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Individual perception of different stimuli: Implications for managers

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Abstract

Managerial perception is the process by which managers form an image of the stimuli they receive. According to research, perception is conditioned by the individual's cognitive profile. But the different nature of incoming stimuli suggests that it would be interesting to study whether the cognitive profile's influence varies in the presence of different stimuli. This paper analyses the effect of the cognitive profile on perception of differently-structured stimuli. The results clearly show that the cognitive style, tolerance of ambiguity, and proactivity have an effect. Specifically, they condition the recognition of stimuli, particularly when the stimuli are relatively unstructured. The results also show that the cognitive variables have less influence in the interpretation stage.

Keywords: managerial perception, stimulus, structure, strength, cognitive profile

1 INTRODUCTION

The cognitive perspective in the management literature recognises managerial perception as the firm's "black box" that hides the key parameters determining decision-making from view (Sáez and Jiménez, 2004; Yanes, 2004). Managers form a mental representation from the stimuli they receive from their competitive context (external stimuli), and this becomes the foundation on which they adopt their strategic decisions. Research also shows that managers differ individually in terms of how they perceive, acquire, interpret and use information (see Walsh, 1995, Livengood and Reger, 2010, Tang et al, 2012, Barreto, 2012). Thus it would be extremely useful to understand the factors that affect managers' interpretations of stimuli (Kuvas and Kaufman, 2004), because these interpretations affect their knowledge about internal and contextual factors, and consequently condition entrepreneurial actions and intentions (Wood, 1991; Miller, 1993; Thomas and Simerly, 1994; Shane, 2003; Baron, 2006; Ubcbasaran et al., 2008; Kaplan, 2008; Blume and Covin, 2011; Plambeck, 2011).

In this respect, research has stressed that managers' perception is far from being an objective and rational process. Rather, the process is influenced by aspects as diverse as the context (Santos and García, 2008), the qualities of the manager, and even the nature of the stimulus (Dutton and Ashford, 1993, Gielnik, et al., 2011; Plambeck, 2011). The empirical literature offers clear evidence that the organisational context – the type of firm and its strategic orientation – influences managers' interpretations of the stimuli coming from the environment (Thomas and McDaniel, 1990; Ginsberg and Venkatraman, 1992; Thomas et al., 1993, 1994; Calori et al., 1994; Sutcliffe, 1994; Denison et al., 1996; Chattopadhay et al., 1999; Nadkarni and Barr, 2008; Nicolau and Shane, 2009; Singh, 2010). At the same time, both theoretical and empirical literature recognises that managers' personal characteristics and beliefs also condition the perception process (Daft and Weick, 1984; Schwenk, 1984; Milliken and Lant, 1991; Kautonen, 2008; Blume and Covin, 2011). The difficulty arises when it comes to how to operationalise and analyse these individual characteristics that affect perception. Perhaps for this reason researchers frequently use demographic characteristics (age, education, experience, etc.) to measure individual characteristics (Schneider and DeMeyer, 1991; Thomas et al., 1993, 1994; Kautonen, 2008). But the researchers often explain the effect of these demographic variables using arguments involving cognitive aspects and the different managerial attitudes that affect the process of recognition and interpretation of the competitive context (Hambrick and Mason, 1984; Gillingwater and Gillingwater, 2009). It would be more appropriate to recognise that the individual characteristics that most affect the perception process are the cognitive traits.

The cognitive profile refers to the set of individual qualities related to the different forms of thought and action managers can engage in, in other words their capacity to recognise and interpret information. After a review of the available literature, we did not find any studies that have analysed the relationship between managerial perception and cognitive traits.

As proposed in signal detection theory (Swets, 1992), a stimulus is a signal that could foster an idea or knowledge in the receiver. In management literature it is common to introduce external stimuli as signals that issue the context but that influence managers' reactions in such a way that they condition business behaviour (Miller, 1996; Green et al., 2008). Furthermore, entrepreneurship research emphasizes the key role of stimuli in opportunity recognition processes (Shane, 2003, Baron, 2006; McMullen and Shepherd, 2006, Ucbasaran, et al., 2008; Nicolay and Shane, 2009). Additionally, the research stresses the diversity and complexity of the stimuli that managers receive (Mintzberg et al., 1976; Eggers and Kaplan, 2008; Phan et al 2009, Tang, et al., 2012) and the varying amount of attention managers pay them. Research has shown that managers pay more attention to stimuli linked to threats than to those linked to opportunities and linked with previous knowledge (Dutton and Ashford, 1993, Shepherd and Detienne, 2005; Blume and Covin, 2011). Researchers have also shown that the strength and clarity of the stimulus moderates the extent to which the receiver's personality affects the perception process. Thus the clearer the stimulus is, the less important the individual perception process (Fiske and Taylor, 1991; Waller et al., 1995; Entrialgo et al., 2001). Other researchers offer features to classify the stimuli into different categories. Some distinguish between opportunities and threats, while others stress structure and strength (Haukedal, 1994; Haukedal and Gronhaug, 1994).

Thus the objective of the current paper is to study the effect of the manager's cognitive traits on the process of the perception of stimuli. The study also analyses whether the effect of the cognitive profile on perception depending on the nature of the stimuli. The purpose of this paper is to illuminate the perception of diverse stimuli. For this purpose, the following section looks at the literature on the perception process and the influence of the cognitive profile. The stimuli are characterised according to two features (Haukedal, 1994; Haukedal and Gronhaug, 1994): structure and strength. This leads to the formulation of the model that guides the study. Section 3 offers the methodology. This work uses experimentation, a technique that is frequently used in research on cognitive biases and managerial perception (Samuelson and Zeckhauser, 1988; Sterman, 1989; Schwenk, 1995; Shout and Bolger 2002, Gielnik et al., 2011). The experiment involves business administration students, who were considered representative of potential managers. These students were chosen for two main reasons: they had a basic understanding of the workings of the capital market and takeover processes, and they

had no previous managerial experience, so they would not be influenced by their beliefs (Ucbasaran et al., 2010; Baron et al., 2012; Aguinis and Lawal 2012). Section 4 offers the main results of the study, and Section 5 the discussion. The paper ends with some final remarks.

2 INDIVIDUAL PERCEPTION OF STIMULI: A REVIEW

Perception is the process by which the individual forms an image of the surrounding reality. In other words, it is the cognitive representation resulting from the individual interpretation process (Haukedal, 1994). Two distinct stages are evident in this process (Starbuck and Milliken, 1988; Santos and García, 2006): (1) the recognition of the stimuli; and (2) their subsequent interpretation. In the first stage the individuals (managers, for instance), faced with the stimuli coming from the context, select only those that they consider relevant (i.e., classify each stimulus as either a signal or noise). In the second stage the managers attribute meaning to those stimuli they selected in the first stage. Thus the managers form a more or less reliable image of the original stimulus. This final image can contain various biases –misperception- that distance managers' perception from the original signal. This is the case with omission biases, when relevant stimuli are ignored, or attribution biases, when the meaning does not correspond to the real strategic importance of the stimulus. What the manager registers then is not the real stimulus. Something is always added, taken away or changed when the stimulus passes from the senses to the mind of the manager (Haukedal, 1994).

