

# “The role of recognition intelligence for opportunity recognition of habitual entrepreneurs”

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## SECTION 3. General issues in management

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### The role of recognition intelligence for opportunity recognition of habitual entrepreneurs

#### Abstract

Although existing research has placed cognitive aspects such as thinking patterns into the center of research on opportunity recognition, this paper examines for the first time the development of cognitive prototypes with respect to an increase in entrepreneurial experience. Additionally, the role of intuition in opportunity recognition is closely examined which is so far underrepresented in entrepreneurial research. Due to their initial importance in opportunity recognition, the concept of recognition intelligence is developed and introduced to subsume both aspects. The findings of this study indicate that a development of cognitive prototypes occurs as the number of prototypical features and foundation experience is positively correlated. The importance of intuition as second component of recognition intelligence is however not related to existing entrepreneurial experience, but decisive for habitual entrepreneurs in the recognition of opportunities.

**Keywords:** opportunity recognition, cognitive prototype, intuition, cognition.

**JEL Classification:** M13.

#### Introduction

Recognition and exploitation are the fundamental characteristics of an entrepreneur (Shane & Venkataraman, 2000; Eckhardt & Shane, 2003). Recognition and exploitation address, however, two different areas of skills and competencies in which entrepreneurs have to be proficient. Managerial skills are needed to foster growth and secure survival in a competitive environment, while recognition requires the perception of pieces of information upon which a business can be built. Due to its initial importance, Gaglio and Katz (2001) see the understanding of opportunity recognition as the core intellectual question within entrepreneurship research.

Kirzner (1973; 1979; 2008) argued that some people can identify existing information asymmetries in the market and are able to “develop ideas for how to pursue them, including the development of a product or service that will be provided to customers” (Shane, 2003, p.10). Another perspective sees an opportunity as the result of creative ability of an individual who introduces innovations to the market (Schumpeter, 1934). Both kinds are not mutually exclusive, however, but complementary. Kirzner (2008) describes Schumpeterian opportunity creation as a longer run force and the exploitation of asymmetries as more influential in the short run as market inefficiencies are exploited over short periods, and disruptive innovations initiate massive changes in markets that play out over longer horizons.

Being aware that either asymmetries in the market and/or creative skills and abilities drive discovery still does not explain why individuals identify oppor-

tunities that can be exploited for a profit (Baron, 2004) and more specifically how the process occurs in the mind (Baron, 2006). Kirzner already argued in 1979 that the opportunity identification is influenced by a set of perceptual and cognitive processing skills and should be, therefore, considered as a component of opportunity recognition. Shaver and Scott (1991) asked more than 10 years later how cognitive processes determine new venture creation. Since then cognition in entrepreneurial research has gained steadily in importance and has been proven valuable (e.g. Gaglio & Katz, 2001; Ucbasaran et al., 2003; Baron, 2004; Baron & Ensley, 2006; Dimov, 2003; Dimov, 2007; Ward, 2004; Westhead et al., 2005; Kickull et al., 2009; Gregoire et al., 2011; Westhead et al., 2009; Brigham & Sorenson, 2008; Gregoire et al., 2010).

Cognition describes in general the intellectual processes through which information is acquired, transformed, memorized, recovered and used (Neisser, 1967; Matlin, 2005). Hence, “everything we think, say, or do as human beings is influenced by mental processes” (Baron, 2004, p. 223). With respect to entrepreneurship Mitchell et al. (2002) defined cognitions as the knowledge structures that people use to assess, judge, decide in areas like opportunity evaluation, new venture creation and venture growth. Entrepreneurs must possess subsequently some form of recognition intelligence in order to identify a valuable business opportunity.

Recognition intelligence is understood within this study as a combination of contextual and individual factors. Experiments show that appropriate context affects perception positively by fostering the identification of objects, independent from specific, inherent features of the object. Inappropriate context,

in contrast, can hinder or even impede its perception (Palmer, 1999). Biederman (1972) and Biederman et al. (1973) proved additionally that less time is needed to find a target object within a suitable scene than one that is inappropriate. As a consequence, people find a screw driver more easily on a workbench than on a kitchen counter. While physical objects are related to a specific context, entrepreneurial opportunities lack such context and can become apparent in diverse and different settings. Hence, there are no specific features of context, which determine an objective measurable appropriateness. It is rather dependent on the individual. The more a person perceives a context as appropriate the more likely the opportunity is recognized.

