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In user's shoes: An experimental design on the role of perspective taking in discovering entrepreneurial opportunities☆

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ABSTRACT

In this paper we investigate how the entrepreneur's ability of taking the perspective of the user in a market enhances opportunity identification. We also show how prior knowledge of the market positively moderates the relationship between user perspective taking and opportunity recognition. Our study is grounded in entrepreneurship contributions that try to disentangle the role of cognitive processes in opportunity recognition. We confirm our intuition through a one-factorial between-subject experiment and we discuss our findings for entrepreneurship research and user innovation literatures.

1. Executive summary

Research in entrepreneurship has investigated cognitive traits that in addition to stock of information can spur market opportunities. In this paper we focus on a specific cognitive mechanism: user perspective taking, which means assuming the user's perspective when approaching a market. We specifically deduce two hypotheses that untangle cognitive processes of user perspective taking in an entrepreneurial setting, highlighting how an entrepreneur can enhance her ability to identify market opportunities by putting herself in the user's mind. User perspective taking can in fact provide the linking and underlying mechanism to develop not only the needed knowledge about a specific market segment but also the motivation to act-as by entering oneself in users' minds and being able to figure out how to meet their expectations can increase one's confidence in one's actions and intrinsic motivation to find an appropriate solution to the needs of those whose perspective has been shared.

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To validate our conceptual and anecdotal intuitions, we set up one experimental study. The main results show that user perspective taking actually enhances an entrepreneur's ability to recognize market opportunities. It also shows that prior knowledge measured as technical expertise of the entrepreneur positively moderates the relationship between user perspective taking and opportunity recognition.

Overall, we believe that our study makes three main contributions to entrepreneurship research. First and most important, we suggest that user perspective taking represents a new and powerful cognitive variable. While entrepreneurship studies have begun to highlight cognitive properties that characterize entrepreneurs' alertness, we suggest that user perspective taking adds an important extra dimension. In particular, taking the user's perspective can enhance entrepreneurs' creativity by allowing them to better identify latent user needs and to address user needs by recombining and integrating their previous knowledge. User perspective taking lets entrepreneurs identify market opportunities that are not only more innovative, but also more desirable and aligned with the user needs.

Second, our study shows, on the one hand, how prior knowledge negatively impacts opportunity identification but, on the other, acts as a positive moderating mechanism in the relationship between user perspective taking and opportunity identification. We show that when entrepreneurs are equipped with coherent cumulated expertise they can better leverage their ability to assume the user's perspective to understand the user's problems and find a proper solution. Hence, by introducing the interaction between user perspective taking and prior knowledge, we contribute to shed further light on the relationship between an individual's prior knowledge and her ability to cognitively process information and identify entrepreneurial opportunities.

Third, our work provides a contribution to the user innovation literature. By allowing entrepreneurs to overcome cognitive barriers to knowledge transfer and to discover new market opportunities, user perspective taking may be a fungible way to connect entrepreneurs with users. Entrepreneurs' propensity to take users' perspective can enhance their ability to recognize opportunities and their chances to create new ventures that match specific market preferences. The stronger this effect the more user perspective taking is combined with prior entrepreneur's knowledge.

We conclude our contribution by discussing the limitations of our studies and by providing some suggestions for promising avenues for future research in the fields of entrepreneurship, perspective taking and user innovation.

2. Introduction

Entrepreneurship has been defined as the scholarly field aimed at understanding "*how opportunities to bring into existence* '*future*' *goods and services are discovered*, *created*, *and exploited*" (Venkataraman, 1997: 120). Recognizing the right opportunities for new businesses is among the most important abilities of successful entrepreneurs (Stevenson and Gumpert, 1985).

Research in entrepreneurship has highlighted information corridors as a primary cause of the discovery of entrepreneurial opportunities. As noted by Shane and Venkataraman (2000: 222):"*human beings all possess different stocks of information*, *and these stocks of information influence their ability to recognize particular opportunities*". More recently, scholars have investigated cognitive traits that in addition to stock of information can spur market opportunities (e.g., Busenitz and Barney, 1997; Haynie and Shepherd, 2009; Haynie et al., 2010; Shaver and Scott, 1991; Smith et al., 2009). Cognitive mechanisms can in fact crucially affect how entrepreneurs interact with their environments and create new opportunities (Shaver and Scott, 1991; Mitchell et al., 2008). Cognitive mechanisms are especially relevant to entrepreneurship when demand is considered not given but something that entrepreneurs should try to "*do something about*" (Penrose, 1959: 80; see also Alvarez and Barney, 2007).

Following this line of reasoning, we focus on a specific cognitive mechanism: user perspective taking, which means assuming the user's perspective when approaching a market. Perspective taking (henceforth, PT) can be defined as "*the ability to infer other individuals*' *mental states*, *to consider their perspective*, *and thereby to interpret and predict their actions*" (Wu and Keysar, 2007: 600). A large body of literature suggests that the ability to understand another person's viewpoint can benefit all parties. This ability is positively related to sensitivity (Parker and Axtell, 2001) and helps people empathize with others' feelings (Batson, 1994). PT has been found to diminish egocentric biases in judgments (Savitsky et al., 2005; Wade-Benzoni et al., 1996), to favor successful conflict resolution (Eiseman, 1978; Paese and Yonker, 2001), and to support the coordination of social goals by creating social bonds (Galinsky et al., 2005).

In this paper, we deduce two hypotheses that untangle user PT in an entrepreneurial setting, highlighting how an entrepreneur can enhance her ability to identify market opportunities by putting herself in the user's mind. We specifically focus on users because market demand is central in opportunity identification (Shane and Venkataraman, 2000) and because in general "*consumers are arbiters of value*" (Priem, 2007: 219). In a recent review of entrepreneurship literature, Priem et al. (2012: 352–353) noted that the process of new value creation depends "*on a start-up entrepreneur's ability to successfully recognize and exploit consumer demand that is unknown to or undervalued by more established firms*". Relatedly, in a rich literature on innovation, users have been associated with the ability to identify successful innovations (Von Hippel, 1988, 2005).

While grounded in theory, our user PT model is also based on anecdotal evidence. In fact, Thomas Edison (2012: 38)—one of the greatest inventors and most famous entrepreneurs of all times—once said, "*Anything that won't sell I do not want to invent. Its sale is proof of its utility and utility is success*". And modern entrepreneurs to connect to the market stress empathy and PT as an important variable. For instance, Virgin CEO Richard Branson (2009) claims that "*when we start a new venture*, *we base it on hard research and analysis. Typically*, *we review the industry and put ourselves in the customer's shoes to see what could make it better*". Similarly, celebrity chef Gordon Ramsay (2007), famous worldwide for his hit TV series Hell's Kitchen, remarks "*the secret of a successful chef is to put himself in the customer's position. By that*, *I mean thinking about what they want*".