The effect of the cognitive profile on perception

This perception process is affected by receivers' individual characteristics, especially their cognitive traits. The current researchers understand the cognitive traits or cognitive profile as the individual framework in which information is processed and analysed. Specifically, the terms refer to the knowledge structures and mental models that the individual uses to make assessments, judgements or decisions (Cools and Van den Breek, 2008). The cognitive profile coincides, in essence, with what is sometimes called "cognitive schema", defined as a mental structure that directs information processing, guides attention and memory towards consistent schemata, and fills gaps in the information (Gioia and Poole, 1984; Ericson, 2001; Baron et al, 2012). Defined like this, individuals' cognitive traits undoubtedly govern and condition their perception of stimuli. The central hypothesis of this research follows:

H_1: The individual cognitive profile conditions the perception of stimuli.

Accepting the influence of the cognitive profile on the perception process, the difficulty is in operationalising these concepts. Researchers use several dimensions in the literature, and the current paper uses the following three: cognitive style, tolerance of ambiguity, and proactivity.

Cognitive style refers to the individual information processing process[1] (Hayes and Allinson, 1994; Sadler-Smith and Badger, 1998; Cools and Van den Breek, 2008). Cognitive style affects how people look at their context to gain information, how they analyse their environment, how they organise and interpret that information, and how these interpretations guide their actions (Hayes and Allinson, 1998). Likewise, the concept refers to the way individuals perceive stimuli and how they use that information to guide their behaviour (Hayes and Allinson, 1998). The individual cognitive style can affect preferences for different types of learning, knowledge, information processing and decision-making (Dubard et al., 2007). Thus the cognitive style makes it possible for managers to see what they see but at the same time blinds them to other aspects. Moreover, the cognitive style conditions the stimuli that the individual pays attention to and how that stimulus is interpreted and understood (Hayes and Allinson, 1998, Dutta and Thornhill, 2008), so it conditions the two stages of perception.

The literature offers different models of reference for the cognitive style. Authors have identified up to 54 items (Hayes and Allinson, 1994; Sadler-Smith, 1999; Armstrong, 2000; Sadler-Smith et al., 2000; Hodgkinson and Sadler-Smith, 2003; Kozhervnikov, 2007; Cools and Van den Breek, 2008). Thus some authors have tried to frame these items in a bipolar scale (Allinson and Hayes, 1996). Of all the scales in the literature, the current authors use Allinson and Hayes' (1996) cognitive style index (CSI). The CSI is a bipolar construct that classifies individuals into two groups: intuitive versus analytical. The reason for this choice is that various studies find a relation between the CSI and business behaviour (Allinson et al., 2000), making the indicator appropriate for the current research. The analytical individual studies problems in detail and makes decisions on the basis of mental reasoning. The intuitive individual makes decisions and deals with problems based on feeling (Allinson and Hayes, 1996, Dutta and Thornhill, 2008).

[1] For a more detailed explanation of the differences between cognitive style and other closely related concepts – learning style, cognitive strategies, etc. – see Hayes and Allinson (1994).

Tolerance of ambiguity is the way in which the individual deals with an ambiguous situation (Furnham and Ribchester, 1995; Cools and Van den Breek, 2008). The concept represents the person's capacity to accept the lack of information about the range of possible outcomes and their probabilities (Sherman, 1974; McNally et al., 2009). Tolerance of ambiguity also refers to the individual's capacity to make decisions in risky or highly uncertain environments (Westerberg et al., 1997). Individuals with less tolerance of ambiguity perceive ambiguous situations as threats (Sully de Luque and Sommer, 2000; Ling et al., 2005), while individuals with a higher level of tolerance perceive such situations as non-threatening (Budner, 1962). Moreover, individuals with less tolerance perceive a higher level of risk in ambiguous situations than those with a higher level of tolerance (Conchar et al., 2004). Ambiguous situations are totally new situations, complex situations with a large number of elements, or contradictory or ill-defined situations (Conchar et al., 2004).

Finally, proactivity refers to individual differences in how people seek to influence and change their environments (Bateman and Crant, 1993; Cools and Van den Breek, 2008). Proactive individuals look for opportunities, show initiative, do things, and persevere in their behaviour until they achieve the set goal (Bateman and Crant, 1993). Proactive behaviours are anticipatory and anticipation depends on imagining future outcomes. Proactivity helps individuals understand the information they receive (Crant, 2000; Grant and Ashford, 2008). Proactive individuals also feel less conditioned by the situational forces of their environment than less proactive individuals (Kickul and Gundry, 2002).

Stimuli: their diversity and perception

Managers are overloaded with information, since they receive a huge amount of diverse stimuli (Mintzberg et al., 1976; Baron, 1998, 2004). The diversity of stimuli makes it necessary to use some criterion to classify them into different categories. The literature offers a number of different typologies, for example the one that stresses the content of the stimuli and distinguishes between opportunities and threats (see Dutton and Jackson, 1987, Kuvaas and Kaufman, 2004). But this classification is somewhat confusing, because depending on the receiver a stimulus can be classified as either an opportunity or a threat (Ramaprasad and Mitroff, 1984; Kuvaas and Kaufman, 2004). In this paper, the authors use the classification with the features "strength" and "structure" (Haukedal, 1994; Haukedal and Gronhaug, 1994) to classify the stimuli. The first feature – strength – distinguishes between easily recognisable stimuli and stimuli that are more difficult to recognise, discriminating between stimuli in terms of their visibility. On the other hand, the second feature allows the researcher to distinguish between well-structured stimuli and stimuli with an undefined, diffuse structure (Simon, 1973). This feature is difficult to measure, and it is represented by three attributes (Kaufman, 1987): novelty, complexity, and ambiguity. Novelty refers to the individual's lack of experience or knowledge that can be directly applied to the perceived stimulus. Complexity refers to the quantity of information contained in the signal. Finally, ambiguity refers to situations in which the problem is to decide what the best options are, or which suit the overall objective best. These are situations with various alternatives and the manager is unsure of which is the best one. Using these two features: strength and structure, we can distinguish among four different types of stimulus:

Table 1: Adopted from Haukedal and Gronhaug (1994: 357)

	Strength: high	**Strength: low**
Structure: high	Type A: Messages	Type C: Whispers
Structure: low	Type B: Symptoms	Type D: Itchers

Type A – "messages" – is surely the least problematic in terms of perception since it refers to stimuli that are perfectly visible – so they catch the manager's attention easily – and well-structured – so the managers know what they mean and how important they are. The stimuli classified as "itchers" (D) are at the other extreme, since they barely catch the manager's attention because of their low visibility, and they are also difficult to interpret. "Whispers" (C) are stimuli that are difficult to recognise but that have a clear, known structure. These stimuli consequently have a problem of strength. Finally, "symptoms" (B) are strong stimuli but they are relatively unstructured. Managers faced by these stimuli have the problem of finding the right interpretation and determining the most appropriate actions.