Next to context factors, recognition intelligence contains attention as a component, as attention allows cognitive processes to absorb selected aspects of the sensory world in a correct and efficient manner (Fernandez-Duque & Johnson, 2002; Palmer, 1999; Matlin, 2005). People are normally confronted in every waking moment with a mass of stimuli, of which only a small proportion is perceived consciously, while a larger proportion is being ignored. Attention governs which stimuli are selected at any given time and which are further processed. As William James wrote more than 120 years ago:

“Millions of items of the outward order are present to my senses which never properly enter into my experience. Why? Because they have no interest for me. My experience is what I agree to attend to. Only those items which I notice shape my mind – without selective interest, experience is an utter chaos. Interest alone gives accent and emphasis, light and shade, background and foreground – intelligible perspective, in a word [...]. Everyone knows what attention is. It is the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought. Focalization, concentration, of consciousness are of its essence. It implies withdrawal from some things in order to deal effectively with others, and is a condition which has a real opposite in the confused, dazed, scatterbrained state which in French is called *distracted*, and *Zerstreutheit* in German” (pp. 402-403).

People pay attention to things because an interesting stimulus is presented (bottom-up processing) or it is purely intentional by looking for a specific stimulus (top-down processing) (Matlin, 2005). Attention is not limitless, however, but rather highly selective. Phenomena such as inattention blindness (Mack & Rock, 1999), which describes a situation where critical stimuli are failed to be detected because people attend to another stimuli, or dichotic listening, where for example someone is paying attention to

one conversation, but noticing if her name is mentioned in a nearby other conversation (so called cocktail party effect) (Moray, 1959; Wood & Cowan, 1995) are often cited to illustrate the limitations and shortcomings of attention.

In order to recognize an entrepreneurial opportunity, it is hence not sufficient that a person perceives the context as appropriate and pays attention to specific stimulus or bundles of stimuli. Both factors have to be aligned by consciousness, which illustrates the third component of recognition intelligence. Although there is still a debate among scholars how to define consciousness exactly, it can be understood in a broader sense as “the awareness people have of the outside world and of their perceptions, images, thoughts, memories, and feelings” (Matlin, 2005, p. 90). Hence, only if all three factors are given, a person recognizes an existing business opportunity.

The goal of this study is to enrich the existing knowledge towards cognitive aspects of opportunity recognition by examining recognition intelligence with the help of cognitive prototypes. Cognitive prototypes govern and determine the recognition process by raising attention and increasing the likelihood of a conscious processing.

Despite its importance, cognitive prototypes cannot account completely for the recognition of opportunities and thus for recognition intelligence, as recognition takes place under uncertainty and limited cognitive resources. Schmidt and Klein (1996) identified four different sources of uncertainty. First, information is not available as it has been received but cannot be located when required. Second, information at hand is not reliable as either the credibility of the source is low or it is evaluated as unreliable. Third, ambiguous or conflicting information hinders the interpretation of information. Fourth, information is complex in nature, which makes its interpretation difficult. Cognitive psychology and managerial science have shown that in exactly such situations intuition plays a crucial role. As a consequence, intuition is examined along to cognitive prototype as component of recognition intelligence.

The paper is structured as follows. First, a literature overview will be given towards the term entrepreneurial opportunity. Second, the hypotheses of the paper will be derived from scientific literature. Therein, a literature review towards cognitive prototypes and intuition is provided. Third, the methodology will be explained, before the results are shown in the fourth section. The paper concludes with a discussion of the results and a final conclusion.

## 1. Entrepreneurial opportunity

Scholars have defined an opportunity in a variety of forms. Stevenson and Jarillo (1990) defined an opportunity in general as a desirable state in the future that differs from the current state and is perceived as achievable. This opportunity can manifest itself either in the improvement of intrapreneurial activities of a firm or in a business foundation (Christensen et al., 1994). Eckhardt and Shane (2003) had a narrower perspective and focused solely on opportunities with an entrepreneurial character. They see entrepreneurial opportunity as “situations in which new goods, services, raw materials, markets and organizing methods can be introduced through the former new means, ends, or means-end relations” (p. 336). They emphasized that entrepreneurial opportunities cannot be exploited by simply optimizing existing means-end frameworks as alternatives to those opportunities are novel, not known, and so far not visible (Baumol, 1993).

Till the beginning of 2000 most of the research in entrepreneurial opportunities has been governed by the product market perspective (Shane and Venkataraman, 2000). In 1985, Drucker's (1985) definition mirrored this approach and described three different kinds of opportunities that are related to product markets. The first group consists of opportunities, which arises from the creation of new information. This new information can be the result of novel technologies. The second group comprises situations in which market inefficiencies exist. These inefficiencies are caused by information asymmetries between market participants. The third group involves a reaction to changes in the relative costs and benefits of resources that can be used due to changes on the macro-level differently.

