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The individual side of ambidexterity: Do individuals' perceptions match actual behaviors in reconciling the exploration and exploitation trade-off?

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ABSTRACT

The paper addresses the issue of the exploration–exploitation dilemma, adopting a micro level of analysis. Unlike the extensive literature on ambidexterity that investigates the organizational solutions that allow firms to pursue the balance between the two kinds of learning orientation, this research draws attention to the as yet barely analyzed individual dimension of ambidexterity. Specifically, in investigating personal ambidexterity we point to the relevance of individuals' perceptions on what their role requires of them and the actual behaviors they perform.

Drawing on an inductive multiple case study carried out on managers who face daily a strong pressure to balance exploration and exploitation and are expected to perform ambidextrous behaviors, we identify four different situations at the individual level, depending on the consistency/inconsistency between individuals' role perceptions and their actual behaviors: enacted personal ambidexterity, dominant learning orientation, perceived personal ambidexterity and full personal ambidexterity. Moreover, our study adds to the ambidexterity literature by suggesting theoretical propositions on how individual characteristics, namely prior work experience and behavioral competency profile, may impact on the different situations of personal ambidexterity we identified and how the consistency/inconsistency between individuals' perceptions and behaviors may contribute to sustaining or jeopardizing full personal ambidexterity.

Introduction

The ability of a firm to exploit its current competencies as well as to explore new opportunities represents the core of organizational learning. However, due to the incompatible nature of the exploitative and exploratory activities (March, 1991), the trade-off to pursue both these kinds of learning orientation has been tackled for a long time, suggesting different ambidextrous organizational solutions: structural, sequential and contextual ambidexterity (Gibson & Birkinshaw, 2004; Siggelkow & Levinthal, 2003; Tushman & O'Reilly, 1996). Despite the valuable insights that this body of literature has provided, a main limitation can be highlighted. These studies, adopting the firm level of analysis, implicitly assume homogeneity at the individual level, neglecting how the organizational members might influence the firm's ability to pursue a balance between exploration and exploitation

The contributions of the behavioral theory of the firm (Cyert & March, 1963; March & Simon, 1958; Simon, 1985), reinforced by the recent debate on the micro-level origins of a firm's capabilities (Felin, Foss, Heimeriks, & Madsen, 2012; Foss, 2011), have shown that the individuals' characteristics are important antecedents of the development of organizational capabilities. In addition, recent literature reviews on ambidexterity have called for research spanning multiple levels of analysis (Raisch & Birkinshaw, 2008; Raisch, Birkinshaw, Probst, & Tushman, 2009; Rosing, Frese, & Bausch, 2011; Turner, Swart, & Maylor, 2012). However, only few studies have delved into the micro-foundation of ambidexterity. These contributions point to the relevance of the individual characteristics as well as preferences in orientating the performance of exploratory and exploitative activities.

This paper maintains the explanatory relevance of a more fine-grained level of analysis in studying ambidexterity since, according to Raisch et al. (2009), investigating further the individual side of ambidexterity (*personal ambidexterity*) may contribute to understanding how to balance exploration and exploitation within a unit or firm (*organizational ambidexterity*). First, as suggested by prior contributions, even if individuals could correctly perceive the kind of learning orientation expected by their role (people's perceptions of what their job requests of them), at the same time they might

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not activate consistent behaviors in their daily activities since they may not be able to face the challenge of reconciling dual demands (Gupta, Smith, & Shalley, 2006; Raisch et al., 2009). Second, research on role theory (Katz & Kahn, 1966) and cognitive dissonance theory (Festinger, 1957) shows that when perceptions are consistent with actual behaviors individuals tend to be more satisfied and to perform more. Such a complex relationship between individuals' role perceptions on what they are expected to perform and their actual behaviors suggests that both these two different dimensions should be considered in investigating personal ambidexterity. Moreover, if ambidexterity at the individual level may present different facets according to the consistency/inconsistency between role perceptions and actual behaviors, a further advantage of adopting the micro level of analysis is the possibility to investigate those personal characteristics that favor individuals to be ambidextrous not only in their perceptions but also in their actions. As argued in prior research, the possession of personal characteristics (such as technical competence) moderate the relationship between task characteristics and role perceptions, as well as leading to a more efficient and effective performance of behaviors (Gilbert, De Winne, & Sels, 2011). Although ambidexterity literature acknowledges that ambidextrous individuals have to fulfill different and contradictory activities, what makes individuals correctly perceive their ambidextrous role and behave consistently is still an open issue. Accordingly, the research questions addressed in this paper are: (a) how can ambidexterity at individual level be detected and classified? (b) how may individual characteristics contribute to achieving personal ambidexterity?