Thus it can be deduced that type A stimuli are the clearest and type D stimuli the least clear, and the other two categories are somewhere in between. Moreover, and as mentioned above, different stimuli present different challenges to managers in their perception process. Thus while some stimuli generate problems of recognition, others give rise to difficulties in the interpretation process, and the clearest lead to simpler perception processes. Also, research recognises that the "force of the situation" moderates the extent to which the receiver's personality affects the perception process (Waller et al., 1995; Entrialgo et al., 2001). The force of the situation

refers to the clarity of the stimulus, which is composed of the strength and structure (Fiske and Taylor, 1991). The clearer the stimulus (high strength and high structure), the less effect the receiver's individual characteristics have on the perception process. But in relatively unclear stimuli (low strength and low structure) the cognitive variables decisively condition the perception process (Sutcliffe and Huber, 1998). The second hypothesis of this paper follows:

H_2: The influence of the cognitive profile on an individual's perception of stimuli is weaker with clear stimuli (high strength and high structure).

Comparing two stimuli with the same structure but different strength, the perception process depending on the ease or difficulty in recognising the stimulus, rather than of interpreting the stimulus or deducing its strategic implications. Thus the cognitive traits most involved in the process of recognition of the stimulus will be more relevant than those linked to interpretation. Similarly, comparing two stimuli with the same strength but different structures, the cognitive traits most involved in the process of interpretation will be more relevant.

On the other hand, the characterisation of the cognitive profile reveals that the three dimensions considered have different effects in different information contexts. Thus proactive behaviour has more effect in uncertain situations (Weick, 1979; Grant and Ashford, 2008). Equally, tolerance of ambiguity is also associated with situations of uncertainty. With regard to the cognitive style, the analytical character seems to be more suited to structured contexts with information available, while the intuitive character may be more appropriate in uncertain situations. With all this, the third and final hypothesis of this research is as follows:

H_3: Tolerance of ambiguity, proactivity and intuitive character have more effect on the perception of unclear stimuli (low strength and low structure) than on the perception of clear stimuli.

This completes the analytical model upon which the current research is founded. This research will study the effect of the cognitive profile on the process of the perception of different stimuli.

3 METHODOLOGY

Experiment design

The empirical analysis aims to analyse whether perception of stimuli is conditioned by the individual's cognitive profile, and above all, if the effect of the cognitive profile is stronger with unclear stimuli. For this purpose, the authors compare the perception of two stimuli with the same strength (high) but different structure (high vs. low). Of the three attributes determining the level of structure, novelty and complexity are kept unchanged, and the authors compare the perception of two stimuli that differ only in their level of ambiguity. They are consequently comparing a type A stimulus (message) and a type B stimulus (symptom). Recall that the former has high strength and high structure, while the latter has high strength but low structure.

To carry out this study the authors needed to observe the behaviour of individuals in a controlled way, so they used a laboratory experiment[2] (Aguinis and Lawal, 2012). The sessions of the experiment were carried out in our experimental laboratory. A total of 96 people participated in the experiment, all of them undergraduate business administration students enrolled at the University of Valladolid (Spain), recruited through a public announcement. These students were considered representative of potential managers. Incentives were used to encourage the participants to behave realistically in response to the announcement of a takeover bid (Camerer and Hogarth, 1999). Participants were remunerated according to the level of coherence of their decisions. The remuneration was a fixed amount, from which sums were subtracted for each financially incoherent decision. Specifically, two situations were penalised: (1) responses in which the participant predicted a rise (fall) in the share price of the firm – bidder or target firm – and then declared their decision[3] in the market to be to sell (buy) those shares; and (2) responses in which the participant predicted a fall in the share price of the target firm.

The experiment involved presenting the participants – in writing – with an event that contained two stimuli. The event was the announcement of a takeover bid (henceforth, TOB[4]) in six different scenarios. The event was the same in each of the scenarios – the announcement of the TOB – but the presentation and source differed. Thus, for example, some scenarios state~~d~~ that a financial newspaper reports on the TOB, while others state~~d~~ that rumours about a possible bid are heard in the branch of a bank. In each scenario the announcement of the TOB

[2] Experimentation is one of the most widely recommended techniques for research into cognitive biases (Schwenk, 1995). This type of research frequently involves university students (Zalesny and Ford, 1990).

[3] For a more detailed explanation, please contact the authors.

[4] In general terms, a TOB refers to purchases in which firms acquire securities with voting rights from a company: shares, convertible bonds, subscription rights, etc. Although bidders generally only want to acquire part of the firm, TOB operations are considered typical of the market of control (Farinós and Fernández, 1999).

was described, and this gave rise to the two stimuli subsequently analysed: the stimuli referring to the bidder and the target firm, respectively.

A TOB is a strategic decision that, as Baker et al. (2009) recognise, requires setting a value that is sufficiently flexible to make the offer attractive to the shareholders and managers of the target firm but that at the same time avoids giving the shareholders and managers of the bidding firm the feeling they are overpaying. In these circumstances, the cognitive profile helps manage the complexity of the decision in an environment with an information overload (Raghubir and Das, 1999). The choice of this event was also based on two other reasons. First, the event would have barely any affective connotations for the participants, since they had had no previous experience in the area; they would consequently not be influenced by their beliefs. Second, all the participants had a basic understanding of how the capital market and takeover processes work, so the event was familiar to them.

For each scenario, and for both the bidder and the target firm, the participants were asked to say whether they thought the event stimulus would affect the share price or not. Specifically, they were asked whether, in light of the TOB announcement, they believed that each firm's share price would rise, fall or remain unchanged in the short term (Appendix 1).

The financial literature is unanimous in saying that credible TOB announcements generate powerful information, create value and produce abnormal profits for the shareholders of the target firm (Farinós and Fernández, 1999), since they have a positive effect on the firm's share price (Mitchell et al., 2004). The same cannot be said for the firm that launches the takeover bid. Firms launch such operations for a wide range of reasons, and so the effects on the bidder are equally diverse. The bidder's share price sometimes rises after announcing a TOB but sometimes falls.

These are consequently the two stimuli that will be used in this study: the TOB announcement for the bidder firm and for the target firm, respectively. These two stimuli have the same degree of strength since they appear in the same event. They also have the same degree of novelty (the participants have no previous experience in TOB operations but understand how they work) and complexity (they receive the same information). Nevertheless, the ambiguity of the two stimuli differs: the TOB announcement is less ambiguous for the target firm than for the bidder. Thus the TOB announcement will be a type A stimulus for the target firm but a type B stimulus for the bidder.

Measures design

The participants were also asked a series of questions to determine the three dimensions of their cognitive profile: cognitive style (COG), tolerance of ambiguity (TA), and proactivity (PRO). The authors used Allinson and Hayes's (1996) cognitive style index (CSI)[5] to measure cognitive style. This indicator consists of 38 items that the participant must score on a three-point scale ("true", "uncertain", "false"), and measures how intuitive or analytical the individual is. Thus the range of scores runs from 0 to 76. Individuals with an analytical style obtain high scores on the CSI, while intuitive individuals get low scores. The Cronbach alpha for this scale is 0.857, so its internal consistency can be considered satisfactory[6].