Sternberg (2004) has offered a broader perspective on opportunities and has included services into his categorization. He distinguished eight different kinds of entrepreneurial opportunities: “conceptual replications”, “redefinitions”, “forward incrementation”, “advance forward incrementation”, “redirection”, “regression and redirection”, “reinitiation”, and “integration”. Conceptual replications imitate existing products with minor adjustments. Redefinitions comprise existing services and products that are perceived differently. Depending on the degree of innovativeness Sternberg (2004) distinguished between forward incrementation and advance forward incrementation. While forward incrementation is related to incremental developments, advance forward incrementation synthesizes radical changes. In a redirection a qualitative and quantitative change can be noted in a

product or service. If a product appeals to “old times” Sternberg (2004) defined it as a regression and redirection. Reinitiation illustrates disruptive innovations. Hence, a former technology or way of doing is replaced by something novel. Integration as last type of opportunity summarizes the situation in which several existing ideas are combined.

Seven years later Hansen et al. (2011) extracted, based on an extensive literature review, six types of opportunity. Similar to Casson (1982) and Shane and Venkataram (2000), an opportunity can be the possibility to introduce a new product to the market at a profit (e.g. Companys & McMullen, 2007; DeTienne & Chandler, 2007; Dutta & Crossan, 2005). Similar to the definition of Eckhardt and Shane (2003), an opportunity can also be a situation in which an entrepreneur predicts or creates new means end frameworks (e.g. Companys & McMullen, 2007). It can be, in addition, an idea that has developed into a business form (e.g. Ardchivili et al., 2003; Dimov, 2007). It can also be the perception of a feasible tool or instrument to achieve benefits (e.g. Casson & Wadeson, 2007; Dimov, 2003) as well as the ability and skills of an entrepreneur to identify and to realize a solution to a given, so far insufficiently solved or problem (e.g. Chandler et al., 2003). The last type of opportunity occurs if value can be added to the market by improving the customer service (Alsos & Kaikkonen, 2004; Wickham, 2001).

## 2. Research questions

Concepts are cognitive representations. They include the knowledge of an individual about things (e.g. business opportunities) in the form of specific characteristic features (Scheiner et al. 2014). Following Bruner (1964) and Margolis and Lorence (2011), concept learning occurs by concept acquisition and concept formation. Concept acquisition describes the process of how a new concept is created. Concept formation, however, means that a person learns to distinguish between different classes. Concept acquisition and formation can be illustrated with the following example: if an individual learns that there are birch trees and beech trees, a person has acquired a concept. If she learns to distinguish between both types of trees, she has formed a concept. In the context of concept learning it is, however, not enough to assume that the significance of a feature is determined by the statistical distribution among members of a category and in its contrasting category. The significance is also influenced by the existing knowledge of an individual (Wisniewski, 1995). Although the term category describes a set of examples selected by a concept, both term are often used synonymously (Scheiner et al., 2014).

Categories are essential for intelligent thinking and behavior. If a person is confronted with information, she or he tries to classify it as member of a specific type and then uses her/his knowledge of this type to decide how to deal with it. Categories enable individuals, subsequently, to access and exploit relevant knowledge for known and new stimuli (Ross & Makin, 1999). Categories are, hence, important for the process of perception and cognition (Matlin, 2005; Scheiner et al., 2014).

Within scientific research especially two generic views are applied to explain how knowledge of a category is represented (Scheiner et al., 2014). In the prototype view it is stated that the stored category representation contains the most typical feature values for members. Depending on the similarity with existing prototypes, new pieces of information is classified (e.g. Reed, 1972; Rosch & Mervis, 1975; Posner & Keele, 1968, Homa, 1984; Scheiner et al., 2014). The exemplar view argues in contrast that new information is compared with specific stored exemplars of a category (Medin & Schaffer, 1978; Nosofsky, 1986; Hintzman, 1986; Markman & Gentner, 2001; Scheiner et al., 2014). Ross and Markin (1999) point, additionally, to a third view. They add combined models in which both generic views are merged (e.g. rational model, PDP view, different category levels and different types of categories). In entrepreneurship research, however, the prototype view illustrates the most prominent and has been applied to analyze the opportunity recognition (e.g. Baron, 2004; Baron & Ensley, 2006), but has been also used in the context of technology recognition (Scheiner et al., 2014). This study follows, therefore, previous research and focuses on the influence of categories represented by prototypical features in the opportunity recognition.