Our contribution is twofold. First, we add to the studies on personal ambidexterity by proposing a classification of ambidexterity at individual level which depends on the comparison between the individual's perceptions and behaviors. Second, the paper offers new insights into the role of individual characteristics that explain why individuals may or may not perceive that a balance between exploration and exploitation is expected from them and may or may not perform a consistent behavior. From the analysis of the empirical evidence we have developed some propositions that can be further tested in future research.

In order to answer our research questions and to build novel theory on personal ambidexterity, we carried out an inductive multiple case study (Eisenhardt, 1989) on individuals who face daily a strong pressure to balance exploration and exploitation and are expected to perform ambidextrous behaviors.

This paper is organized as follows: the following section introduces the notion of personal ambidexterity against the backdrop of previous research targeting the organizational level of analysis. The method section provides details about the cases, data collection and data analysis. Next, we present the empirical evidence illustrating the classification of personal ambidexterity we propose, and we explain the factors that may impact on the challenge to reconcile both exploration and exploitation at the individual level. Finally, we conclude with a discussion of the results, implications, and directions for further research.

Towards a personal ambidexterity approach

Overview of the extant literature on organizational ambidexterity

Organizational ambidexterity is the firm's capability to pursue learning through two apparently conflicting sets of activities: exploiting existing competencies and exploring new opportunities. According to March's original article, learning through exploitative activities requires the performance of refinement, choice, production, efficiency, selection, implementation, and execution; whereas learning through explorative activities implies search, variation, risk taking, experimentation, flexibility, discovery, and innovation (March, 1991: 71).

Empirical research has found support for the positive effect of the balance between these two learning orientation both on innovation output and on firm performance (e.g. Chang & Hughes, 2012; Danneels, 2002; Gibson & Birkinshaw, 2004; Tushman & O'Reilly, 1996). For instance, Katila and Ahujia (2002) showed that the interaction between exploration and exploitation has a positive impact on new-product development. In their study, He and Wong (2004) found that firms that pursue both exploration and exploitation simultaneously achieve higher sales performance. These findings support the general agreement that "variance does not generate returns without some efforts to fix and develop the new knowledge" (McGrath, 2001: 119). Indeed, an overreliance on exploration, which generates both higher potential benefits and higher potential costs, may cause the firm to operate with less efficiency since it is constantly renewing its knowledge base without fully utilizing it (Levinthal & March, 1993). On the other hand, a firm that shows an exclusive focus on exploitative learning, whose returns are more certain, immediate, and familiar, may risk the obsolescence of its knowledge base.

Despite this positive and complementary interplay between exploration and exploitation, scholars have long noted that firms face difficulties in achieving the balance between the two kinds of learning orientation, in that they involve different kinds of cognitive orientation that can create paradoxical challenges (Levinthal & March, 1993).

As pinpointed by a recent bibliometric analysis (Nosella, Cantarello, & Filippini, 2012), the literature has primarily adopted a macro-level of analysis identifying the possible organizational solutions that orientate behaviors towards a balanced learning: structural ambidexterity, cycling or sequential ambidexterity and contextual ambidexterity (Gupta et al., 2006; Raisch & Birkinshaw, 2008; Raisch et al., 2009). In all these approaches, scholars adopt the concept of *organizational ambidexterity*, thus measuring it at the firm level, investigating how the firm divides attention and resources between exploratory activities versus exploitative activities. For instance, they analyze the level of intensity of introducing new generations of products vs. improving existing products, or opening up new markets vs. enhancing existing markets (Cao, Simsek, & Zhang, 2010; He & Wong, 2004; Jansen, Van den Bosch, & Volberda, 2006; Lubatkin, Simsek, Ling, & Veiga, 2006).

The first approach, structural ambidexterity, suggests that in order to achieve exploration and exploitation firms could design a dual architecture (spatial separation) in which some units are organized to be efficient while others are organized to experiment and improvise (Benner & Tushman, 2003; Tushman & O'Reilly, 1996). In accordance with this approach, research identifies the competencies, systems, incentives, processes and cultures that are peculiar to the independent units each devoted to one of the two mutually exclusive kinds of learning orientation (O'Reilly and Tushman, 2008). Adopting the same logic of differentiation, sequential ambidexterity implies a temporal separation between long periods of exploitation and short bursts of exploration (Burgelman, 2002; Siggelkow & Levinthal, 2003).