To measure tolerance of ambiguity, the authors used Acedo and Jones (2007) and included four statements, which the participants had to score at 1-5 depending on their level of agreement. In this case, the reliability indicator is acceptable ($\alpha = 0.83$). For proactivity, the authors included a 10-item scale, each item scored at 1-5 depending on the degree of agreement, as in the previous scale. The Cronbach alpha in this case (0.72) guarantees the reliability of this scale.

The authors built two individual indicators for the stimuli analysed: an indicator of the proportion of stimuli classified as relevant (AFF), and another of the proportion of stimuli considered to have a favourable effect on the firm's share price (FAV). The first (AFF) reflects the number of times the individual says that the stimulus received affects the share price in the six scenarios presented in the experiment. The second (FAV) is calculated as the ratio of the number of times a favourable effect is recognised (the share price rises) to the number of times the stimulus is considered to have an effect. This indicator varies in a range from 0 to 1. These indicators were calculated separately for each of the stimuli analysed: AFF-A and AFF-B for recognition of the stimuli and FAV-A and FAV-B for attribution of meaning to the stimuli recognised as relevant (favourable or unfavourable) (Appendix 2).

[5] The authors used this index with the kind permission and authorisation of its authors, Professors Allinson and Hayes from the University of Leeds (UK).

[6] This result is consistent with results of previous studies, which are in the range 0.78-0.9.

4 RESULTS

The authors analysed whether the participants' cognitive profile affects their perception of the two stimuli analysed. First, they analysed whether recognition of the stimuli depends on the individual's cognitive profile. For this purpose, the authors used a regression analysis. Table 2 shows the results of this analysis.

Table 2: Results of regression analysis

	AFF-A	**AFF-B**
R^2	0.072	0.088
Adj. R^2	0.042	0.059
F (Sig.)	2.39 (0.074)	2.97 (0.036)
Constant	1.14 (0.000)	0.97 (0.00)
COG	-0.33 (0.010)	0.005 (0.977)
TA	-0.022 (0.9)	0.398 (0.08)
PRO	-0.063 (0.74)	-0.65 (0.010)
Mean	0.843	0.715
SD	0.179	0.233
Wilcoxon signed rank test	Z: -4.39[a] (0.00)	
Signed test	Z: -4.18[a] (0.00)	

a: (AFF-B)-(AFF-A)

The results show that the level of recognition of stimuli is significantly higher for Stimulus A than for Stimulus B. As might have been suspected, Stimulus B poses greater problems of visibility than Stimulus A, a sure consequence of its higher ambiguity. The authors next analysed the explanatory power of each of the three dimensions included in the cognitive profile. Some interesting points come out of the results. On the one hand, the regression analyses carried out are statistically significant, thereby confirming that the recognition of the stimuli analysed depends on the receiver's cognitive profile. On the other hand, the results show considerable differences in the explanatory power and in which dimensions of the cognitive profile are influential. Specifically, the F statistic and the adjusted R^2 indicate that the cognitive variables have greater explanatory power in Stimulus B. In other words, the cognitive profile has an effect on the recognition of stimuli, above all when the stimuli are relatively unclear.

With regard to the cognitive dimensions that are influential, the recognition of Stimulus A depends on the cognitive style. Specifically, the results show that the greater the analytical orientation, the lower the level of recognition of Stimulus A. With Stimulus B, the most significant dimensions are tolerance of ambiguity and proactivity. Tolerance of ambiguity shows a positive effect on recognition of the stimulus, as would be expected, while proactivity has a negative effect. This latter result means that proactive individuals may recognise fewer stimuli as relevant because they anticipate that they are not going to be affected by them. It should be recalled that proactivity has connotations of anticipation.

Having analysed the stimulus recognition stage, the authors then went on to the interpretation stage, in other words, the stage in which the participants attribute meaning to the event. The authors analysed the variables FAV-A and FAV-B for this purpose. The descriptive statistics of these variables show that the mean is higher for Stimulus A than for Stimulus B (1.8 compared to 1.52). This means that participants recognise a favourable effect more frequently for Stimulus A than for Stimulus B. The variability of the indicator is clearly higher in the second case (Sd-A: 0.24; Sd-B: 0.29).

The authors then looked at the dependence relation between the stimulus interpretation variables and the individual cognitive profile. They decided to make some regroupings. In the case of Stimulus A, they grouped the sample into two categories: (a) the participants who always say that Stimulus A has a positive effect[7]; and (b) the participants who say that the effect of the stimulus varies (sometimes positive, sometimes negative). The ANOVA analysis shows that none of the cognitive profile dimensions can explain the differences evident in the interpretation of Stimulus A (Table 3). Consequently, the authors observe that for Stimulus A the attribution of meaning does not depend on the cognitive profile.

The process was similar for the interpretation process with Stimulus B. In this case the authors grouped the sample into three categories[8]: (a) participants recognising a varied influence, but with the negative effect being in the majority; (b) participants giving an equal number of positive and negative scores; and (c) participants who

[7] Recall that Stimulus A refers to the TOB announcement and its effects for the target firm. In this case the announcement, if credible, leads to a rise in the firm's share price.

[8] Stimulus B refers to the effect of the TOB announcement for the bidding firm, and its effects are more uncertain.

recognised mainly positive effects. Table 3 shows the results of the ANOVA analysis with the cognitive profile dimensions. The results show that the cognitive style has a significant effect on the meaning that participants attribute to Stimulus B. Specifically, intuitive individuals attribute a positive effect to Stimulus B more frequently than analytical individuals.

Table 3: Results of ANOVA

	COG	**TA**	**PRO**
STIMULUS A	F: 1.855 (0.176)	F: 0.204 (0.653)	F: 0.060 (0.808)
STIMULUS B Levene statistic (Sig.) F (Sig.)	 1.2 (0.29) 3.22 (0.04)	 1.13 (0.32) 0.92 (0.40)	 1.64 (0.20) 0.29 (0.74)
0: 34 participants 1: 20 participants 2: 42 participants Total: 96 participants	0: (0.74) 1: (0.74) 2: (0.67) total: (0.71)	0: (0.61) 1: (0.62) 2: (0.59) total: (0.60)	0: (0.76) 1: (0.77) 2: (0.75) total: (0.76)

Finally, the authors analysed how the perception process develops with respect to the cognitive dimensions. In other words, they examined whether differences exist in the perception process between intuitive and analytical individuals, and whether the level of proactivity and tolerance of ambiguity have an effect on the perception process. For this purpose, they split the sample into two groups depending on how subjects score on COG: low (intuitive) or high (analytical). Then a difference of means analysis (ANOVA) was used to determine if this grouping was associated with the differences evident in the perception process of the different participants (AFF-A; AFF-B; FAV-A; FAV-B). The process was identical with the other two dimensions: tolerance of ambiguity and proactivity. Table 4 shows the results of this analysis.