Baron and Ensley (2006) highlight the importance of prototypes for the recognition of patterns as they act as “templates, assisting the persons who possess them to notice links between, diverse events or trends and to perceive recognizable meaningful patterns in the connections” (p. 1332). Hence, the probability increases that person becomes aware of stimuli and classifies them according to their category, if these stimuli possess features, which can belong to existing prototypes (Scheiner et al., 2014). Winkelman et al. (2006) showed, in addition, that people prefer stimuli, which resemble their existing prototypes, which has been labeled as beauty-in-the-averageness-effect. They (Winkelman et al., 2006) found that prototypical stimuli were preferred as these stimuli were processed faster and evoked as a result a positive affect. In the context of the identification and evaluation of business opportunities, opportunities, which contain features of existing prototypes, could be more attractive for entrepreneurs and catch their attention more easily

than those with less similarity. Casson and Wadeson (2007) provided another important argument why entrepreneurs constrain their searching behavior to the most decisive features of opportunities. As information is costly, an entrepreneur has to focus his attention to those features that will predict best the likelihood of success or failure of a new venture.

It has to be borne in mind, however, that prototypes are not solely determined by statistical distribution among members of a category and differ, as a consequence, due to existing knowledge between individuals, as they are not objective in nature (Wisniewski, 1995; Scheiner et al., 2014).

Based on this review of literature, habitual entrepreneurs could possess specific cognitive prototypes of valuable opportunities that guide their attention and consciousness towards new business opportunities. To examine the existence and essence of possible cognitive prototypes, the following research question is posed.

*Research question 1: Do cognitive prototypes influence opportunity recognition of habitual entrepreneurs?*

Taking into consideration the different aspects of concept learning (Bruner, 1964) and previous illustrated research (e.g. Scheiner et al., 2014), it can be assumed that concepts formation enriches the category for business opportunity over time by an increase of knowledge and experience. Entrepreneurs may enrich, as a consequence, an acquired concept with further prototypical features (Baron & Ensley, 2006). By that the concept of business opportunity further develops and enables entrepreneurs to conduct a better veridical perception and veridical interpretation (Gaglio & Katz, 2005). Hence, an entrepreneur perceives market information correctly. In case that the acquired information is interpreted correctly, it veridical interpretation has been conducted. This process can become self-reinforcing, as veridical analyses can lead to the enrichment of a category regarding content and complexity (Scheiner et al. 2014). Kickul et al. (2009) reveal that that the confidence in recognizing a business opportunity is dependent on the degree to which people preferred intuition as a cognitive approach. Dimov (2007) pointed out that intuition can help individuals to become aware of business opportunity. Further studies show that intuition can also support pattern recognition (Simon, 1987; Crossan et al., 1999; Weick, 1995) and can be essential in the evaluation process (Covin et al., 2001; Riquelme & Watson, 2003).

An expression of a successful information perception and interpretation illustrates the creation of a new venture. Ward (2004) emphasized in this context, that knowledge alone is not what counts, but what a

person is doing with this knowledge. In the best case the opportunity becomes manifested in a newly founded business. The number of founded businesses is also possibility to measure the entrepreneurial experience directly. As a result, it can be assumed that the cognitive prototype of an entrepreneurs is richer (measured by discrete prototypes), the more he or she went through the self-reinforcing process of concept formation, opportunity recognition, venture creation, and again concept formation. Taking this line of reasoning into consideration, the following research question is posed to examine a possible effect of founding experience on the enrichment of cognitive prototypes.

*Research question 2: Is the founding experience of habitual entrepreneurs correlated with the enrichment of cognitive prototypes?*

An entrepreneur's recognition intelligence depends not only on the ability of perceiving and being aware of a business opportunity, but also on assessing this opportunity as valuable. This process is, however, interfered by uncertainty and conducted under limited cognitive resources. Missing information, unreliable information, ambiguous and conflicting information, as well as complex information (Schmitt & Klein, 1996) are sources of uncertainty that can exacerbate opportunity recognition. Simultaneously, information is costly for entrepreneurs (Casson & Wadeson, 2007), which increases further the level of uncertainty. Under such circumstances, intuition is a crucial component, as it allows, "cognitive conclusion based on a decision maker's previous experiences and emotional inputs" (Burke & Miller, 1999, p. 92). In particular or even solely, where intuition is some form of so-called expert intuition (Kahneman & Klein, 2009).

Kickul et al. (2009) reveal that that the confidence in recognizing a business opportunity is dependent on the degree to which people preferred intuition as a cognitive approach. Dimov (2007) pointed out that intuition can help individuals to become aware of business opportunity. Further studies show that intuition can also support pattern recognition (Simon, 1987; Crossan et al., 1999; Weick, 1995) and can be essential in the evaluation process (Covin et al., 2001; Riquelme & Watson, 2003).