To validate our conceptual and anecdotal intuitions, we set up one experimental study. The main results show that user PT actually enhances an entrepreneur's ability to recognize market opportunities and to provide solutions more aligned to the targeted customers. It also shows that prior knowledge measured as technical expertise of the entrepreneur positively moderates the relationship between user PT and opportunity recognition. We conclude our contribution by discussing our results and the limitations of our study and by providing some suggestions for promising avenues for future research in the fields of entrepreneurship, PT and user innovation.

In the next pages, we first highlight the importance of users and demand in opportunity recognition (Section 2). Before presenting our model, we then review core findings on PT (Section 3) and introduce and define the construct of user PT (Section 4). We then show how user PT impacts opportunity identification and how prior knowledge is a moderating variable of this relationship (Section 5). After highlighting our results (Section 6), we discuss their implications for literature and practice (Section 7).

3. Opportunity recognition and users

With the expression "opportunity recognition" entrepreneurship scholars refer to how ideas for potentially profitable new businesses are identified by entrepreneurs (e.g., Kirzner, 1979; Shane, 2003). Ardichvili et al. (2003): 109) argued that "*an opportunity may be the chance to meet a market need* (*or interest or want*) *through a creative combination of resources to deliver superior value* (…). *As the market need becomes more precisely defined in terms of benefits and value sought by particular users, and resources become more precisely defined in terms of potential uses*, *the* '*opportunity*' *progresses from its elemental form and a business concept begins to emerge*". While many conceptual papers discuss the process of opportunity recognition, empirical analyses have measured opportunity recognition as an outcome variable. According to the measurement indicators developed by Grégoire et al. (2010) ideas can be defined as opportunities if they meet three criteria: alignment with the market's needs, feasibility, and desirability.

As the foregoing illustration highlights, the understanding of market demand and customers is an essential feature of opportunity recognition. This intuition rests on the fact that users are often better positioned to understand problems and opportunities related to a specific business (von Hippel, 1986, 2005). The type of experience that users develop with products is unique and different from the one that is developed by producers. In this regard, the perspective of a producer is limited by the rigidity of the technology that is used to conceive products and by the limited understanding of the product in the usage and consumption context. Instead users are uniquely positioned to exploit an understanding of the market that producers do not have and can sometimes even anticipate market needs—what in von Hippel (1976)'s theory are called "*lead users*". Nonetheless, because of a lack of time and resources they do not end up developing new products or, if they do, they develop them not with commercial purposes but only for their private use. In fact 'user entrepreneurs'–namely lead users that become actual entrepreneurs (Shah and Tripsas, 2007)–are a rare phenomenon limited to specific industries (von Hippel, 2005).

Interestingly, while the topic of users and demand as a lever to discover and exploit new opportunities has also been highlighted in seminal works dealing with entrepreneurship (e.g., Penrose, 1959; Kirzner, 1979), to the best of our knowledge it has been surprisingly overlooked empirically. An exception is the work by Shane (2000) who shows that individuals' prior knowledge of customers' problems enhances their likelihood of also discovering entrepreneurial opportunities. In the case of 3D imaging, inventor and entrepreneur Todd Jackson was able to solve the customer problem behind his invention because it came to him while he was preparing his doctoral thesis.

In this paper we'll try to show how the identification of entrepreneurial opportunities can be enhanced by the cognitive ability to assume the perspective of the user.

4. The construct of PT

Originating from the seminal contributions of Piaget (1932) and Mead (1934), PT is the cognitive component of empathy, the other is being the emotional trigger (e.g., Coke et al., 1978; Davis, 1983; Deutsch and Madle, 1975; Hoffman, 1977; Oswald, 1996). This cognitive component of empathy refers to the ability to infer the perceptions of others (e.g., Dymond, 1949, 1950). It involves the ability to understand another person's inner experiences and feelings and the ability to view the outside world from the other person's perspective (Hojat et al., 2001; Parker et al., 2008).

Different literatures have analyzed how PT impacts a number of variables. In psychology studies, it has been shown that PT is fundamental to social interactions (e.g., Decety and Sommerville, 2003; Saxe and Kanwisher, 2003), and particularly with respect to both individuals' interpersonal and affective sets of relationships (e.g., Aron and Aron, 1986; Aron et al., 1991; Astington et al., 1988; Perner et al., 1987; Piaget, 1932) and their business and organizational relationships (e.g., Babcock et al., 1995; Messick, 1995; Van Boven et al., 2000). In the latter context, PT appears to play crucial roles in both competitive and cooperative activities (Wu and Keysar, 2007). Specifically, one of the primary benefits of PT is that it supports the coordination of social goals, helping create social bonds (Galinsky et al., 2005). The ability to adopt others' perspectives may also be graduated: for instance, research shows that assuming the perspective of a close individual is easier than putting oneself into the mind of a stranger (Aron and Aron, 1986; Aron et al., 1991; Wu and Keysar, 2007).

PT has recently been in the foreground of some marketing and organizational studies. Specifically, marketing scholars have explored the relationship between the PT construct and both marketing performance and sales outcomes. One such study shows that higher levels of knowledge about customer needs, driven by greater cognitive empathy or PT abilities, are associated with enhanced customer satisfaction and willingness to pay (Homburg et al., 2009). Other studies have focused instead on the extent

to which greater PT abilities can reflect higher customer orientation, especially in individual service workers (e.g., Rupp et al., 2008), salespeople (e.g., Aggarwal et al., 2005; Giacobbe et al., 2006; McBane, 1995), and frontline employees (Homburg et al., 2009), and it has been identified as a determinant of adaptive selling (Widmier, 2002: 610). These studies are consistent with our intuition of user PT as a base for opportunity recognition.

Organization scholars have also been attracted to PT as a possible determinant of knowledge integration and organizational capabilities. In their work on communities of practice, Boland and Tenkasi (1995: 362) conclude that "*representations of ways of knowing from members in one community can then be exchanged with members of another, who, […] can now engage in communication about the perspectives of another. This taking of the other into account, in light of a reflexive knowledge of one's own perspective, is the PT process*". By applying PT to the relationship between employees and suppliers, Parker and Axtell (2001) show that PT is associated with cooperative and helping behaviors toward suppliers. More recently, PT has been envisioned as an organizational capability. Litchfield and Gentry maintain that PT facilitates "*both seeing and believing*" (Litchfield and Gentry, 2010: 195) and that it helps individuals to capture others' perspectives in a manner that is unbiased, thus facilitating knowledge integration and underpinning organizational learning and innovation.

In summary, while psychology studies have discovered, explained, and refined the construct of PT, business studies in marketing and organizational behavior have highlighted how PT can contribute to marketing performance and organizational alignment. In the following, we extend the notion of PT to users and entrepreneurship studies.

More precisely, we introduce the notion of *user PT*. Relatedly to Wu and Keysar (2007)'s definition of PT, we define user PT as *the cognitive ability to infer customer mental states, to consider their perspective and to interpret and predict their actions* with respect to processes of consumptions.

The importance of user PT is grounded in two conceptual intuitions. On the one hand, users and demand are important vehicles of success in opportunity identification (Shane, 2003) and value creation (Priem et al., 2012). Being able to cognitively predict and interpret the actions of consumers is potentially an important ability to succeed in opportunity recognition because of the role of consumers in value creation (Priem, 2007). Secondly, literature on user innovation has demonstrated that user and customer knowledge is sticky and difficult to be transferred (von Hippel, 1994). By assuming the user perspective entrepreneurs can overcome the knowledge sharing challenge by directly thinking *as they were customers*.