Table 4: Results of ANOVA

	COG: INTUITIVE/ANALYTICAL	**TA: - TA / + TA**	**PRO: - PRO / + PRO**
AFF-A	1: 0.89 2: 0.79 TOTAL: 0.84 LS: 6.73 (0.011) F: 8.71 (0.004)	1: 0.83 2: 0.85 TOTAL: 0.84 LS: 0.26 (0.609) F: 0.27 (0.602)	1: 0.833 2: 0.85 TOTAL: 0.84 LS: 0.004 (0.952) F: 0.351 (0.555)
AFF-B	1: 0.70 2: 0.73 TOTAL: 0.71 LS: 0.00 (0.956) F: 0.39 (0.53)	1: 0.68 2: 0.76 TOTAL: 0.71 LS: 0.42 (0.51) F: 2.88 (0.093)	1: 0.75 2: 0.674 TOTAL: 0.715 LS: 7.52 (0.007) F: 2.83 (0.096)
FAV-A	1: 1.77 2: 1.84 TOTAL: 1.80 LS: 0.22 (0.637) F: 2.12 (0.14)	1: 1.80 2: 1.81 TOTAL: 1.80 LS: 0.103 (0.909) F: 0.043 (0.83)	1: 0.183 2: 1.78 TOTAL: 1.80 LS: 3.54 (0.063) F: 0.854 (0.358)
FAV-B	1: 1.59 2: 1.44 TOTAL: 1.52 LS: 1.21 (0.27) F: 6.14 (0.015)	1: 1.52 2: 1.50 TOTAL: 1.52 LS: 1.21 (0.27) F: 0.109 (0.74)	1: 1.51 2: 1.52 TOTAL: 1.52 LS: 0.66 (0.417) F: 0.018 (0.89)

LS: Levene statistic of difference of variances (Sig.).

F: F statistic of difference of means test (Sig.).

The grouping with the variable COG gives rise to 2 groups (intuitive versus analytical individuals). The results show that significant differences exist between the two groups in the recognition of Stimulus A (AFF-A), in the difference in the level of recognition of the two stimuli considered (DIFF), and in the interpretation of Stimulus B (FAV-B). The results show that analytical individuals recognise Stimulus A less than intuitive ones. Finally, analytical participants recognise the favourable effect of Stimulus B less frequently than intuitive individuals.

The grouping for tolerance of ambiguity is associated with significant differences only in the behaviour of the variable that measures the recognition of Stimulus B. Specifically, and consistent with the above arguments, the results show that participants with a higher TA recognise unclear stimuli as relevant signals more frequently.

Finally, the analysis shows that the level of proactivity is associated with significant differences in AFF-B. Proactive participants recognise Stimulus B less frequently than non-proactive ones.

5 DISCUSSION

A number of interesting points can be made from the results of this analysis. First, and most importantly, the results show that the cognitive profile is a determinant in the process of individual perception. Specifically, in the experiment carried out here the cognitive dimensions are determinant mainly in the initial stage of the perception process, in which the individual classifies the stimulus as either a signal (relevant stimulus) or noise (irrelevant stimulus). These results confirm – at least partially – Hypothesis H1. On the other hand, the cognitive profile has greater explanatory power in the perception process for Stimulus B than for Stimulus A. In the recognition stage this difference is clearer when comparing the goodness of fit of the estimated regression models. In other words, the results show that the cognitive profile is more relevant in explaining the recognition stage of the stimuli, especially when the stimuli are relatively unstructured, and so unclear. This provides support for Hypothesis H2, which postulates that the cognitive profile has a stronger effect given relatively unclear stimuli (low strength and low structure).

Second, the results also indicate that recognition of Stimulus A is associated with the cognitive style. Thus, intuitive individuals recognise this stimulus more frequently than analytical ones. As could be expected, the attribution of meaning to Stimulus A is not associated with the participants' cognitive qualities. It will be recalled that Stimulus A refers to the effects on the share price of the target firm, and the financial literature indicates that the likely effects are positive.

And third, recognition of the least clear stimulus (Stimulus B) is related to greater tolerance of ambiguity and individuals with a low proactivity. Stimulus B's interpretation stage is related to the participants' cognitive style, so that intuitive individuals recognise a favourable effect more frequently than analytical ones. This result is also consistent with the situation. Stimulus B has some uncertain effects that depend on the bidding firm's motives in making its bid. The participants in the experiment have no information about these motives, so any attribution of meaning can only be based on intuition.

With regard to H3, the results diverge slightly from what was expected. The authors postulated that cognitive style would have more effect on the perception of Stimulus B, the less well-structured stimulus, than on that of Stimulus A. The results from the interpretation stage confirmed this hypothesis because cognitive style helps explain the interpretation of Stimulus B but not that of Stimulus A. But in the recognition stage the relation is not confirmed because cognitive style explains the recognition of Stimulus A but not that of Stimulus B. The effect of tolerance of ambiguity, as predicted, contributes to recognising relatively unstructured stimuli (Stimulus B in the current analysis). Likewise, the previous arguments led the authors to postulate that proactivity would surely have an active role in the perception of unclear stimuli. The results support this argument and show that proactive individuals recognise this stimulus as relevant less frequently. Considering the anticipatory nature of proactivity, this result shows that the most proactive participants anticipate that they will not be affected by Stimulus B and so ignore it, in other words they classify the stimulus as irrelevant.

In short, the authors show that the cognitive dimensions have a significant effect on the process of the perception of stimuli, above all in the initial recognition stage and in the presence of relatively unstructured stimuli. Thus, these results give support to the idea that the perception process is dependent on the manager's cognitive traits and that the type of stimulus conditions the relevance of the cognitive dimensions on the perception process.

6 FINAL REMARKS

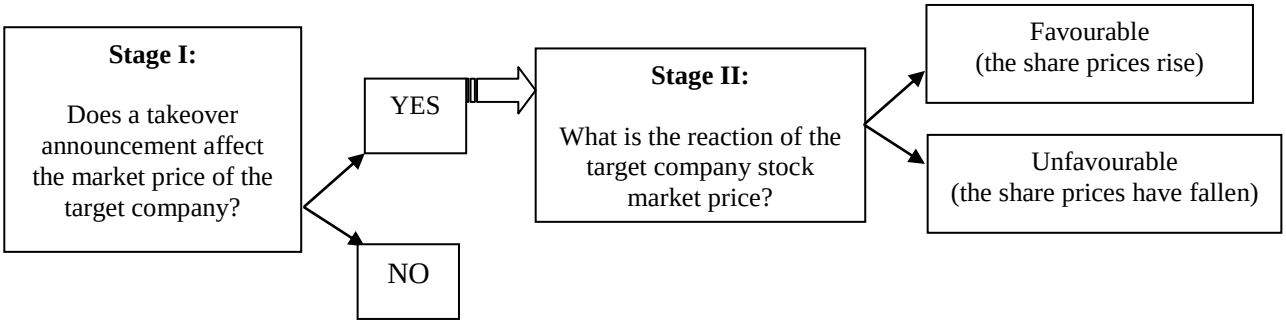
The perception of stimuli can be seen as the "black box" that hides the secrets of the managerial decision-making that marks out the path for firms. The process of managerial perception determines which stimuli deserve a strategic response and attributes their meaning. Previous research has shown that the individual's characteristics condition this perception process. Many authors have studied the effect of the managers' demographic characteristics, but it is their cognitive traits that are determinant in the process of recognising and interpreting stimuli. Moreover, the incoming stimuli differ in nature, hence the interest in studying whether the effect of the cognitive profile varies in the presence of different stimuli. Thus, in the current research the authors have analysed the effect of the cognitive profile on the process of perception of differently-structured stimuli. The stimulus was the share price of a firm involved in the announcement of a takeover bid. The cognitive profile was measured using three dimensions: cognitive style, tolerance of ambiguity, and proactivity.