The use of intuition is, however, sometimes seen as inappropriate or inadequate and is for this reason often disdained for psychological reasons (Simon, 1996). Yet, the "notion that entrepreneurial intuition is relevant would not have long survived without some basis in the life experiences of entrepreneurs and ventures" (Mitchell et al., 2005, p. 671). Therefore, the following research question is posed.

*Research question 3: Do habitual entrepreneurs value intuition in opportunity recognition?*

Although, intuition has been the object of research in a multitude of different articles and scientific disciplines, a consensus among researchers has started to emerge only recently (Blume & Covin, 2011). Early definitions saw intuition as a "psychological function transmitting perceptions in an unconscious way" (Jung, 1933, pp. 567-568), as "an immediate awareness by the subject, of some particular entity, without such aid from the senses or from reason as would account for that awareness" (Wild, 1938, p. 226), or as "the act of grasping the meaning, significance, or structure of a problem without explicit reliance on the analytic apparatus of one's craft" (Bruner, 1962, p. 102) (in Dane & Pratt, 2007).

In 2005, Mitchell et al. (2005) noticed still a potpourri of different views. In their theoretical work, they found for example definitions of intuition as a fuzzy ability to perceive problems and errors (Bunge, 1983), as disparate information which is integrated (Bastick, 1982), a heuristic (Riquelme & Watson, 2002), a rational and logical cognitive skill which is used to support and govern decision making (Agor, 1989), a subjective feeling which is based on gained experience (Covin et al., 2001), a skill of the right hemisphere in the brain (Olson, 1985), or a purely rational, complex psychological process that is rooted in working experience of an expert (Prietula & Simon, 1989).

In the years thereafter, Smith (2008) for example defined intuition as a way of knowing something spontaneously without the conscious use of logic or analytical reasoning. Hodgkinson (2008) argued similar by stating that intuition comprises the way, how a brain is storing, processing, and retrieving information subconsciously (Hodgkinson, 2008). Also Leybourne and Sadler-Smith's (2006) or Dayan and Di Benedetto's (2011) definition resembles the former as they see intuition as an processing mode, which occurs fast and builds on an unconscious reasoning process, which may possess an affective component. Blume and Covin (2011) added that intuition includes holistic association as a further commonly stated element. Considering the mentioned definitions of intuition and its characteristics mentioned, intuition appears still as a multifaceted, fuzzy construct. It becomes in addition apparent that intuition has been examined mainly from a general perspective and not with a focus on a core intellectual question, the recognition of opportunities. This study tries therefore to explore intuition of habitual entrepreneurs in this specific domain by asking the following research question:

*Research question 4: What characterizes intuition for habitual entrepreneurs in the context of opportunity recognition?*

The theoretical work of Mitchell et al. (2005) points out that entrepreneurial intuition is not static, but dynamic in nature. It can undergo a developmental process and can be learned, improved, and fostered. By identifying new business opportunities and starting new ventures, entrepreneurial intuition can thus become more proficient. Shepard and DeTienne (2005) argue, in addition, that people with more knowledge think more intuitive as they decide in a more automatic way (Logan, 1990). This can be especially the case for habitual entrepreneurs, as they try to avoid “analyzing ideas to the death (McGrath & MacMillan, 2003, p. 3). It can be assumed, subsequently, that intuition becomes more important, when experience is gained by founding new businesses, as the reliance on intuition increases with it. Despite its impact on entrepreneurs, this aspect has been widely neglected in entrepreneurship research. In order to explore the development of entrepreneurial intuition, the following question is posed.

*Research question 5: Does the importance of intuition in opportunity recognition increase with founding experience?*

### 3. Method

The focus of this study lays solely the role of recognition intelligence with its components cognitive prototypes and intuition in the context of opportunity recognition. It was, therefore, necessary to choose carefully a subgroup of entrepreneurs, which possesses expertise in this specific area. In contrast to novice entrepreneurs with experience from a single business foundation, habitual entrepreneurs had the chance to develop a set of experienced-driven skills (MacMillan, 1986), cognitive prototypes and a richer intuition in the context of opportunity recognition. Habitual entrepreneurs were, therefore, chosen as sample subject.

For the purpose of this study, it was, however, necessary to make a further distinction among habitual entrepreneurs to ensure that study participants have the required knowledge at their disposal. Depending of the number of ownerships of businesses, a difference is normally made between serial or sequential entrepreneur and portfolio entrepreneurs. If an entrepreneur is involved in one business at a time, he or she is classified as a serial entrepreneur (Ucbasaran et al., 2003). If an entrepreneur owns more than one business at time he or she is sorted to the group of portfolio entrepreneur (e.g. Ucbasaran et al., 2003). For the purpose of this

study not the ownership at a time was decisive, but existing experience with opportunity identification and evaluation. In the selection process of participants it was, therefore, checked whether interview partners have been directly involved in at least two business foundations. The understanding of the term of this study was, subsequently, inclined toward the more narrowly based definition of Hall (1995) and not the one developed by Westhead and Wright (1998, 1999) and Ucbasaran et al. (2003); although their definition can be seen as the most prominent and formative set.

