choice tasks.

To elicit the social networks of employees in Firm A, the proposed assessment included four standard questions (see Brañas-Garza et al. (2017) for a review of methods). In particular, the employees would be asked to select, from a drop-down list, a number of other employees with whom they (i) prefer to jointly carry out some teamwork, (ii) prefer to jointly participate in a leisure/socialization activity organized by the company, (iii) prefer *not* to jointly carry out some teamwork, (iv) prefer not to jointly participate in a leisure/socialization activity organized by the company. The names in the list correspond to all other participants (both from one's own and other departments). The first two questions are intended to elicit *positive* relationships, whereas the last two questions assess *negative* relationships. Positive and negative relationships in social networks have been found to be key predictors of between-department conflicts within companies (Labianca, Brass, and Gray 1998, Nelson 1989, Sparrowe, Liden, Wayne, and Kraimer 2001). It is important to note that monetary incentives for network elicitation (Branas-Garza, Jiménez, and Ponti 2017) are not necessary in this case because employees face other type of extrinsic incentives to reveal their truly preferred partners (e.g. giving incorrect names could result in having to work or to go out for dinner with disliked partners)⁶.

With these data, measures of centrality of individuals and other aggregate measures can be obtained. In particular, betweenness, in-degree and closeness centrality individual measures are key variables here since, among other things, they can help infer who might serve as a (positive) link between departments and who is likely to be a bottleneck. One potential application of these measures is to find out the appropriate person(s) to lead the communication between departments: for example, someone with a central position in the path between departments (betweenness) can canalize all the between-department communication⁷. The density/cohesion

⁵Experimental evidence from Espín et al. (2012) also suggests that intertemporal preferences have to do with the willingness to punish uncooperative group members, which is a fundamental driving force of long-term cooperation (Gächter, Renner, and Sefton 2008)

⁶Yet, as noted by a reviewer, there might exist other causes that lead a worker to hide social network information (for instance, showing a preference for not working with someone could reflect a non-cooperative character which might be disliked by the company).

⁷Although we provide brief practical implications here for several individual variables, we should note that individual measures are not enough to offer a definite solution to a problem such as this one and a more complete picture should be drawn from the whole assessment. For instance, if the person with

and centralization of the departmental clusters are also variables of interest: are more dense or centralized departments more, or less, likely to conflict with other departments? The intervention recommended to improve between-department cooperation could depend on the answer to this question. For instance, if the networks of more conflictive departments are more (less) centralized around particular individuals, one possible solution may consist of increasing (reducing) the homogeneity of groups.

Finally, the assessment included a battery of social preference games to elicit the participants' preferences when matched with (i) other random participants, (ii) random members of his/her own department (ingroups), (iii) random members of other departments (outgroups). After reading the general instructions of each game, individuals would have to make three types of decisions, one for each different type of partner. Apart from the "general" dispositions measured through the first matching protocol, with this methodology it is possible to explore the level of an individual's intergroup bias by comparing his/her decisions in the three cases (Chen and Li 2009, Espín, Correa, and Ruiz-Villaverde 2015). But even more critically, it also allows to infer how the different departments (as aggregate units) are perceived by people from other departments. The key question here is, which are the characteristics that define the best-perceived employees or departments? For example, are they more cooperative, more trustful, more compassionate, less ingroup biased? The answer to this question will determine the course of action.

The proposed tasks are the following: a distributional preferences game (Corgnet, Espín, and Hernán-González 2015) to explore pure outcome-based concerns; a public goods game (Fischbacher, Gächter, and Fehr 2001) to explore cooperation and conditional cooperation; an stag hunt game (Skyrms 2004) to explore coordination; a trust game (Ermisch, Gambetta, Laurie, Siedler, and Noah Uhrig 2009) to explore trust and trustworthiness; an ultimatum game (Güth, Schmittberger, and Schwarze 1982) to explore bargaining and fairness orientation; and a dictator game (Forsythe et al. 1994) to explore generosity.

As is the case here, often there are technical and logistical limitations to have participants play a game simultaneously. Thus, those games that require strategic interaction need to be played using the strategy method (Selten 1967). The strategy method entails that the participant decides for every possible contingency of the game (that is, for every possible choice of the other player). Let us illustrate this with an example. In the ultimatum game, a proposer suggests a way to split €200 with a responder. If the responder accepts the offer, the proposed split is implemented. However, if the responder rejects the offer, both players earn nothing. Here, all participants would have to make decisions for both roles of the game (Exadaktylos, Espín, and Brañas-Garza 2013). For the role of

the responder, using the strategy method, they would have to decide in advance whether they accept or reject each of the possible offers (Mitzkewitz and Nagel 1993).

The dictator game is identical to the ultimatum game with the exception that the second player is passive, so that the proposer's (here labeled as "dictator") offer is implemented for sure. The simplicity of this game allows to use it, for instance, to elicit the individuals' beliefs about the average generosity of different groups of participants (corresponding to the aforementioned three types of matching) and even to provide the decision maker with the name of the recipient, which allows to examine which departments and individuals are seen as less generous and which ones receive less generosity from others.

The amount of information obtained with this assessment is indeed exceptional. Both individualized and aggregate analyses can be carried out. Therefore, many variables can enter the equation (note that variables such as the participant's gender, age, experience, position, type of contract and earnings need also to be accounted for and have to be collected either during the experiment or from the company's previous data). However, this fact may also imply that the statistics are complex and strong econometric skills might thus be required. Especially in these cases, it is important to note that, while exploratory analyses need to be performed, theory- and evidence-based hypotheses must drive the data analysis.

Conclusion

We have delineated some potential avenues for the use of a behavioral economics approach for the evaluation and management of people within organizations, with applications for both the private and public sector. Hopefully, these lines stimulate further research on the areas where the evidence is still scarce.

To the best of our knowledge the supply of behavioral economics assessments for companies is very limited. Although there is increasing demand, the experience so far suggests that one of the main problems to sell this type of services (apart from the obvious entry barriers) is that managers, even within HR departments, are not familiar with the methodology and are thus reticent to apply it. However, now widely-used measurements such as cognitive skills and personality traits also found similar obstacles some years ago. We are thus optimistic that the current obstacles will decrease in the near future once more and more companies take the first step in applying behavioral economics methods to the assessment of their employees' attitudes.

Regarding possible policy implications, we can offer several insights. Governments might encourage public and private employment agencies to assess the characteristics of the (to be) employees not only in order to facilitate companies to hire the appropriate workers, but also to help employees to develop their careers toward the sector or level that is better suited to their characteristics. Public employment policy may benefit from these practices.

Another key insight for public policy might be obtained

good relationships at both sides is also uncooperative according to another measure, s/he might not be the appropriate person to lead between-department communication.

from assessing the preferences of the public servants in different institutions (e.g. city councils or regional governments) and analyze which are the variables that distinguish corrupt from non-corrupt institutions, over-indebted from balanced-accounting ones, etc. This would help solve these important problems through a systematic knowledge of their origin.

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