A different approach is provided by contextual ambidexterity, defined by Gibson and Birkinshaw (2004: 209) as "the behavioral capacity to reconcile simultaneously both exploration and exploitation across an entire business unit". According to this approach, exploration and exploitation are achieved simultaneously, since individuals make their own choice about how to divide their time and tasks between exploratory and exploitative activities, for instance between an existing customer or a new one. These studies

provide insights into contextual factors (systems and processes) that promote organizational ambidexterity, supporting individuals in performing behaviors which balance exploration with exploitation. For instance, in their seminal study, Gibson and Birkinshaw (2004) identified two attributes of the organizational context, namely the performance management context (a combination of discipline and stretch) and the social context (a combination of support and trust). Moreover, several studies provide evidence on the different impact of coordination mechanisms on exploration and exploitation activities. In particular, it was found that the presence of formalization and top-down knowledge flows (Benner & Tushman, 2003; Jansen et al., 2006; Mom, Van den Bosch, & Volberda, 2007; Zollo & Winter, 2002) supports exploitation, while the presence of decentralization of decision making and bottom-up and horizontal knowledge flows has a positive impact on exploration (Cardinal, 2001; Jansen et al., 2006). In addition, a dense network of interactions (connectedness) may increase both the accessibility to new knowledge, thus favoring exploration (Mom, Van den Bosch, & Volberda, 2009; Subramaniam & Youndt, 2005), and the sharing of experiences on how to implement improvements, thus promoting exploitation (Jansen et al., 2006). A further line of research inside this approach focuses on how firms might achieve contextual organizational ambidexterity through managing employees. In particular, Un (2007) highlighted that the innovative system of human resource management practices, consisting of team-based incentive system, team-based job design, and job rotation, enables the firm to undertake exploration and exploitation simultaneously. Moreover, in their theoretical study, Kang and Snell (2000) distinguish between two types of human capital, namely specialist and generalist human capital. Specialist human capital fosters exploitative learning, since specialists tend to be more effective for acquiring and assimilating new in-depth knowledge within a narrow range of parameters. Consequently, they often incur a functional bias that may reduce their ability to exchange and combine new knowledge beyond their specialized area. On the other side, generalist human capital favors explorative learning, since generalists tend to be less entrenched in a particular perspective and thus have the capacity for various interpretations of problems and situations. Similarly, the empirical study of Un (2010) provides evidence that organizational-level systems, in which the individuals are selected on the basis of their broad prior work experience in other companies, support radical rather than incremental learning, since individuals have technological expertise that is distinct from that of the hiring firm, have access to more sources of knowledge and can thus enhance learning and innovation when the firm is striving to experiment. On the contrary, team-level systems, where individuals are selected on the basis of firm-internal overlapping experience suitable for the needs of a project, favor more incremental rather than radical learning.

Ambidexterity at the individual level of analysis

The above-mentioned studies provide interesting insights into organizational contexts that may promote ambidexterity at the firm level. However, existing research neglects the analysis of ambidexterity at the individual level (*personal ambidexterity*) assuming that most of the heterogeneity is located at the organizational level. In their work, O'Reilly and Tushman (2004: 81) maintain that "ambidextrous organizations need ambidextrous senior teams and managers", pointing out that also the variation at the individual level, for instance in terms of personal characteristics, may explain why people are effective in undertaking ambidextrous roles.

In accordance with this line of thinking, recent literature reviews call for the adoption of a micro-foundation approach in investigating organizational capabilities (Felin et al., 2012; Foss, 2011), and, specifically, ambidexterity (e.g. Nosella et al., 2012; Raisch & Birkinshaw, 2008; Raisch et al., 2009; Rosing et al., 2011). In their contribution, Turner et al. (2012) highlight the limited theorization on individual ambidexterity and the scant empirical evidence on how people can actually orchestrate exploration and exploitation. To the best of our knowledge, only a few recent studies have explicitly addressed the ambidexterity issue at the individual level of analysis. Among these, a significant contribution has been given by Mom et al. (2007, 2009), who provide evidence that ambidexterity can be pursued not only at the firm level but also at the individual level. They define managers' ambidexterity as a "behavioral orientation toward combining exploration and exploitation related activities within a certain period of time" (2009: 812). However, two limitations can be highlighted in this study. First, even though the authors conceptualize individual ambidexterity as a behavior, they measure it by asking the managers to indicate the intensity they felt engaged in exploration and exploitation activities. In other words, they analyze on a perceptual scale the individuals' behaviors, but they investigate neither the perceptions of the requirements of their role nor the actual behaviors performed. In an ambidextrous organization, individuals face complex and changing job demands, thus they are expected to switch between different tasks in the course of a day's work and to partition their activities to meet the conflicting dual demands. Consequently, individuals who fulfill ambidextrous roles might face tensions in terms of different kinds of cognitive orientation requested by contradictory activities, such as efficiency-oriented versus variability-increasing tasks (Swart & Kinnie, 2007). In such a situation, considering only the perceptions of individuals' engagement in exploration and exploitation is not enough to say that individuals actually achieve personal ambidexterity. Understanding whether individuals correctly formulate the perceptions about what their role requires of them (role perceptions) and whether their perceptions are consistent with their actual behaviors becomes crucial. Indeed, several scholars have highlighted the relevance of the consistency/inconsistency between perceptions and behaviors in affecting individual job satisfaction and performance. In particular, studies on role theory maintain that when individuals are facing unclear information about role perceptions (role ambiguity) or incongruity among different role perceptions (role conflict), they will respond to these so-called "role stressors" with negative attitudes and behavior, and subsequently with negative job performance (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964; Katz & Kahn, 1966). Moreover, cognitive dissonance theory (Festinger, 1957) argues that individuals strive toward consistency within themselves when what they know or believe does not fit with what they do. The presence of this cognitive dissonance, i.e. inconsistency between role perceptions and behaviors, generates negative affective states such as guilt, shame, embarrassment, anxiety, anger (Cooper, 2007), and thus, being psychologically uncomfortable, it motivates the individuals to activate processes intended to align these cognitions with one another. For instance, individuals might change their perceptions, convince themselves that their actions do not conflict with their perceptions, or they could change their behavior. Such a complex relationship between individuals' role perceptions on what they are expected to perform and their actual behaviors seems to open up a promising line of research also in investigating ambidexterity at individual level, for instance suggesting a fine-grained classification of personal ambidexterity which considers both perceptions and behaviors as interconnected dimensions.