Semi-structured interviews were chosen as research method. An interview guideline was comprised that contained general question to the participants and to the founded business as well as specific questions to recognition intelligence with its components cognitive prototypes and intuition. The questions were inclined to the study of Baron and Ensley (2006). To assess, analyze, and compare intuition, a set of question was asked highlighting aspects from its roots to its application. Depending on the answers given, follow up questions were asked to gain further insights.

Replies were examined according to the procedure suggested by Glaeser and Laudel (2009). Interviews were transcribed first. Following, important interview excerpts were collected and assigned to categories. Five graduate students, two Ph.D. students and one post-doc conducted the process. All graduate students were trained beforehand intensively in content analysis. For the examination of a possible correlation of opportunity recognition experience, as measured by self-founded businesses, and developed prototypes a Pearson test chosen. To examine the importance of intuition for habitual entrepreneurs given replies to the question “how do you evaluate the importance of intuition in general in the context of opportunity recognition?” were classified into four groups (“none”, “low”, “middle”, “high”, “very high”). To test the correlation between the meaning of intuition and opportunity recognition experience of habitual entrepreneurs, as measured by founded businesses a Spearman test was chosen with respect to the value of the included items.

### 4. Results

All 43 participants were male and in average 40.5 years of age. The age ranged between 20 and 70 years with a mode of 40 years. The participants had founded their first business between the age of 14 and 35 years. In average the first venture creation occurred at the age of 25 years. They had founded already 221 businesses in total, with a range of 2 to 25 businesses and a mode of three foundations. The

businesses had been started in a variety of businesses among the habitual founders ranging from information and telecommunication to brewery systems. 173 of those companies and 21 additional, in which habitual entrepreneurs held stakes, were in ownership at the time of the survey. Further, 26 businesses were in the foundation phase, 26 had been sold, 22 had failed. More than half of the habitual entrepreneurs stated explicitly that they would not search actively for opportunities. Six referred even that the identification of an opportunity would have been by accident. A structured approach in the identification was something of a rarity.

Regarding the family background of the habitual entrepreneurs, six stated that both parents were entrepreneurs. In the case of four participants only the mother was self-employed, in eleven cases only the father. Two mentioned that close relatives were entrepreneurs (uncle, grandfather). 20 habitual founders came from a family without entrepreneurial background. With the exception of ten participants, the habitual entrepreneurs gained working experience before the business foundation. Two of those 33 have, however, only done an internship. The educational level among the habitual entrepreneurs was relatively high. Six received a doctoral degree (Ph.D.), 27 completed a study, two achieved a master craftsman, two completed their A-level, five finished an apprenticeship, and one a general certificate of secondary education.

According to research question 1 it was asked whether opportunity identification and evaluation are influenced by existing, developed prototypes. It was, furthermore, posed, that those prototypes would differ among habitual entrepreneurs. In total, 43 different prototypical features could be identified. Mode and median were four prototypes per habitual entrepreneur with a standard deviation of 2.272. One habitual entrepreneur was unable to articulate what would characterize an opportunity for a successful business idea, which was the

minimum value. The maximum were 12 prototypical features, which were reported by one habitual entrepreneur.

Industry orientation was the prototypical features that was stated most frequently with 19 mentions. Customer value was mentioned 16 times and was the second most occurring feature. A comparable, similar field of activity followed, which was for 15 habitual entrepreneurs an important component. A match with existing skills and competences was mentioned by ten habitual entrepreneurs as a decisive characteristic of a valuable opportunity, as well as a gap in the market due to an unmet need or a solution to a given problem. Also, a unique selling proposition, an existing, directly communicated demand by customers, and financial viability would be a typical and representative attribute and were mentioned nine times. The prototype model of seven habitual entrepreneurs included that the idea needed to be clear and simple. Six respondents emphasized that the right timing (esp. pioneer strategy) would be a typical characteristic of a successful business idea. A low degree of innovation and an existing market for product or services represented each five times an opportunity for a successful business. Further features were marketing, sales and distribution, scalability, a focus on a niche market, a specialization and focusing in activities, and met personal preferences, which were mentioned each four times. Creation of synergies, price premium, and a focus on business-to-business were additional prototypical features. These prototypical features were mentioned three times. A high level of innovation, a low competition intensity, a clearly visible revenue model, the possibility to protect the idea, a rapid realization, rapid attainment of profit, an understandable business model, were named two times. Table 1 summarizes the shared mentioned prototypical features. Hypothesis 1 can, thus be confirmed within this study.