5. A model of user PT and opportunity recognition

In this section we will introduce the main effect of our model by highlighting how user PT can enhance opportunity recognition. Building on the evidence of how cognitive processes impact opportunity recognition (Grégoire et al., 2011; Grégoire and Shepherd, 2012), our key hypothesis is that entrepreneurs who take the user's perspective will ultimately show a stronger ability to recognize market opportunities. The reason why this happens refers to a series of mechanisms. Entrepreneurs tend to be limited by their own experience. Experience generates "*einstellung*" effects, which occur "*when the first idea that comes to mind, triggered by previous experience with similar situations, prevents alternatives from being considered*" (Bilalić et al., 2008: 653; see also Dane, 2010). Instead, user PT: (a) helps them widen the spectrum of perspectives they can think of; (b) acts as a selective force to identify what are the most relevant problems and solutions and in general the most relevant opportunities among those that have been recognized; (c) supports integration both with the self and with own creativity; and finally (d) stimulates motivation to act and find a proper solution to meet the identified opportunities. We now discuss each of this mechanism.

First of all, user PT helps entrepreneurs broaden their understanding of opportunities by expanding their cognitive understanding of the needs, wants and preferences of potential customers (a). In fact, a pattern recognition perspective suggests that the identification of entrepreneurial opportunities can be enhanced "*by providing potential entrepreneurs with a very broad range of experience. The broader this experience (e.g., the wider the range of positions held, the greater the number of different industries) the richer will be the prototypes and store of exemplars at their disposal, and hence, the more likely the entrepreneurs will be to perceive connections between seemingly unrelated events or trends—especially connections that are not immediately apparent to any casual observer*" (Baron, 2006: 117). We assume that there is no magic at work that changes the entrepreneur's ability to identify opportunities but instead that user PT can help entrepreneurs further enhance their "*entrepreneurial imagination*" (Kor et al., 2007) and especially their ability to create commercially profitable opportunities that are useful for the user. User PT helps widen the breadth of entrepreneur's perspectives by assuming the viewpoints of customers: "*Having one foot outside your world means you can be less beholden to the ties that would otherwise bind and blind you in that world*" (Hargadon, 2006: 209). In other words, user PT helps an entrepreneur share a target user's experience, which enhances that entrepreneur's opportunity to learn (e.g., Sciangula and Morry, 2009) and to address specific "*idea sets*" (Hill and Birkinshaw, 2010). Since the size and the shape of social ties are particularly important antecedents of opportunity recognition (Ardichvili et al., 2003; Baron, 2006), user PT can enhance them, by letting the entrepreneur envision to what kind of networks she has to be connected with. In sum perspective taking, by expanding the self-perspective to others, also triggers an exploration of other agents' viewpoints.

With regard to (b), user PT reduces the complexity of opportunities and favors their prioritization, by helping the entrepreneur select those opportunities that are relevant for the user. As noted by Galinsky and Moskowitz (2000: 709) "*perspective takers made the same attributions for the target that they would have made if they themselves had found themselves in that situation*". This special attention focus helps eliminate the useless information related to stereotypes and judgment (Brewer, 1991).

User PT has also the power to function as an integrative mechanism (c). In fact, PT increases self–other overlap (Galinsky and Moskowitz, 2000: 709). "*Increased self–other overlap occurs both when participants imagine themselves in the target's place and when they imagine what it would be like to be the target*" (Davis et al., 1996). Through PT our knowledge gets *altered* within the self

(Grant and Berry, 2011; Kor et al., 2007) and user PT acts as an important integrative mechanism able to absorb the new available knowledge effectively.

With regard to the increased motivation in accomplishing the opportunity (d), user PT can improve entrepreneurial cognition and facilitate the shift from the recognition of a third-person opportunity to the acquisition of the belief that the opportunity is valuable to the entrepreneur, i.e., a first-person opportunity belief (Shepherd et al., 2007). As McMullen and Shepherd (2006: 141) noted, "*believing that one has recognized a third person opportunity does not necessarily mean one believes one possesses the knowledge and motivation necessary to exploit it*". User PT can provide the linking and underlying mechanism to develop not only the needed knowledge about a specific market segment but also the motivation to act, as by entering oneself in users' minds and being able to figure out how to meet their expectations can increase one's confidence in one's actions and intrinsic motivation to find an appropriate solution to the needs of those whose perspective has been shared.

Overall user PT favors variation, selection, and integration of opportunities from the user perspective and finally also stimulates a series of motivation to accomplish opportunity identification. As noted in the introductory section, our conceptual intuition is also grounded in practice. In fact management practice highlights several entrepreneurial initiatives similar to those cited by Chef Rumsey and entrepreneur Branson in which an entrepreneur's ability to assume the user's perspective is a key success factor.

On the basis of these elements, we advance the following main effect:

H1. An entrepreneur's user PT increases her ability to identify market opportunities.

6. The moderating effect of prior knowledge

Opportunities that entrepreneurs perceive from their environment tend to depend on the patterns of opportunities with which they are familiar—which help them translate emerging information into ideas for entrepreneurial action (Baron, 2006; Cornelissen and Clarke, 2010). For this reason, many scholars consider prior knowledge an important driver of opportunity recognition (e.g., Hayek, 1945; Kirzner, 1979; Shane and Venkataraman, 2000; Dencker et al., 2009; Gruber et al., 2013).

With specific regard to demand, entrepreneurial success is related to an entrepreneur's prior experience with the same consumers or markets (Hmieleski and Baron, 2009). Similarly, Baron (2006) pointed out that individuals with a broad range of work experience will have greater knowledge about industries, markets and technologies than will persons with limited experience. He notes that "*this knowledge will enable them to develop more accurate and appropriate prototypes and a broader range of exemplars. These cognitive frameworks, in turn, can facilitate the identification of new opportunities*" (Baron, 2006:112). In this direction, Shane (2000, 2003) argued that entrepreneurs discover opportunities thanks to their prior knowledge, which triggers recognition of the value of new information: people cumulate different stocks of prior information thanks to their individual experiences, which increase the likelihood to identify opportunities. According to this view, any entrepreneur is able to discover those opportunities that are related to her/his previous knowledge of field or industry (Shane, 2001; McKelvie and Wicklund, 2004). In other words, this means that each entrepreneur moves within her/his "*knowledge corridor*", which allows her/him to recognize some opportunities and not others (Venkataraman, 1997).