A second limit of the research of Mom and colleagues is that even though they claim to provide a contribution on individual ambidexterity they do not address the personal characteristics that may affect ambidextrous behaviors. They only suggest further investigation on this issue, since some of the control variables

included in their model (age of individuals, tenure in the firm, and tenure in the current function) turned out to be relevant. Two recent studies have attempted to address this issue. In the first contribution, Laureiro-Martínez, Brusoni, & Zollo (2010), adopting a neurological perspective, maintain that individual ambidexterity is not a matter of allocation of exploration- or exploitation-oriented tasks, but a matter of the decision-maker's ability to change his/her attention scope (from broad to narrow and vice versa). Specifically, the authors distinguish between two cognitive operating modes: the phasic and the tonic. In the phasic mode, individuals broaden their attention, therefore they are able to search for alternatives and are creative (exploration behavior); whereas in the tonic mode, individuals narrow down their attention, hence they are more concentrated and focused on solving specific problems (exploitation behavior). Similarly, the second study (Jasmand, Blazevic, & de Ruyter, 2012) shows that an individual "locomotion orientation" – i.e. the movement away from a current state – facilitates ambidextrous behavior above all if it interacts positively with an individual assessment orientation, which is the preference for critical comparison of alternative states, means, and goals to judge their relative worth. Both these studies provide insights that individual ambidexterity is influenced by personal characteristics, thus suggesting that further investigation on this topic is promising.

Our paper aims to advance research on individual ambidexterity by proposing a classification of personal ambidexterity that takes into account the complex relationship between perceptions and behaviors when ambidextrous roles are investigated. Moreover, drawing on this classification, we contribute to understanding how different types of personal ambidexterity may be explained by individual characteristics. In doing so, we carried out empirical research in which, through the comparison of perceptions and behaviors of the individuals involved in our study, we explored different situations that can emerge at the individual level. These situations provided us with the basis for understanding how individual factors can favor or hamper personal ambidexterity.

Research methods

We adopted an inductive case-based methodology (Eisenhardt, 1989; Yin, 2009). Case studies are "particularly well suited to new research areas" (Eisenhardt, 1989, p. 548) and to generate "novel theory" (Eisenhardt, 1989, p. 546), since they provide useful insights into answering "'how?' and 'why?' questions" (Yin, 2009, p. 9) and in "examining contemporary events" (Yin, 2009, p. 11).

More specifically, following a "literal and theoretical replication logic" (Yin, 2009, p. 54) we conducted a multiple-case study in order to make results more robust and compelling and to "extend the emergent theory" (Eisenhardt 1989, p. 537), thus enhancing its generalizability. In doing so, we adopted the individual as unit of analysis (Yin, 2009). We selected comparable individuals in order to ensure the possibility of discovering similarities among cases (literal replication) as well as individuals with different characteristics to predict contrasting results for predictable reasons (theoretical replication). In other words, relying on a theoretical sampling logic (Eisenhardt, 1989), we chose 16 R&D and Sales managers and direct reports of Italian companies for reasons of appropriateness rather than of statistical representativeness (Corbin & Strauss, 2008).

First, we selected individuals who work in firms which are all characterized by a strong commitment toward both innovation

Table 1
Characteristics of the firms where the selected individuals work.