Table 1. Shared prototypical features of habitual entrepreneurs

No.	Prototypical features	Frequency
1	Industry orientation	19
2	Customer value	16
3	Comparable; similar field of activity	15
4-5	Existing skills and competences; gap in the market	10
6-8	Unique selling proposition; an existing, directly communicated demand by customers; financial viability	9
9	Idea needs to be clear and simple	7
10	Right timing	6
11-12	A low degree of innovation; an existing market for product or services	5
13-17	Marketing, sales and distribution; scalability; focus on a niche market; specialization in and a focus of activities; met personal preferences	4
18-20	Creation of synergies; price premium; focus on business-to-business	3
21-27	High level of innovation; a low competition intensity; clearly recognizable revenue model; possibility to protect the idea; rapid realization; rapid attainment of profit; comprehensible business model	2

Next to shared prototypical features, 16 individual prototypical features could be identified that were mentioned by only one respondent (e.g. sales and distribution can be outsourced to a third party, low level of capital expenditure, possibility to develop further businesses out of the opportunity, strong market growth).

Research question 2 asked whether there is a correlation of experience of habitual entrepreneurs (measured by the number of founded businesses) with the sophistication of cognitive prototypes (measured by the number of discrete prototypical features). The Pearson correlation test shows highly significant results. Although the correlation equals 0.372, which is low, the significance was high with a  $p$ -value of 0.014. Research question 2 can, hence, be answered positively.

Research question 3 asked whether habitual entrepreneurs value intuition in opportunity recognition. The results of this study answer this question positively as the vast majority of habitual entrepreneurs perceived intuition as at least important. Eleven participants stated that intuition would be highly important. 21 rated its meaning as high, seven as middle, and three as low. Only one respondent reported that intuition could be neglected.

Research question 4 argues that intuition is a multifaceted. For eleven habitual entrepreneurs intuition is a kind of enthusiasm or confidence towards a business idea and was a decisive prerequisite for starting a proper evaluation process and for investing resources into it. "First the gut feeling decides, whether you want to take a closer look at a business opportunity. This is the first obstacle, which has to be overcome" (expert 40). Intuition was for some entrepreneurs also a form of idea or vision. This vision allowed habitual entrepreneurs to imagine how the newly founded business will be successful in the future. This imagination unfolded a motivational effect on the entrepreneurs.

For the vast majority of habitual entrepreneurs, intuition played a major role in the evaluation process. It could occur both parallel and continuously or alternating to the objective, conducted analysis. Gut feeling could appear completely unconscious, as a purely emotional response or as an emotional, unconscious comparison with conducted analyses. Habitual entrepreneurs described intuition, furthermore, as an overall picture or something that is located between emotions and mind. "The head is giving structure and skepticism [...], the emotional

part is the desire. Intuition is between those two elements, and acts as a yardstick" (expert 8). It is also described as a combination of experience and knowledge that allows a short cut evaluation, especially if a business opportunity would occur in the domain of the habitual entrepreneurs (esp. industry). Expert 1 reported that it would be "in the meantime a lot of gut feeling, if a new idea for a product comes up, which we want to realize in the medium term. I don't think a lot in such a case. I just know enough and have enough information at hand to decide spontaneously". Expert 20 exemplarily highlighted that intuition is "not just a simple intuitive feeling, but a feeling that is rooted in experience" (expert 20). Expert 7 defined gut feeling as the sum of experience, creativity, phantasy and willingness to take a risk. The roots of gut feeling were, in addition, often seen in gained experience and knowledge.

Habitual entrepreneurs set value on a concordance of intuition and objective analysis. Expert 26 explained: "I have learned to go with my gut and my mind. It is deadly to rely solely on one. That is what I have learned over the years. You are listening to your gut and you are getting a strange feeling. Then your gut tells your mind: be careful [...]. The mind listens to it and tracks it down in a structured and rational way". Expert 23 pointed out to the meaning of gut feeling in the context of the business plan creation: "Everything you write in a business plan is based on assumptions [...]. This does not give you a fully secure base and then I need the gut feeling to say: OK that could be something which I will or won't do".

A negative intuition could raise doubts towards an objective conducted analysis and acted as a warning signal. In four cases it was reported that a negative gut feeling had even caused physical pain. Habitual entrepreneurs were responding to a negative intuition by initiating further analysis, choosing a wait-and-see-strategy, or abolishing the business opportunity finally. In more than a third of all respondents gut feeling would outweigh the results of objective analysis and only five entrepreneurs argued explicitly that they would favor the rational approach and would follow its outcome.