Despite the relevance of knowledge corridors, Siegel and Renko (2012: 797) pointed out that "*the mechanisms through which knowledge contributes to entrepreneurial opportunity recognition are still unclear*". By reviewing the works of other authors, Dane (2010) noted that domain expertise can be a hindrance in this regard. Relatedly, Ucbasaran et al. (2008) argued that being experienced may lead to liabilities, such as relying too much on heuristics and decision-making shortcuts that have worked in the past. Being highly experienced may induce to infer too much from little information and produce a tendency to become constrained by the familiar such that people are less able to think beyond what is known (Westhead et al. 2005). Similarly, Gielnik et al. (2012) argue that experience may lead to a cognitive fixedness impeding the integration of new information and thus hindering business opportunity identification. Knowledge provides mental models to interpret information (Fiske and Taylor, 1984), which also means that experienced entrepreneurs can fall into "*mental ruts*" (Shepherd and DeTienne, 2005) with negative consequences, such as cognitive entrenchment, stereotyped thinking, and discounting of new information. Experienced entrepreneurs discount new information that is not consistent with their preconceptions, and they rely on their past experiences even when circumstances are changing (Parker, 2004). As a result, experienced entrepreneurs may refrain from using and combining new information, with detrimental effects on business opportunity identification.

Independently from the positive or negative impact of prior experience on opportunity recognition, in our model we propose that prior knowledge acts as a positive moderating variable in the relationship between user PT and opportunity identification. In fact: (a) prior knowledge interacts with user PT by favoring a better understanding of the user context, in this way boosting opportunity recognition. In addition (b) prior knowledge of users empowers the cognitive dimension of empathy by stimulating ad hoc problem-solving and as such it contributes in identifying new market opportunities.

With regard to (a), the entrepreneurs in the study by Gemmell et al. (2011: 15) demonstrated creative ideation in many domains "*however, they consciously and exclusively selected ideas within a "home domain" for elaboration. When asked about domain selectivity, entrepreneurs cited insufficient understanding of the new domain risk factors, challenges developing new "close outer group" network ties, and issues attaining funding in a domain in which they lack a track record*". By combining together prior knowledge and user PT, entrepreneurs can better exploit their previous experience beyond their home domain, by entering new users' domain. In fact prior knowledge specifically enhances the entrepreneur's capacity to absorb information about markets, production processes and technologies (Corbett, 2002) and hence makes stronger main positive effect that user PT plays on opportunity recognition.

With regard to (b), the entrepreneur's stock of information shapes a mental schema, which sets the perception of a market or an industry (Gaglio, 1997), and facilitates pattern recognition, i.e. the identification of meaningful patterns in complex arrays of events or trends (e.g., Matlin, 2005). By putting herself in the shoes of the user, an actor with prior knowledge of the market can further understand the problems encountered by the users and propose possible solutions that also leverage the cumulated knowledge of the market. Instead, an actor lacking prior knowledge of the field may reduce the options she's able to span to help a user solve a problem into a specific field. Overall, user PT interacts with previous technical expertise by enhancing a bisociative mode of thinking, which implies making connections among previously not related ideas (Koestler, 1964). Previously cumulated technical expertise can contribute to make stronger relationship between the entrepreneur's ability to enter the mind of the customer and her ability to solve new problems faced by those customers whose perspective is assumed.

Hence, if prior knowledge per se might have controversial effects on opportunity recognition, we argue that when combined with user PT it positively contributes to increase the entrepreneur's ability to understand specific users' problems, which generate market opportunities, and effectively address them with proper relevant solutions. In other words, the more the entrepreneur is an expert into a specific knowledge domain, the more her ability to assume the perspective of the user will positively impact opportunity identification. For these reasons we claim that:

H2. The relationship between an entrepreneur's user PT and her ability to identify market opportunities is positively moderated by the entrepreneur's prior knowledge.

Fig. 1 provides a representation of our model.

7. Methods

7.1. Data, sample, and procedure

In order to test our hypotheses, we set up a scenario-based experiment, in which we adopted a one-factorial, between-subjects design with one experimental and one control group and instructional sets from previous PT studies (e.g., Davis et al., 1996; Galinsky and Moskowitz, 2000; Galinsky et al., 2008) to manipulate the intensity of user PT. We chose the food industry as the setting of our experiment.

To construct an accurate story with a relevant business problem, we consulted an experienced practitioner for insight into how to frame the scenario. In addition, we also discussed users' problems, needs, and potential business opportunity in the food (and superfood) industry with a nascent entrepreneur in this sector.

In our experimental scenario we described a story in which a user, Charles, is a successful manager who is passionate about sports and running and who is, therefore, sensitive to particular diet issues. Following Davis et al. (1996) and Galinsky and Moskowitz (2000), among others, we manipulated the intensity of user PT by setting it to either full PT or pure observation. The participants of the experimental group *User PT group*, were instructed to "put yourself in the shoes of Charles—try to figure out his thoughts when experiencing the problem. Imagine his viewpoint as clearly and vividly as possible" ($n = 73$). By contrast, the participants of group 2 ($n = 64$), the Control group, were instructed to read the scenario "carefully and objectively". They were explicitly invited to preserve their full independence of judgment to the extent possible in understanding the situation and in finding a possible solution to the emerging problem and to avoid assuming the user's point of view. We assigned the treatment randomly, and each participant ran the experiment individually.

To address the core component of the experiment and thus, to determine whether taking the user's perspective can be an effective method of improving an entrepreneur's ability to recognize and deal with market opportunities, we asked participants to attempt to help Charles by inventing a new food product that would aid him in maintaining his healthy lifestyle during work hours.

In order to address this point, we developed a questionnaire. The questionnaire was divided into two parts: the first included a list of controls, and the second included instructions, the scenario, manipulation checks, and additional control variables. Before

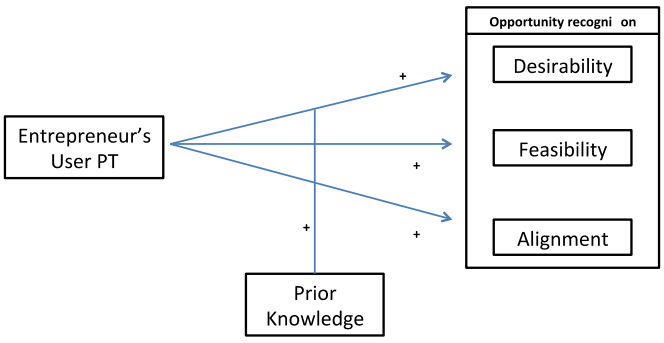

Fig. 1. A model of opportunity recognition and user perspective taking.

conducting the experiment, we ran a pilot study over a few weeks to test whether the questionnaire was fully understandable and whether it could be completed in the required time. We pre-tested the questionnaire on a random sample of 35 students from an M.Sc. in Strategy and Entrepreneurship class at a leading school of management. The final version of the experiment was administered to a final sample of 137 graduate students.[4] Participants were divided into two groups: group 1, the experimental group or *User PT group* (n = 73), and group 2, the Control group (n = 64).