Firms	Year of establishment	Size	Industry	Performance (growth, profitability, internationalization, innovation)	Organizational and strategic change
Alpha	1984	Employees: 120 Turnover: 39 mil Euro in 2010	Urban furnishings, metallic fencing for the building industry and furnishings for the garden and home	Growth rate 56% between 2007 and 2010 ROS: 6.85% (2010)ROA: 4.05% (2010) Export across 50 countries Prizes and recognitions at international level	From an owner-run firm to a managerial firm Establishment of a Design Department with the aim of becoming the research centre and creative centre of the company New foreign sales structures Collaborations with international, well-known designers and with prestigious academic institutions
Beta	1973	Employees: 275 Turnover: 130 mil Euro in 2010	Sports footwear	Growth rate 37,7% between 2000 and 2008 ROS: 4.49% (2008) ROA: 4.93% (2008) Export share: 74% of turnover, distribution in over 110 countries	Network of innovative partners (universities, research centers and professionals) New brands acquisitions and differentiation of the product range
Gamma	1993	Employees: 774 (210 in Italy) Turnover: 183.9 mil Euro in 2010	Home automation industry	Growth rate 22.6% between 2006 and 2010 ROS: 22.75% (2010) ROA: 16.32% (2010) Export share: over 80% of turnover, distribution in 100 countries with 16 subsidiaries Numerous international and national design awards	Acquisitions of international and national companies in order to consolidate Gamma's direct presence in countries, where the demand for products offered by the company has shown significant rates of growth, and to further enhance Gamma's product range within the residential and solar-power business segments
Delta	1993	Employees: 35 Turnover: 30 mil Euro in 2010	Telecommunications sector (access gateways, multimedia products, home networking solutions)	From 2000 to 2006, turnover increased tenfold In 2007, thanks to a 30% reduction in costs, the firm recorded an ROE of 14% High level of internationalization Numerous international and national design awards	Setting up of foreign commercial structures and a Research Centre in Austria Extension of its product range to networking devices

and efficiency. Indeed, according to the information we gathered from the General Directors and the HR managers of these companies, in recent years all these firms have undertaken strategic changes in terms of additional technological domains as well as new geographical areas and market segments to serve, and at the same time have striven to maximize efficiency. However, to allow theoretical replication, in order to increase the variability of context and to investigate an heterogeneous array of settings where ambidextrous individuals could operate, we deliberately chose companies of different sizes (in terms of both turnover and number of employees) and sectors (e.g. IT, footwear). An overview of the four firms where the selected individuals work is provided in Table 1.

Second, within the above described firms we selected individuals who are in charge of leading departments which are required to manage the trade-off between exploration and exploitation. Specifically, the above-mentioned General Directors and HR managers we interviewed reported that in their firms both R&D and Sales units are engaged in pursuing both local and distant search, refinement and planned experimentation, reuse of existing routines and variation. This engagement is less required of other business units, for instance the Operations unit, which presents a high level of outsourcing in all the four firms we considered.

Third, we selected individuals who operate within units where, according to the prior empirical studies on contextual ambidexterity we reviewed in the section 2.1, the organizational context, in terms of coordination mechanisms and human resource management, is designed in order to promote both exploration and exploitation. In fact, the above- mentioned interviewees reported to us that formalization and top-down knowledge flows are present along with decentralization, bottom-up and horizontal knowledge flows. In addition, high connectedness together with team job design and job rotation are promoted within the units.

To sum up, we selected individuals who, with reference to our research issues, represent theoretically relevant cases, since they face daily a strong pressure to balance exploration and exploitation and are expected to perform ambidextrous behaviors. Moreover, we selected a number of individuals that allowed us analytical generalization of findings and which we considered sufficient for our objective of theory building (Yin, 2009). In particular, we stopped adding cases when the incremental learning, in terms of discovering similarities and predicting contrasting results, we had obtained was minimal, meaning that we had reached theoretical saturation (Eisenhardt, 1989). .

Data collection

As far as data collection is concerned, we gathered data through three rounds of interviews with the R&D and Sales managers and their direct reports. In order to avoid the potential single interviewer bias, each round of interviews was carried out by a different researcher.

In the first round, we conducted structured interviews aiming at investigating individuals' perceptions of the extent to which they were asked to perform exploratory and exploitative activities in the last two years. In doing so, we reformulated questions selected from prior empirical studies on individual ambidexterity (Mom et al., 2007; Mom et al., 2009). More specifically, with reference to exploratory activities we asked to what extent the individual, in accordance with his/her perceptions, was requested to: (a) search for new possibilities with respect to products/services, processes or markets; (b) evaluate diverse options with respect to products/services, processes or markets; (c) focus on strong renewal of products/services or processes; (d) perform activities requiring some adaptability on his/her part, and (e) perform activities requiring him/her to acquire new skills or knowledge. As far as exploitative activities are concerned, we asked to what extent the individual, in accordance with his/her perceptions, was requested to: (a) perform activities where a lot of experience had been accumulated by them; (b) perform activities which serve existing customers with existing services/products; (c) perform activities where it is clear to him/her how to conduct them, and (d) perform activities primarily focused on achieving short-term goals. We asked each respondent to answer the above-mentioned questions on a seven-point Likert scale (from 1 = "to a very small extent" to 7 = "to a very large extent"). These interviews allowed us to gather the interviewees' role perceptions of what they are expected to perform.