The results obtained strongly support the idea that the cognitive profile analysed here does have an effect on the perception of stimuli. Specifically, the cognitive dimensions considered are determinant in the initial stage of the recognition of stimuli and especially when the stimuli are relatively unstructured. But the results also show that these cognitive dimensions have a weaker effect in the interpretation stage. With all this, the results of this research point to the need to study the managerial perception process further in two directions.

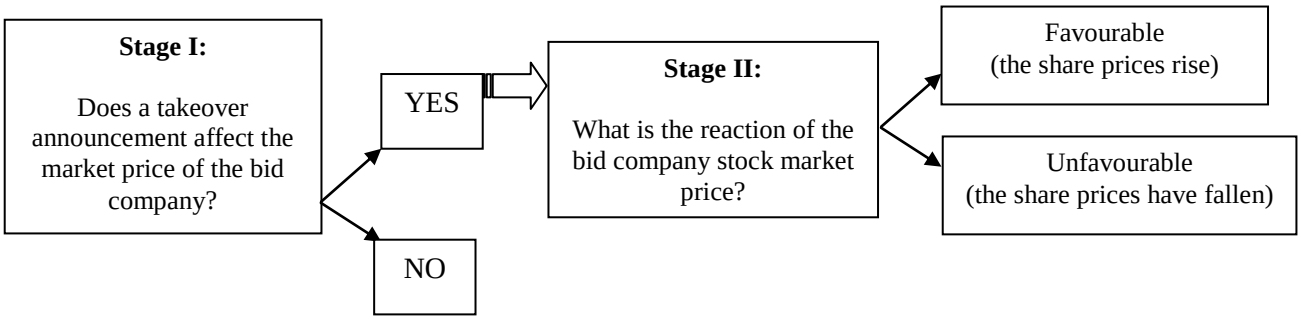
Thus researchers need to refine their operationalization of the individual cognitive dimensions to analyse their influence on the different stages of the perception process in more detail. At the same time, they should examine the contextual features that would allow them to characterise and differentiate different stimuli to learn more about the different associated perception processes. Finally, we recognise that interdisciplinary research is likely to provide novel insight into exploring and conceptualizing organizational behaviour (Gillingwater and Gillingwater, 2009). All this will mark the direction of future research.

Appendix 1

TYPE-A STIMULUS: TAKEOVER ANNOUNCEMENT – THE TARGET COMPANY



TYPE-B STIMULUS: TAKEOVER ANNOUNCEMENT – THE BID COMPANY



Appendix 2

VARIABLES
Stage I: Recognition of the stimuli • AFF-A= the proportion of stimuli-A classed as relevant: • The number of times the individual says that stimulus-A affects the share price in the six scenarios presented in the experiment. • AFF-B= the proportion of stimuli-B classed as relevant • The number of times the individual says that stimulus-B affects the share price in the six scenarios presented in the experiment.
Stage II: Interpretation of the stimuli: • FAV-A = the proportion of stimuli considered to have a favourable effect on the price of the target company. • The ratio of the number of times a favourable effect is recognised (the share price rises) to the number of times stimulus-A is considered to have an effect. • FAV-B = the proportion of stimuli considered to have a favourable effect on the price of the bid company. • The ratio of the number of times a favourable effect is recognised (the share price rises) to the number of times stimulus-B is considered to have an effect.
Cognitive Dimensions: • Cognitive Style: CSI • Tolerance of ambiguity: TA • Proactivity: PRO

REFERENCES

Acedo FJ, Jones MV (2007): Speed of internationalization and entrepreneurial cognition: Insights and a comparison between international new ventures, exporters and domestic firms. *Journal of World Business*, 42: 236-252.

Aguinis, H.; Lawal, S.O. (2012): Conducting field experiments using eLancing's natural environment. *Journal of Business Venturing*, 27 (4): 493-505.

Allinson CW, Chell E, Hayes J. (2000): Intuition and Entrepreneurial Behaviour. *European Journal of Work and Organizational Psychology*, 9 (1): 31-43.

Allinson CW, Hayes J. (1996): The cognitive style index: a measure of intuition-analysis for organizational research. *Journal of Management Studies*, 33 (1): 119-135.

Armstrong, S.J. (2000): The influence of individual cognitive style on performance in management education. *Education Psychology*, 12 (3): 323-339.

Baker M, Pan X, Wurgler J. (2009): The psychology of pricing in mergers and acquisitions. Working papers, Electronic copy available at: http://ssrn.com/abstract=1364152.

Baron RA. (1998): Cognitive mechanisms in entrepreneurship: why and when entrepreneurs think differently than other people. *Journal of Business Venturing*, 13 (4): 275-294.

Baron, R.A. (2004): The cognitive perspective: a valuable tool for answering entrepreneurship's basic "why" questions. *Journal of Business Venturing*, 19 (2): 221-239.

Baron, R.A. (2006): Opportunity recognition as pattern recognition: how entrepreneurs "connect the dots" to identify new business opportunities. *Academy of Management Perspectives*, 20 (1): 104–119.

Baron, RA., Hmieleski, KM; Henry, R.A. (2012): Entrepreneurs' dispositional positive affect: The potential benefits – and potential costs- of behing up. *Journal of Business Venturing*, 27 (3): 310-324.

Barreto, I. (2012): Solving the entrepreneurial puzzle: the role of entrepreneurial interpretation in opportunity formation and related process. *Journal of Management Studies*, 49 (2): 356-380.

Bateman TS, Crant JM (1993): The Proactive Component of Organizational Behavior: A Measure and Correlates. *Journal of Organizational Behavior*, 14 (2): 103-118.

Blume, B.D; Covin, J.G. (2011): Attributions to intuition in the venture founding process: Do entrepreneurs actually use intuition or just say that they do? *Journal of Business Venturing*, 26: 137-151.

Budner S. (1962): Intolerance of ambiguity as a personality variable. *Journal of Personality*, 30: 29-50.

Calori R, Johnson G, Sarnin P. (1994): CEOs cognitive maps and the scope of the organization. *Strategic Management Journal*, 15: 437-457.

Camerer CF, Hogarth RM. (1999): The effects of financial incentives in experiments: a review and capital-labor-production framework. *Journal of Risk and Uncertainty:* 7-42.

Chattopadhyay P, Glick WH, Miller CC, GP Huber (1999): 'Determinants of executive beliefs: comparing functional conditioning and social influence', *Strategic Management Journal*, 20 (8): 763-789.

Cools E, Van den Breeck H. (2008): The Hunt for the Heffalump Continues: Can trait and cognitive characteristics predict entrepreneurial orientation? *Journal of Business Strategy*, 18 (2): 23-41.

Conchar MP, Zinkhan GM, Peters C, Olavarrieta S. (2004): An integrated framework for the conceptualization of consumers' perceived-risk processing. *Journal of Academy of Marketing Science*, 32 (4): 418-436.