7.2. Measures

7.2.1. Dependent variable

Our main dependent variable is *Opportunity Recognition*. After the priming, the participants were asked to complete the questionnaire post-stimulus as if they were entrepreneurs taking the user's perspective (or simply 'watching' him, depending on which group they were in) as described in the scenario and thus, to attempt to help the user Charles by inventing a new product idea that addressed his problem (i.e. to suggest a food product that would aid him in maintaining his healthy lifestyle during work hours). For the opportunity recognition task, the following instructions were provided: "Please briefly suggest a new food product that might help Charles resolve his diet requirements". We told all the participants that their ideas would be evaluated in terms of novelty, usefulness, and alignment with the user's needs. In order to evaluate this task objectively, we adopted the consensual assessment technique (Amabile, 1996; Grant and Berry, 2011) and thus we relied on the objective and professional evaluations of two external reviewers who were experts in the food and beverage sector.[5] The two raters were asked to evaluate the participants' ideas anchored on a validated Likert scale. To measure opportunity recognition, we adopted the measure by Grégoire et al. (2010), according to which ideas can be defined as opportunities if they meet the criteria of: i) alignment with the market's needs, ii) feasibility, and iii) desirability. For each of these dimensions, the two experts expressed their judgment on a 7-point Likert scale (for instance, 1 = not at all aligned with market needs; 7 = completely aligned with market needs).

We finally verified that the two raters achieved good reliability based on the Intraclass Correlation Coefficient (ICC) within conventional guidelines (LeBreton and Senter, 2008; Grant and Berry, 2011), so that we could average their ratings to obtain unique measures for alignment, feasibility, and desirability. The compact measure e of opportunity recognition encompassing these three facets shows a good reliability (alpha = 0.92). In turn, by summing these three facets, we had the final and compact measure of opportunity recognition. After they judged the participants' ideas, their potential value as market opportunities, we asked the two raters to verbalize their evaluation criteria. The ideas that were rated the lowest typically describe new products that are creative and feasible but that are insufficiently customized to the specific user's needs. These products do not appear to truly open an opportunity trajectory, which is why they scored low. Ideas that are considered embryonic, interesting opportunities are those that suggest new products aligned with a user need, offering proof of a high level of sensitivity to market needs. Finally, the most-appreciated ideas are those that combine high levels of creativity and feasibility with high customization. We display the separate evaluations of the raters, the final measure with relative ICC statistics in the Table 1.

7.2.2. Independent variable

In our study *user PT* is operationalized by the PT manipulation (e.g. Davis et al., 1996; Galinsky and Moskowitz, 2000; Galinsky et al., 2008) and thus, it is measured by a dummy variable equal to 1 if the respondent participated in the treatment group, while it is zero if the respondent took part to the experiment in the control group.

7.2.3. Moderating variable

In our model we measured prior knowledge of markets with *Technical Expertise* (Franke et al., 2006, 2014). Shane (2000) defines prior knowledge as a broad construct made of prior knowledge of markets, prior knowledge of ways to serve markets, and prior knowledge of customer problems. In measuring this construct, Shepherd and DeTienne (2005): 99) use only prior knowledge of the market claiming that "*prior knowledge of the customer was chosen because it captures aspects of the other dimensions* (*knowledge of the market and ways to serve the market*) *and is argued to be the primary reason why entrepreneurs start new companies* (Von Hippel, 1988)". Following this direction, we employed the measure validated by Franke et al. (2006, 2014).

7.2.4. Control variables

Although we collected the data in a laboratory experiment and we assigned the manipulation randomly, which reduces per se the confounding factors and unobserved heterogeneity between the participants of the two different groups and the bias of the final results (e.g. Winer et al., 1991), we additionally controlled for a series of individual variables that typically are associated with the likelihood of opportunity recognition. Hence, in our questionnaire we included the measures to capture *Age* and

[4] Researchers aiming to develop, test, or validate new constructs (e.g., Lumpkin et al., 2009); Thompson (2009); Mueller and Conway Dato-On, 2008; Wilson et al., 2007) have often composed their samples from Entrepreneurship students' graduate, MBA and executive students. MBAs have also been indicated to be valid references, leading to reliable results, in entrepreneurial cognition and opportunity recognition studies and have been considered particularly appropriate for research adopting methodologies such as experiments and quasi-experiments (Gaglio and Katz, 2001). Other works (e.g. Shepherd and DeTienne, 2005; Chen et al., 2009; Dew et al., 2009) consider them as good surrogates or 'novice entrepreneurs'.

[5] The evaluators are both around their 40s–45s. One evaluator is an academic scholar in operations management, with a long experience in consulting in the food and beverage industry. The second rater is a top manager with responsibilities on innovation and R&D activities, working in one leading Italian company in the food and beverages sector. They both have know-how about the industry, its dynamics and its trends.

Table 1
Consensus techniques: ratings from the two external experts.

Rater	Mean (SD)			
	Alignment	*Desirability*	*Feasibility*	*Opportunity*
1	3.78	3.72	3.38	10.89
	(1.04)	(1.11)	(0.99)	(2.81)
2	3.74	3.85	3.23	10.82
	(1.16)	(1.12)	(1.13)	(3.12)
Total mean	3.76	3.79	3.31	10.85
	(1.11)	(1.12)	(1.06)	(2.94)

Note: for the three dimensions alignment, desirability, and opportunity, the ICC is consistent and significant. More precisely, for Alignment, ICC = 0.833 and $p < 0.01$; Desirability, ICC = 0.820 and $p < 0.01$; and Feasibility, ICC = 0.778 and $p < 0.01$.

Entrepreneurial Activities (by using a measure from Nicolaou et al., 2008), as proxies of general entrepreneurial experience that has been shown to be an antecedent of opportunities (e.g. Ardichvili et al., 2003; Gruber et al., 2013). We also controlled for the *Entrepreneurial Intentions* (by using a measure from Linan and Chen, 2009), *Entrepreneurial Self-efficacy* (scale from Jones, 1986), *Self-perceived Creativity* (Oldham and Cummings, 1996), and the *Alertness* level (by using a measure from Kaish and Gilad, 1991) as variables that usually characterize the entrepreneur and thus also the probability of discovering opportunities (e.g. Chen et al., 1998; Kirzner, 1979; Krueger and Dickson, 1994; Shane, 2003; Ward, 2004). Finally, we also inserted other individual controls such as *Gender*, *Empathic Tendency* (using the IRI Index from Davis, 1980), *Personal Innovativeness* (using a scale by Baumgartner and Steenkamp, 1996), *Lead Userness* status (by using the scale by Franke et al., 2006) to control for specific personal attributes that have been shown to drive creativity, innovation and new product development (e.g. Franke et al., 2006; Hoever et al., 2012; Urban and von Hippel, 1988).

Table 2 lists the variables and their measures; Table 3 contains their descriptive statistics and the pairwise correlations. Finally, we also introduced two different manipulation checks drawn from Davis et al. (1996) to understand whether participants properly interpreted the instructions received and answered the questions according to the priming. With the first manipulation check the respondents rated one of the following statements, on a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree): "I took Charles' perspective and put myself in his shoes" and "I read the story objectively". The second common manipulation check asked the participants to answer the following questions: "To what extent did you imagine how you would behave and think if you were Charles?" and "To what extent did you try to read Charles' story carefully and objectively?" The answers are anchored on a seven-point Likert scale (1 = I read the story objectively; 7 = I took the perspective and put myself in the shoes of Charles, and vice-versa for the other checks).