In order to collect data on actual behaviors of the selected individuals, the second researcher engaged in a round of semi-structured interviews drawn upon the critical incident interview technique (Flanagan, 1954). According to this technique, the attention of the interviewer is focused on gathering information about specific and real cases and events experienced by the interviewee and not on the interviewee's opinions and general evaluations. The critical incident technique and its further developments, such as the behavioral event interview (Boyatzis, 1998; McClelland, 1998) or the storytelling technique (Boje, 1991a,b; Martin, 1982), have been widely adopted to structure qualitative data analysis in order to get rich and detailed information on the context, behavior, and strategies adopted to achieve particular outcomes (Campion et al., 2011; Chell, 2004; Ekaterini, 2011). For this reason, this interview technique represents an efficient substitute for direct observation of real events and is considered to give accurate, reliable and valid retrospective reports of behaviors and processes in practice (Andersson & Nilsson, 1964). As Kraaijenbrink (2012: 1088) highlights, it has been recognized as a suitable technique for gathering data "for a variety of purposes, including the analysis of information behavior (Fisher & Oulton, 1999; Kraaijenbrink, Faran, & Hauptman, 2005a; Kraaijenbrink, Groen, & Wijnhoven, 2005b; Urquhart et al., 2003), shared cognition (Ensley & Pearce, 2001; Taggar, 2002), and managerial decision making (Wolf, 1981;Wolfe, 1975)"[1]. In particular, we asked each interviewee to describe some specific situations whose effects could be recognized in terms of the kind of learning orientation performed through the attainment of individual working effectiveness and good results for his/her organizational units. These interviews, which lasted approximately 90 min, were taped to provide a richer account of the data and to allow the researchers to monitor the conversations (Silverman, 1994). We then transcribed each interview.

In the final round, the third researcher conducted semi-structured interviews aiming at collecting data on the individual's educational background, professional development path, the kind of expertise they had developed in their private and work contexts, the motivation toward their role, the main important decisions and recent changes in the firm processes in which they have been involved. The interviews, which lasted from 45 to 90 min, were all recorded and transcribed verbatim.

Data analysis

Data analysis consisted of three activities that were performed in a cyclic trajectory with elements of both deduction and induction.

First, data collected with the first round of interviews was analyzed by the authors in order to examine the individual

[1] The "critical incidents" collected by this methodology are not extraordinary or unusual situations: Flanagan (1954: 327) specifies that "by an incident is meant any observable human activity that is sufficiently complete in itself to permit inferences and predictions to be made about the person performing the act. To be critical, an incident must occur in a situation where the purpose or intent of the act seems fairly clear to the observer and where its consequences are sufficiently definite to leave little doubt concerning its effect. "

perceptions on what kind of learning orientation is requested of them by their role. In doing so, we first converted the mean value of the scores on the seven-point scale used by the respondents to answer the questions on what extent they were asked to perform exploratory and exploitative activities into three levels: low, intermediate, and high. Then, we compared the level obtained for the explorative activities and the level obtained for the explorative activities of each respondent: if these two levels were similar (for example, were both high or both intermediate), we considered that the individual perceives a balance between exploration and exploitation as requested of him/her; if the two levels were different for exploratory and exploitative activities, we considered that he/she perceives that a prevailing learning orientation (towards exploration or exploitation) is requested of him/her.

Second, in order to analyze if actual behaviors performed by individuals are oriented to exploration, or exploitation or both kinds of learning orientation, we carried out a textual analysis of the narratives of the critical incidents collected with the second round of interviews. In doing so, we used the content analysis methodology, which was adopted for the operationalization of exploration and exploitation also in a recent study by Uotila, Maula, Keil, and Zhara (2009). Specifically, the textual content analysis was carried out by starting from the vocabulary proposed by March (1991) and drawing on the definitions of the two kinds of learning orientation provided in a recent review of the literature, in order to link the contents that emerged from the interviews to the concepts of exploration and exploitation. We carried out the textual analysis independently and then, through discussion, debated the final coding of the words referring to exploration and exploitation. Some examples of the results of this coding process are provided in the Appendix.

For each transcribed interview, first we counted the occurrences, that is the number of words associated with exploration and exploitation[2]. Then, we expressed the occurrences referring to the two kinds of orientation as percentages of the total significant words. Finally, we classified the two percentages into three levels – low, intermediate, and high – and compared them to figure out if the behaviors were balanced or not.