Crant, JM (2000): Proactive Behavior in Organizations. *Journal of Management*, 26 (3): 435-462.

Daft RL, Weick KE. (1984): Toward a model of organizations as interpretation systems. *Academy of Management Review*, 9 (2): 284-295.

Denison DR, Dutton JE, Kahn JA, Hart SL. (1996): Organizational context and the interpretation of strategic issues: A note on CEOs' interpretations of foreign investment. *Journal of Management Studies*, 33 (4): 453-474.

Dubard S, Gerhardt MW, Richard J. (2007): The Role of Cognitive Style and Risk Preference on Entrepreneurial, *Journal of Leadership and Organizational Studies*, 13 (4): 86-104.

Dutta, D.K.; Thornhill, S. (2008): The evolution of growth intentions: Toward a cognition-based model. *Journal of Business Venturing*, 23 (3): 307-332.

Dutton JE, Ashford SJ. (1993): Selling issues to top management. *The Academy of Management Review*, 18 (3): 397-428.

Dutton JE, Jackson SE. (1987): Categorizing strategic issues: links to organizational action. *Academy of Management Review*, 12 (1): 76-90.

Eggers, J.P., Kaplan, S, (2008): Cognition and renewal: comparing CEO and organizational effects on incumbent adaptation to technical change. *Organization Science,* 20 (2): 461–477.

Entrialgo M, Fernández E, Vázquez CJ. (2001): Los efectos de la turbulencia del entorno y del grado de discrecionalidad percibido en el comportamiento del emprendedor. *Revista Europea de Dirección y Economía de la Empresa,* 10 (1): 21-36.

Ericson T. (2001): Sensemaking in organizations – towards a conceptual framework for understanding strategic change, *Scandinavian Journal of Management*, 17: 109-131.

Gielnik, M.M., Frese, M., Graf, J.M.; Kampschulte, A. (2011): Creativity in the opportunity identification process and the moderating effect of diversity of information. *Journal of Business Venturing*, in press.

Green, K.M.; Covin, J.G.; Slevin, D.P. (2008): Exploring the relationship between strategic reactiveness and entrepreneurial orientation: The role of structure–style fit. *Journal of Business Venturing*, 23: 356-383.

Farinós JE, Fernández M. (1999): La incidencia de una OPA sobre la actividad negociadora y la estimación del riesgo sistemático de las empresas objetivo, *Revista Española de Financiación y Contabilidad*, 100: 381-401.

Fiske ST, Taylor SE. (1991): *Social cognition.* McGraw Hill: New York.

Furnham A, Ribchester T. (1995): Tolerance of Ambiguity: A review of the concept, its measurement and applications. *Current Psychology*, 14 (3): 179-200.

Gillingwater, D., Gillingwater, T.H. (2009): A neuroanatomical approach to exploring organizational performance. International *Journal of Business Science and Applied Management*, 4 (3): 34-52.

Ginsberg A, Venkatraman N. (1992): Investing in new information technology: The role of competitive posture and issue diagnosis. *Strategic Management Journal*, 13: 37-53.

Gioia D, Poole P.(1984), Scripts in Organizational Behavior, *Academy Management Review*, 9: 449-459.

Grant AM, Ashford SJ. (2008): The dynamics of proactivity at work. *Research in Organizational Behavior,* 28: 3-34

Hambrick DC, Mason PA. (1984): Upper Echelons: The organization as a reflection of its top managers, *Academy of Management Review*, 9 (2): 193-206.

Hayes J, Allinson CW. (1994): Cognitive Style and its relevance for management practice. *British Journal of Management*, 5: 53-71.

Hayes J, Allinson CW. (1998): Cognitive style and the theory and practice of individual and collective learning in organization. *Human Relations*, 51 (7): 847-871.

Hodgkinson G.P. (1997): Cognitive inertia in a turbulent market: A comparative causal mapping study, *Journal of Management Studies*, 34: 921 - 946.

Hodgkinson GP, Sadler-Smith E. (2003): Complex or Unitary? A Critique and Empirical Re-assessment of the Allinson-Hayes Cognitive Style Index. *Journal of Occupational and Organizational Psychology*, 76 (2): 243-268.

Haukedal W. (1994): Categories of strategic stimuli: their implications for managers' sense making of organizational environments. *Scandinavian Journal of Management*, 10 (3): 267-279.

Haukedal W, Gronhaug K. (1994): Context-Specific Rationality in sense-making of strategic stimuli. *Scandinavian Journal of Management*, 10 (4): 355-367.

Kaplan, S. (2008): Framing contests: strategy making under uncertainty. *Organization Science*, 19 (5): 729-752.

Kaufmann G. (1987): Reflections on the concept of a problem. In Bjorgen, I. (Ed.), *Fundamental Problems in Psychology* (Bergen: Sigma, 1987).

Kautonen, T. (2008): Understanding the older entrepreneur: Comparing third age and prime age entrepreneurs in Finland. *Journal of Business Science and Applied Management*, 3 (3): 3-13.

Kickul J, Gundry LK (2002): Prospecting for Strategic Advantage: The proactive Entrepreneurial Personality and Small Firm Innovation, *Journal of Small Business Management*, 40 (2): 85-97.

Kozhevnikov M. (2007): Cognitive Styles in the Context of Modern Psychology: Toward and Integrated Framework of Cognitive Style. *Psychological Bulletin*, 133 (3): 464-481.

Kuvaas B, Kaufman, (2004): Individual and organizational antecedents to strategic-issue interpretation. *Scandinavian Journal of Management*, 20: 245-275.

Ling Y, Floyd SW, Baldridge DC. (2005): Toward a model of issue-selling by subsidiary managers in multinational organizations. *Journal of International Business Studies,* 36: pp. 637-654.

Livengood, RS., Reger, RK (2010): That's our turf! Identity domains and competitive dynamics. *Academy of Management Review*, 35 (1): 48-66.

McMullen, J.S., Shepherd, D.A., (2006): Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management Review,* 31 (1): 132–152.

McNally RC, Durmusoglu SS, Calantone RJ, Harmancioglu N. (2009): Exploring new product portfolio management decisions: The role of managers' dispositional traits. *Industrial Marketing Management*, 38: 127-143.

Miller, D. (1996): "Configurations revisited". *Strategic Management Journal* 17: 502–512.

Miller KD. (1993): Industry and country effects on managers' perception of environmental uncertainties. *Journal of International Business Studies*, 24 (4): 693-714.

Milliken FJ, Lant TK. (1991): The impact of an organization's recent performance history on strategic persistence and change: The role of managerial interpretations. In *Advances in Strategic Management*, Dutton J, Huff A, Shrivastava P (eds). JAI Press: Greenwich, CT; 7: 129-156.

Mintzberg H, Raisinghani D, Théorét A. (1976): The structure of unstructured decision process. *Administrative Science Quarterly*, 21: 246-275.

Mitchell M, Pulvino T, Stafford E. (2004): Price pressure around mergers. *Journal of Finance,* 59 (1): 31-63.

Nicolaou, N.; Shane, S. (2009): Can genetic factors influence the likelihood of engaging in entrepreneurial activity? *Journal of Business Venturing*, 24 (1): 1-22.