Table 2
List of variables and measures.

Variable	Measures
Dependent variable	
Opportunity recognition	Variable indicating if the solutions and idea described by the participant in the experiment is considered as a market opportunity. The measure is the sum of three components i) Alignment with the market, ii) Desirability, and iii) Feasibility evaluated by two independent end external raters (source of the scale: Grégoire et al., 2011).
Core covariates	
User PT	Dummy variable: 1 if the participant was running the experiment in the treated User PT group, 0 if he/she was part of the control group.
Technical Expertise	Dummy variable: 1 if the technical expertise of the participant is higher, 0 otherwise (source of the measure: Franke et al., 2014).
Control variables	
Age	Age of the participant. Self-reported measure.
Individual self-efficacy	Seven-point Likert scale capturing the entrepreneur's perception of individual self-efficacy (source: Cassar and Friedman, 2009).
Individual creativity	Seven-point Likert scale measuring the entrepreneur's perception of individual creativity (source: Zhou and George, 2001).
Entrepreneurial activities	Dummy variable 1: if the participant was either self-employed, owner operator or autonomous workers in the past, 0 otherwise. (source: Nicolaou et al., 2008).
Entrepreneurial intentions	Seven-point Likert scale measuring the level of entrepreneurial intentions (i.e. propensity to become entrepreneur) of each participant. (source of the scale: Linan and Chen, 2009).
Alertness	Seven-point Likert scale measuring the alertness level of each participant. (source of the scale: Kaish and Gilad, 1991).
Gender	Dummy variable: 1 if the participant is female, 0 if male.
Empathic tendency	Seven-point Likert scale measuring the empathic tendency of each participant (source of the scale: IRI index, Davis, 1980).
Innovativeness	Seven-point Likert scale measuring the level of individual innovativeness. (source of the scale: Baumgartner and Steenkamp, 1996).
Lead userness status	Seven-point Likert scale measuring the level of lead userness of each participant (source of the scale: Franke et al., 2006).

Table 3
Descriptive statistics and correlation matrix.

	Variable	N	Mean	SD	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Opportunity recognition	137	10.854	2.941	3	20	1.000															
2	Alignment	137	3.759	1.061	1	7	0.974	1.000														
3	Desirability	137	3.788	1.069	1	7	0.964	0.987	1.000													
4	Feasibility	137	3.307	1.010	1	7	0.869	0.741	0.711	1.000												
5	User PT	137	0.533	0.501	0	1	0.420	0.368	0.391	0.424	1.000											
6	Technical Expertise	137	0.530	0.501	0	1	−0.133	−0.130	−0.116	−0.127	−0.054	1.000										
7	Age	137	24.474	1.774	19	31	0.209	0.239	0.238	0.105	0.102	0.044	1.000									
8	Individ. self-efficacy	137	4.710	1.348	1	7	0.016	0.043	0.042	−0.041	0.037	0.102	−0.038	1.000								
9	Individ. creativity	137	5.272	1.105	1	7	0.046	0.062	0.065	0.001	−0.031	0.264	0.084	0.228	1.000							
10	Entrepr. activities	137	0.219	0.415	0	1	0.005	0.012	0.031	−0.030	0.001	0.051	0.207	0.194	0.156	1.000						
11	Entrepren intentions	137	5.488	1.279	1	7	0.058	0.048	0.062	0.053	−0.142	0.261	0.028	0.171	0.620	−0.006	1.000					
12	Alertness	137	5.196	1.198	1	7	0.046	0.044	0.037	0.047	−0.001	0.285	0.064	0.244	0.656	0.005	0.507	1.000				
13	Gender	137	0.372	0.485	0	1	−0.054	−0.053	−0.081	−0.017	0.086	0.047	0.015	0.004	−0.221	−0.189	−0.271	−0.028	1.000			
14	Empathic tendency	137	4.509	0.828	1	7	0.037	0.029	0.039	0.035	0.107	0.266	−0.093	0.152	0.324	−0.040	0.299	0.412	0.000	1.000		
15	Innovativeness	137	4.279	0.608	1	7	−0.089	−0.058	−0.059	−0.137	−0.060	0.005	−0.150	0.095	0.022	0.014	−0.070	0.045	0.244	0.322	1.000	
16	Lead userness status	137	4.126	1.234	1	7	−0.027	−0.022	−0.028	−0.025	−0.126	0.471	0.167	0.114	0.319	0.035	0.256	0.316	0.103	0.279	0.019	1.000

To determine if our *User PT* manipulation was consistent and thus, any variation of the dependent variable between the two groups was due to it, we ran a t-test between groups on the manipulation checks that show a significance at 1% level ($t(135) = -18.56$, $p < .01$; $t(135) = 16.16$, $p < .01$).

8. Results

To estimate our results and to assess the significance of our hypotheses we employed a linear regression model given the distribution of our dependent variable. Our estimations are reported in Table 4.

The first specification 4.1 displays the results of the baseline model with the control variables only. The second and the third specifications (i.e. 4.2 and 4.3 respectively) introduce one of two covariates independently; the fourth specification (4.4) includes both key covariates, and the final specification (4.5) reveals the complete model with the interaction term for *User PT* and *Technical Expertise*.

From the estimates, we observe that *User PT* correlates positively with *Opportunity Recognition*, and the *Technical Expertise* correlates negatively with it. The coefficients of *User PT* and *Expertise* are always statistically significant and in the complete model (i.e. specification 4.5) they are significant at a 5 and 1% level respectively. The statistical evidence that *User PT* is positive and significant ($p < 0.05$) supports Hypothesis 1.

Specification 4.5 also confirms that assuming the perspective of the user in combination with high expertise is beneficial to the economic success of the invention. The interaction term between *User PT* and *Technical Expertise* (*User PT* × *Technical Expertise*) is positive and statistically significant at the 5% level, in support of our Hypothesis 2. In other terms, only when entrepreneurs with higher technical expertise start to engage in cognitive processes of perspective-taking targeted on users, then the probability of recognizing an opportunity is significant and turns positive. The linear model provides a direct interpretation of the effect of the interaction term. It suggests that keeping all other variables at the mean, the combination of these two effects increases the probability of recognizing opportunity of about 16%.

The signs of the control variables are in the expected directions. In particular, *Entrepreneurial Intentions*, *Entrepreneurial Activities*, and *Age* are significant at the 10% level indicating that entrepreneurial and personal experience developed over time are correlated positively with the ability of recognizing opportunities.

Table 4
OLS regressions results.