Third, we carried out a comparison between the findings that emerged from our first and second analyses. This comparison revealed different potential situations of consistency/inconsistency between the individuals' perceptions on what kind of learning orientation their job requested and the individuals' actual behaviors.

At this stage, in order to investigate the possible causes of the different situations we identified, we conducted the third round of interviews and carried out an inductive analysis of the qualitative data we collected. Following the iterative process recommended by Strauss and Corbin (1990) we traveled back and forth between the data and an emerging structure of theoretical arguments. Specifically, we carried out a thematic analysis of the interview transcripts in search of emerging themes regarding factors that could explain consistency/inconsistency between perceptions and behaviors. We identified some recurrent themes among the cases, then we brainstormed alternative conceptual structures that would explain the manner in which the emerged themes could be related to and differentiated from each other. To increase reliability, these analyses were conducted by us independently and discrepancies were resolved through discussion.

We sought research that could help us comprehend the role of the different emerging factors in explaining the consistency/inconsistency between individual perceptions and behaviors and to which we felt this study might contribute. Specifically, we draw on those theoretical approaches that in a more general perspective address the issue of inconsistency between individual perceptions and actions, namely role theory and cognitive dissonance theory. We also draw on research which includes individual prior knowledge and, specifically, individual prior work experience in theoretical models on organizational and personal ambidexterity (Kang & Snell, 2000; Mom et al., 2009; Un, 2010). Finally, since from the preliminary thematic analysis some sets of individual competencies emerged as recurrent themes, we referred also to research on behavioral competencies (Boyatzis, 1982; Goleman, 1998; Goleman, Boyatzis, & McKee, 2002; McClelland, 1973; Spencer & Spencer, 1993). Behavioral competencies are defined as "underlying characteristics of the person that lead to or cause effective or superior performance" (Boyatzis, 1982). Recent studies have identified three main clusters of behavioral competencies (Boyatzis 2009: 757): (1) Emotional intelligence competencies: the ability to recognize, understand, and use emotional information about oneself; (2) Social intelligence competencies: the ability to recognize, understand and use emotional information about others; (3) Cognitive intelligence competencies: the ability to think or analyze information and situations[3].

In our thematic analysis in order to code behavioral manifestation of competencies, we used Boyatzis' initial codebook (Boyatzis, 1982) and its evolution as main reference (Boyatzis & Gaskin, 2010; Boyatzis, Goleman, & Rhee, 2000; Boyatzis & Sala, 2004).

In accordance with these theoretical frameworks, we reviewed all data, within and across the cases, in order to refine further results that emerged from our thematic analysis and to identify explanations of the different types of consistency/inconsistency between individuals' perceptions and behaviors. This iterative process of theoretical building helped crystallize how each piece of data fits in with previous research on ambidexterity and how the pattern of our findings could enhance the available theoretical knowledge in this field of research. By the end of this process, in fact, we were able to identify different types of personal ambidexterity and their explanations.

Empirical evidence

Table 2 reports data on individuals' perceptions on what kind of learning orientation their role requires of them and data on the behaviors they performed, showing first of all that some individuals perceive that a balanced orientation between exploration and exploitation is requested of them; while others perceive that their role requires more exploratory or more exploitative activities (i.e. an unbalanced orientation). At the same time, the data highlight how some individuals behaved balancing exploration and exploitation, while others performed behaviors orientated toward a prevailing orientation, specifically exploration.

Table 2 also provides a comparison between each individual's perceptions and behaviors. It emerged that some individuals perceive that a balance between exploratory and exploitative activities is requested of them, and in accordance with this perception, they performed balanced behaviors. Other individuals perceive that more exploratory activities are requested and, consistently, they performed behaviors that are unbalanced towards exploration. However, some individuals, who perceive that an unbalanced orientation is requested of them, performed balanced behaviors;

[2] According to Krippendorff (2004), the words and phrases mentioned most frequently in a text are those that reflect the principal arguments of the communication.

[3] For each cluster the codebook defines the competencies and the related behavioral indicators. The codebook adopted for the thematic analysis includes: (1) Emotional competencies: Achievement Orientation; Efficiency Orientation; Initiative; Attention to Details; Adaptability; Emotional Self-Control; Positive Outlook; (2) Social competencies: Empathy, Social Objectivity; Conflict Management; Change Catalyst; Networking; Developing Others; Information Seeking; Influence; Teamwork; (3) Cognitive competencies: System Thinking; Pattern Recognition; Use of Concepts.

Table 2
Individuals' perceptions of the extent to which they were asked to perform exploration and exploitation and their level of actual behaviors orientated towards exploration and exploitation.