Nadkarni S, Barr P. (2008): Environmental context, managerial cognition, and strategic action: An integrated view. *Strategic Management Journal,* 29: 1395-1427.

Phan, P.H., Wright, M., Ucbasaran, D., Tan, W.L., (2009): Corporate entrepreneurship: current research and future directions. *Journal of Business Venturing,* 24 (3): 197–205.

Plambeck, N. (2011): "The development of new products: The role of firm context and managerial cognition". *Journal of Business Venturing*, in press.

Raghubir P, Das SR. (1999): A Case for Theory-Driven Experimental Enquiry. *Financial Analysts Journal*, 55 (6): 56-79.

Ramaprasad A, Mitroff II (1984): On formulating strategic problems. *Academy of Management Review*, 9: 597-605.

Samuelson W, Zeckhauser RJ. (1988): Status quo bias in decision making. *Journal of Risk and Uncertainty*, 1 (1): 7-59.

Sadler-Smith, E. (1999): Intuition-analysis cognitive style and learning preferences of business and management studies. *Journal of Managerial Psychology*, 14 (1): 26-38.

Sadler-Smith E, Badger B. (1998): Cognitive Style, Learning and Innovation. *Technology Analysis and Strategic Management*, 10 (2): 247-265.

Sadler-Smith E, Spicer DP, Tsang F. (2000): Validity of the Cognitive Style Index: replication and extension. *British Journal of Management*, 11: 175-181.

Sáez, Martínez FJ, Jiménez Moreno JJ. (2004): Una revisión de las aportaciones de la escuela cognitiva a la dirección estratégica. *Revista Europea de Dirección y Economía de la Empresa*, 13 (2): 43-60.

Santos MV, García MT. (2006): Managers' opinions: reality or fiction: a narrative approach. *Management Decision*, 44 (6): 752-770.

Santos MV, García MT. (2008): Environmental uncertainty: the sides object of perception. *Journal of Administrative and Social Sciences*, 12 (32): 65-74.

Schneider, S.C., DeMeyer, A. (1991): Interpreting and responding to strategic issues: The impact of national culture. *Strategic Management Journal*, 12: 307-320.

Schwenk CR. (1984): Cognitive simplification process in strategic decision making. *Strategic Management Journal*, 5 (2): 111-128.

Schwenk CR. (1995): Strategic decision-making. *Journal of Management*, 21 (3): 471-494.

Shane, S., (2003): *A General Theory of Entrepreneurship: The Individual-Opportunity Nexus*. Edward Elgar Publishing, Cheltenham.

Shepherd, D.A., DeTienne, D.R., (2005). The impact of prior knowledge and financial reward on the identification of opportunities. *Entrepreneurship Theory and Practice* 29 (1): 91–112.

Sherman, R. (1974): The psychological difference between ambiguity and risk. *The Quarterly Journal of Economics*, 88: 166-169.

Shrout, P.E., Bolger, N. (2002): Mediation in experimental and nonexperimental studies: new procedures and recommendations. *Psychological Methods*, 7 (4): 422–445.

Simon, H.A. (1973): The structure of ill-structured problems. *Artificial Intelligence*, 4: 181-201.

Singh, K. (2010): Developing human capital by linking emotional intelligence with personal competencies in Indian business organizations. *Journal of Business Science and Applied Management*, 5 (2): 29-42.

Starbuck W, Milliken F. (1988): Executive perceptual filters: What they notice and how they make sense. In *The executive effect: Concepts and methods for studying top managers*, Hambrick D (ed). JAI Press: Greenwich, CT: 35-65.

Sterman, J. (1989): Modeling managerial behaviour: misperceptions of feedback in a dynamic decision making experiment, *Management Science*, 35 (3): 321-339.

Sully de Luque MF, Sommer SM. (2000): The impact of culture on feedback-seeking behavior: an integrated model and propositions. *Academy of Management Review*, 25 (4): 829-849.

Sutcliffe, K.M. (1994): What executives notice: Accurate perceptions in top management teams. Academy of Management Journal, 37: 1360-1378.

Sutcliffe K, Huber GP. (1998): Firm and industry as determinants of executive perceptions of the environment. *Strategic Management Journal*, 19: 793-807.

Swets, J. A. (1992): The science of choosing the right decision threshold in high-stakes diagnostics. *American Psychologist*, 47: 522-532.

Tang, J.; Kacmar, K.M.; Busenitz, L. (2012): Entrepreneurial alertness in the pursuit of new opportunities. *Journal of Business Venturing*, 27 (1): 77-94.

Thomas, J.B.; Clark, S.M.; Gioia, D.A. (1993): Strategic sensemaking and organizational performance: Linkages among scanning, interpretation, action, and outcomes. *Academy of Management Journal*, 36: 239-270.

Thomas, JB; McDaniel, R.R. (1990): Interpreting strategic issues: Effects of strategy and the information-processing structure of top maangement teams. *Academy of Management Journal*, 33: 286-306.

Thomas, J.B.; Shakster, L.J.; Mathieu, J.E. (1994): Antecedents to organizationl issue interpretation: The roles of single-level, cross-level, and content cues. *Academy of Management Journal*, 37: 1252-1284.

Thomas, A., Simerly, R. (1994): The chief executive officer and corporate social performance: an interdisciplinary examination. *Journal of Business Ethics*, 13 (12): 959-968.

Ucbasaran, D., Westhead, P., Wright, M., (2008): Opportunity identification and pursuit: does an entrepreneur's human capital matter? *Small Business Economics* 30 (2): 153–173.

Ucbasaran, D., Westhead, P.; Wright, M. (2009): The extent and nature of opportunity identification by experienced entrepreneurs. *Journal of Business Venturing*, 24: 99-115.

Ucbasaran, D., Westhead, P., Wright, M.; Flores, M. (2010): The nature of entrepreneurial experience, business failure and comparative optimism. *Journal of Business Venturing*, 25: 541-555.

Waller, M.J., G.P. Huber; W.H. Glick. (1995): Functional Background as a Determinant of Executive Selective Perception. The Academy of Management Journal 38 (4): 943-974.

Walsh, J.P. (1995): Managerial and organizational cognition: Notes from a trip down memory lane. Organizational Science, 6 (3): 280-321.

Weick, K.E. (1979): *The Social Psychology of Organizing*, 2nd Edition, Addison-Wesley, Menlo Park, CA.

Westerberg, M.; Sing, J.; Hackner, E. (1997): Does the CEO matter? An empirical study of small Swedish firms operating in turbulent environments. *Scandinavian Journal of Management*, 13 (3): 251-270.

Wood, DJ. (1991): Corporate social performance revisited *Academy of Management Review*, 16 (4): 691-718.

Yanes Estévez, V. (2004): La aproximación cognoscitiva a la realidad empresarial y la aportación de Herbert Simon. . *Revista Europea de Dirección y Economía de la Empresa*, 13 (2): 25-42.

Zalesny, M.D., Ford, J.K. (1990): Extending the social information processing perspective: New links to attitudes, behaviors, and perceptions. Organizational Behavior and Human Decision Processes, 47: 205-246.