	(4.1)	(4.2)	(4.3)	(4.4)	(4.5)
Independent variables					
User PT		2.422***		2.394***	1.634**
		(0.457)		(0.450)	(0.689)
Technical Expertise			−1.177**	−1.107**	−1.844***
			(0.559)	(0.512)	(0.629)
User PT × Expertise					1.595**
					(0.930)
Controls					
Age	0.345**	0.262*	0.332**	0.251*	0.234*
	(0.157)	(0.144)	(0.158)	(0.144)	(0.145)
Individual self-efficacy	0.001	−0.032	−0.003	−0.035	−0.024
	(0.208)	(0.191)	(0.202)	(0.186)	(0.186)
Individual creativity	−0.081	−0.058	−0.104	−0.035	−0.035
	(0.258)	(0.270)	(0.256)	(0.269)	(0.263)
Entrepreneurial activities	1.192*	0.692*	1.369*	0.865*	0.771*
	(0.775)	(0.773)	(0.738)	(0.744)	(0.751)
Entrepreneurial intentions	0.011*	0.245*	0.047*	0.275*	0.183*
	(0.268)	(0.244)	(0.274)	(0.252)	(0.256)
Alertness	0.089	0.040	0.076	0.028	0.018
	(0.271)	(0.232)	(0.273)	(0.235)	(0.239)
Gender	0.068	−0.278	0.159	−0.188	−0.262
	(0.576)	(0.533)	(0.569)	(0.522)	(0.525)
Empathic tendency	0.461	0.031	0.558	0.127	0.179
	(0.430)	(0.399)	(0.421)	(0.388)	(0.390)
Innovativeness	−0.474	−0.103	−0.537	−0.166	−0.243
	(0.451)	(0.417)	(0.445)	(0.407)	(0.410)
Lead userness status	0.316	0.078	0.141	0.083	0.164
	(0.244)	(0.242)	(0.250)	(0.243)	(0.291)
Constant	4.099	3.603	3.666	3.201	4.793
	(4.312)	(3.911)	(4.257)	(3.893)	(3.841)
Observations	137	137	137	137	137
R-squared	0.082	0.229	0.112	0.255	0.274
Log likelihood	−335.791	−323.853	−333.567	−321.513	−319.754

Note: robust standard errors in parentheses. *** $p < 0.01$. ** $p < 0.05$. * $p < 0.1$.

In order to validate our results, we also ran additional analysis. More precisely, we employed a multivariate multiple regression model (mvreg) to estimate our main regression model including our principal covariates but with more than one outcome variable. Through this analysis we unblocked *Opportunity Recognition* and we estimated the simultaneous effect of *User PT*, *Technical Expertise*, and their interaction on *Alignment*, *Desirability*, and *Feasibility*. The significance and the signs of the main results are robust suggesting that *User PT* is significant and positively correlated with the three dimensions. Here, the magnitude of the coefficients reveals, however, that *User PT* process has a higher effect on feasibility, followed by desirability and finally by market alignment. The coefficients are respectively equal to 0. 65 ($p < 0.01$), 0.54 ($p < 0.05$), and 0.52 ($p < 0.05$). In addition, *Technical Expertise* is always negative and significantly correlated with opportunity at the level of 5% and similarly the interaction terms between the level of expertise and the three constructs are always consistent regarding direction of the sign and significance with the central linear regression model. Finally, given the experimental nature of our data, we also checked the robustness of the results through an ANCOVA model to assess the variation of the mean of opportunity recognition. This is positive and significant at 1% level and both main and interaction effects are robust and consistent with respect to the principal model. The results of the multivariate regression model and the ANCOVA model are not shown in the paper, but they are available upon request from the authors.

We added other tests to enrich our results. We exploited additional evaluations from the two raters–having experience and knowledge in the food industry–to characterize the opportunities identified by the participants. The two reviewers rated the participants' ideas with respect to the level of usefulness, novelty, incremental and radical innovation on 7-point Likert scales (for instance, 1 = not useful at all, 7 = very useful; and similarly for all the dimensions listed). In all the cases, the two reviewers achieved good reliability (Novelty: ICC = 0.923, $p < 0.01$; Usefulness: ICC = 0.807, $p < 0.01$; Incremental innovation: ICC = 0.870, $p < 0.01$; Radical innovation: ICC = 0.679, $p < 0.01$) and therefore, as for the measure of opportunity recognition, we could average their responses to obtain one compact measure for each construct. According to our evidence, two F-tests confirm that the opportunities of the *User PT group* are rated as more novel ($F = 12.485$, $p < 0.01$) and more useful ($F = 21.411$, $p < 0.01$) compared to the ones described in the *Control group.* In addition, a further t-test also shows that the effect of *User PT* is stronger on usefulness (μ Useful User PT group = 4.19, μ Novelty User PT group = 3.95, $p < 0.05$). We proceeded similarly to assess the level of innovativeness (incremental vs radical) of the opportunities identified. An F-test between groups shows that opportunities identified by the participants in the *User PT group* were more innovative in incremental terms ($F = 7.099$, $p < 0.01$), while this is not the case for radical innovation. The opportunities described by the two groups are not statistically different in terms of radical innovation ($F = 0.012$, $p = 0.913$).

9. Discussion and conclusions

Cognitive perspectives are considered to be promising avenues that can highlight key aspects of entrepreneurship research (Hmieleski and Baron, 2009). In fact, research on cognition has provided the only compelling systematic differences between entrepreneurs and non-entrepreneurs (Busenitz and Barney, 1997). We have shown how a specific cognitive mechanism–user PT–enhances the ability to recognize entrepreneurial opportunities. We have focused on users because understanding customers and markets is crucial to entrepreneurial activities, helping entrepreneurs fill their information corridors with exciting and original ideas (Priem et al., 2012; Shane and Venkataraman, 2000).

Specifically, our work provides a relevant contribution in the stream of research opened by Wiklund and Shepherd (2003: 1313), who argue that "*despite the importance of knowledge to the entrepreneurial process* (Shane and Venkataraman, 2000) *and the acknowledgement of firm-level entrepreneurship* (Brown et al., 2001), *few studies have operationalized a firm's knowledge applicable to the discovery and exploitation of opportunities*". In the same line, Ardichvili et al. (2003) recommend future research testing how changes on cognitive states and knowledge base impact opportunity recognition. We do believe our study contributes to fill in this gap by introducing the notion of user PT and documenting its interaction with the entrepreneur's prior knowledge.

We also followed the suggestion by Ko and Butler (2006) to better explore opportunity recognition by running ad-hoc field experiments and overcome the limits of self-report measures. Hence, we provide a further piece of empirical evidence within the seminal path opened up by Shane (2000) and Gaglio and Katz (2001), who recommend experimental studies as a possible approach to study market opportunities, and by Shepherd and DeTienne (2005: 97), who welcome experimental studies in entrepreneurship research as they are "*especially relevant to the study of opportunity identification because they allow researchers to control extraneous variables, and focus on the identification of opportunities*".

Overall, we believe that our study makes three main contributions to entrepreneurship research. First and most important, we suggest that user PT represents a new and powerful cognitive variable. Shane and Venkataraman (2000: 218) note that to develop the entrepreneurship field and help it evolve, it is necessary to explain "*why, when, and how some people and not others discover and exploit these opportunities*". Further, Kirzner (1979) argues that understanding how people develop different beliefs about market opportunities is crucial. While entrepreneurship studies have begun to highlight cognitive properties that characterize entrepreneurs' alertness, we suggest that user PT adds an important extra dimension. In particular, taking the user's perspective can enhance entrepreneurs' creativity by allowing them to better identify latent user needs and to address user needs by recombining and integrating their previous knowledge. User PT lets entrepreneurs identify market opportunities that are not only more innovative (as demonstrated by Shepherd and DeTienne, 2005), but also more desirable and aligned with the user needs.