Research question 5 focused on an increase in founding experience with an increasing appreciation of gut feeling. Bearing in mind consensus among participants towards intuition, no significant correlation between OIE experience and intuition could be, consequently, found among the habitual entrepreneurs ( $p < 0.05$ ).

Table 2. Pearson correlation test

Pearson correlation	0.372
Sign. (2-tailed)	0.014
N	43

### Discussion, conclusion, and opportunities for future research

The findings of this study suggest in concordance with previous studies (e.g. Baron & Ensley, 2006) that habitual entrepreneurs possess a specific cognitive prototype. An important finding of this study was, however, that the most frequently named prototypical features (industry orientation, customer value, similarity of activities) were represented in less than half of the habitual entrepreneurs' cognitive prototype, that most prototypical features were, additionally, shared by only five or less respondents, and that more than a third of all prototypical features were even purely individual. The cognitive prototypes were, as a consequence, not the sum of the most frequently, statistical distributed prototypes of a category but instead highly individual. Hence, no common cognitive prototype of an opportunity for a successful business seems to exist, as these they seem to be influenced by individual-related factors.

The correlation of opportunity recognition experience with the number of existing prototypes is in line with research from cognition, which sees a learning process as the cause of individuality of thinking patterns. Following the theory of concept learning, concepts are acquired and further developed. The more knowledge and experience a person gained, the more typical features can be named (Bruner, 1964; Margolis & Laurence, 2011). This study draws, thus, attention to an extension of research on concept acquisition and formation and its influence on the development of cognitive prototypes in the context of opportunity recognition. Here, it would be important to examine what role prior knowledge, gained experience, and the nature of the business opportunity play. Wisniewski (1995) showed that prior knowledge influenced the development of categories, while Dimov (2007) pointed to the meaning of gained experience. Hansen et al. (2009) illustrated in the conducted literature review that not only variety of business opportunity understandings can be found in scientific literature, but that opportunities itself differ in nature. Simultaneously, it would be important to examine whether and how existing prototypes are unlearned. What experiences and incidents can cause unlearning of specific prototypical features? This aspect is particularly important, as wrong prototypical features could

inhibit a veridical interpretation and would, therewith, inhibit the choice of appropriate opportunities to pursue.

In contrast to previous studies that focused on differences between novice and habitual entrepreneurs (Ucbasarn et al., 2003; Baron & Ensley, 2006; Westhead et al., 2009; Ucbasaran et al., 2010), a focus was laid solely on habitual entrepreneur who had acquired foundation experience at least with two venture creations. The findings suggest that even habitual entrepreneurs seem to be no homogeneous group and may have to be distinguished further according to founding experience, as it seems to contribute to the development of thinking patterns. It is, hence, not solely important whether an entrepreneur possesses one or several companies at the same time, but what kind of experience he or she gained in the context of opportunity recognition. This distinction could contribute to a better understanding of opportunity recognition as different skills and abilities are decisive in the recognition and exploitation of opportunities.

Intuition as second component of recognition intelligence within this study proved to be an important element for habitual entrepreneurs, independent from their (prior) foundation experience. This study contributes to existing research by showing that intuition seems to play a pivotal role for the last decision for or against an opportunity. Only a small minority of habitual entrepreneurs neglected their intuition and followed the results of the rational analysis. Where intuition occurred as an emotional response in form of enthusiasm, it could even have biased the evaluation of opportunities (Baron, 2008). Also the reported form of vision could have influenced the evaluation of opportunities due to an optimistic bias (Baron, 2008, Busenitz & Barney, 1997). Future research could, therefore examine whether this bias is mirrored by the rate of failure of habitual entrepreneurs.

Despite its meaning, intuition was not described homogeneously by habitual entrepreneurs. The findings are, however, in concordance with scientific literature. Similar to Covin et al. (2001) reported the habitual entrepreneurs that intuition would be an emotional response based on experience. Intuition appeared analogous to Burke and Miller (1999) also as a cognitive conclusion that stemmed from emotions and experience. It acted also as an ability to judge whether rational evaluation contained errors

(Bunge, 1983), which could result in a revision of the evaluation. It was equivalently to Smith (2008) even described as way of short-cut evaluation.

Given the findings of this study, it can be concluded that cognitive prototypes are important for the recognition of opportunities, that they are highly individual and correlated with founding experience. Hence, the more founding experience a habitual

entrepreneur had, the more typical features of an opportunity of a successful business could be named. Intuition was perceived by habitual entrepreneurs especially essential in the evaluation of opportunities and occurred in multifaceted ways. Despite its findings, this study is only a further step towards an understanding of opportunity recognition among entrepreneurs.

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