Second, our study shows, on the one hand, how prior knowledge negatively impacts opportunity identification but, on the other, acts as a positive moderating mechanism in the relationship between user PT and opportunity identification. When presenting our model, we have already discussed literature that observes how prior knowledge might be an impediment to

opportunity identification (e.g., Shepherd and DeTienne, 2005; Ucbasaran et al., 2008; Gielnik et al., 2012). It is interesting to see how it then positively moderates the main effect hypothesized in our model. In our experiment this means that, while having experience in the same area of the user would reduce opportunity identification, having the same experience amplifies the user PT process of opportunity identification. An engineering entrepreneur with specific technical experience would be linked to her experience in seeing the opportunities—by for instance emphasizing the technical side of the situation. This might imply an inability to identify new opportunities. However, the technical expertise of the engineer entrepreneur might be important in the exercise of user PT. In fact, this very experience, when used in the process of user PT, adds a different understanding of the opportunities. In the entrepreneur's user PT process of opportunity identification, this expertise helps blend additional market knowledge gained with the user PT process that would not be accessible with the former technical expertise of the engineer entrepreneur. This can happen because experience in the same business of the user favors the user PT understanding of the opportunities. This represents an important result emerging from our work that enriches literature about prior knowledge, because it shows how overall prior knowledge positively impacts the process of opportunity identification through user PT.

Third, our work provides a contribution to the user entrepreneurship literature (Shah and Tripsas, 2007). Von Hippel (1994) shows that because of its tacitness, user information can be highly idiosyncratic; thus, user information is likely to be 'sticky', costly to transfer and adapt (von Hippel and Tyre, 1995). Because of this complexity, entrepreneurship would be circumscribed to users that are willing to become entrepreneurs (Shah and Tripsas, 2007). Instead, by allowing entrepreneurs to overcome cognitive barriers to knowledge transfer and to discover new market opportunities, user PT may be a fungible way to connect entrepreneurs with users. Entrepreneurs' propensity to take users' perspective can enhance their ability to recognize opportunities and their chances to create new ventures that match specific market preferences. The stronger this effect the more user PT is combined with prior entrepreneur's knowledge.

Our work is not without limitations. First, our research involved a sample of graduate students, as is typical in psychology and marketing studies. Graduate and MBA students are generally a proxy for entrepreneurs (Lumpkin et al., 2009; Thompson, 2009; Mueller and Conway Dato-On, 2008; Wilson et al., 2007), as shown in experimental designs (Shepherd and DeTienne, 2005, Chen et al., 2009; Dew et al., 2009). Future research could replicate our study with a wider sample of actual entrepreneurs to improve the generalizability of the findings. The second limitation is also related to the nature of the experiment. Because the described studies are based on laboratory experiments, the identified opportunities are not developed in the real world and we cannot observe their concrete exploitation and success. The potential of each identified solution is assessed by ad-hoc expert reviewers and not by the same users in the real market.

We suggest four promising avenues for future research. The first involves a deeper understanding and articulation of empathy. We noted that PT represents the rational component of empathy. Thus, future research might explore a potential concurrent role of the emotional component of empathy in enhancing opportunity recognition. Whereas Baron (2008) focuses on the role of affective identification with users in entrepreneurship and Cardon et al. (2009) focus on the benefits of entrepreneurial passion, previous empirical research has provided only mixed results regarding the role of the emotional or instinctive component of empathy on customer knowledge absorption and entrepreneurial performance. For instance, Homburg et al. (2009) show that although cognitive empathy is a core antecedent of the ability to absorb customer knowledge, the emotional aspects of empathy do not appear to influence the understanding of customer needs. Similarly, although Sparks and Hunt (1998) hypothesize in their study that both the cognitive dimension of empathy (i.e., PT) and the affective dimension of empathy (labeled 'emotional contagion') are positively related to marketing researchers' ethical sensitivities, they find that only PT is significantly correlated with ethical sensitivity. Future research therefore may further explore the specific relation of emotional empathy with the constructs analyzed in our study.

The second avenue relates to a better understanding of the activities and mechanisms that support PT processes. One could argue that placing oneself in a user's mind may be difficult for any individual who lacks a spontaneous propensity to assume another's perspective. However, PT could also be considered the outcome of contextual factors such that it is not only an innate trait but also a learned skill (Shalley and Perry-Smith, 2008). The results in this area are still controversial: whereas some authors suggest that user PT capabilities can be enhanced via role-playing mechanisms (e.g., Bettencourt and Gwinner, 1996; Shalley and Perry-Smith, 2008; Szymanski, 1988), others find that such PT training does not enhance the ability to absorb knowledge about customer needs (Homburg et al., 2009). Further research on the role of training mechanisms in enhancing entrepreneurs' user PT ability is needed to advance our understanding of this possibility.

The third avenue for future research involves extending PT to other useful actors. Dean and Snell (1991) note that PT is useful for modern organizations in which traditional boundaries are blurring and the need for collaboration is more salient. This utility appears to be particularly relevant to innovation and entrepreneurial processes, in which customers, partners, and networks are urging firms to adopt more open and collaborative approaches (Chesbrough, 2003; von Hippel, 2005). Indeed, the role of PT in entrepreneurial cognition can extend beyond the absorption of customer knowledge and can relate to other important knowledge sources. A classic distinction in technology entrepreneurship refers to scientists (with PhDs) and managers (with MBAs)—see, e.g., Junkunc and Eckhardt (2009). Situating a scientist-entrepreneur in a venture capitalist's perspective may be one way to encourage him to refine his innovative ideas in ways that are more marketable and more obviously in tune with market needs. Similarly, venture capitalists who want to stimulate entrepreneurship could refine their opportunity recognition ability through a PT process that helps them think as a scientist to identify and better understand actual technological opportunities.

Finally, we believe that our results are also interesting because they are consistent with evidence from recently developed research streams in cognitive neuroscience and cognitive psychology. Seminal contributions have identified 'mirror neurons', i.e., physiological mechanisms for coupling perception to action, with which we stimulate others to understand them better

(e.g., Gallese and Goldman, 1998; Rizzolatti et al., 1996; Rizzolatti and Sinigaglia, 2008). Thus, mirror neurons may be important for understanding other people's actions, for learning new skills by imitation, and for enhancing individual empathy (Gazzola et al., 2006; Jabbi et al., 2007). Laureiro-Martinez et al. (2010) have started to investigate possible ways to combine research in neuroscience, psychology, and management, which promises to be an interesting intersection of research fields that might be appropriate for further exploration via empirical interdisciplinary studies.

In general, we hope that our initial analysis of user PT will open avenues for further investigations and extensions that can contribute to more thoroughly developing the complex and fascinating process of opportunity recognition in entrepreneurship research.

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