	Alpha			Beta			Gamma			Delta		
	R&D manager	R&D assist.	Sales manager	Sales assist.	R&D manager	R&D assist.	Sales manager	Sales assist.	R&D manager	R&D assist.	R&D manager	Sales manager	Sales assist.
Perceptions													
Exploration	High	High	Interm.	High	High	High	High	Interm.	High	High	High	High	Interm.	High
Exploitation	High	High	High	High	High	Interm.	High	Interm.	High	High	Interm.	Interm.	Interm.	High
	Balanced	Balanced	Unbalanced (exploitation)	Balanced	Balanced	Unbalanced (exploration)	Balanced	Balanced	Balanced	Balanced	Unbalanced (exploration)	Balanced	Unbalanced (exploration)	Balanced
Behaviors														
Exploration	High	Interm.	Interm.	Interm	High	Interm	High	Interm	Interm	Interm	High	High	High	Interm
Exploitation	Low	Interm	Interm	Interm	Low	Interm	Low	Interm	Interm	Interm	Low	Low	Low	Interm
	Unbalanced (exploration)	Balanced	Balanced	Balanced	Unbalanced (exploration)	Balanced	Unbalanced (exploration)	Balanced	Balanced	Balanced	Unbalanced (exploration)	Unbalanced (exploration)	Unbalanced (exploration)	Balanced
Consistency/inconsistency between perceptions and behaviors														
	Inconsist.	Consist.	Inconsist.	Consist.	Inconsist.	Inconsist.	Consist.	Consist.	Inconsist.	Consist.	Consist.	Consist.	Inconsist.	Consist.

while others who perceive that both exploration and exploitation is requested behaved in accordance with a prevailing orientation (namely, exploration). As a result, four different situations of consistency/inconsistency emerged, depending on the combination between perceptions (balanced or unbalanced) and behaviors (balanced or unbalanced).

We summarized these different situations in Table 3, which is a 2 by 2 matrix in which one dimension represents individual perceptions and the other dimension represents individual behaviors. In the rows, perceptions are indicated as: (i) "not balanced" if individuals perceive that one kind of learning (exploration or exploitation) is requested by their role, (ii) "balanced" if they perceive that both exploration and exploitation are requested by their role. In a similar vein, in the columns the behaviors are reported as: (i) "not balanced" if individuals perform behaviors primarily orientated toward exploration or exploitation; (ii) "balanced" if they behaved accordingly to both exploration and exploitation. The resulting four cells summarize that at the individual level three different types of ambidexterity (that we labeled: perceived personal ambidexterity, enacted personal ambidexterity and full personal ambidexterity) and one situation of a dominant learning orientation emerge. In each cell we reported our empirical cases (the individuals) associated with each situation and their corresponding characteristics.

Below we provide a detailed description of these different situations.

Enacted personal ambidexterity

Individuals characterized by this type of ambidexterity perceive that their role requires them to pursue one of the two kinds of learning orientation (exploitation in the case of Alpha Sales manager and exploration in the case of Beta R&D assistant) but they behaved by balancing exploration and exploitation. In other words, they perform behaviors (balanced) that are inconsistent with their perceptions (unbalanced), thus revealing a problem of cognitive dissonance.

Moreover, empirical evidence collected from the second and third round of interviews reveal that these individuals are characterized by specific features, in terms of professional experience and competencies. In particular, the Alpha Sales Manager has a technical educational background and a professional experience of almost thirty years. He has been in Alpha for seven years. Before joining this organization, he was an entrepreneur for almost ten years and then he was employed as plant manager, working in different industries. In his narratives, he described that he started to work in Alpha in the Operations unit. Over time, the company asked him to acquire new responsibilities and fulfill other functional roles. As a result, he is now both Sales Manager and Operations Manager.

Moreover, the Sales Manager told us that when he arrived in Alpha, everything was rigidly 'compartmentalized' and orientated toward functional goals. He was able to understand the tensions and the need for coordination among the functional managers and he managed to encourage collaboration among the different units in order to achieve common goals. Analyzing his critical incident interview, we identified that the Sales Manager demonstrated social competencies like empathy (sensing others' feelings and perspectives, and taking an active interest in their concerns) and conflict management (negotiating and resolving disagreements). To illustrate:

> *"At a certain point, during a meeting, strong tensions emerged, and I allowed these tensions to give rise to anger. The day after, I took them aside and I let them decide whether to continue or not to work together."*

The other events narrated by the Alpha Sales Manager point to his competency as change catalyst (initiating or managing change), introducing radical innovation in working procedures, as happened for instance when he promoted the adoption of lean management in Alpha.

Besides the aforementioned social competencies, the Alpha Sales Manager showed abilities ascribed to the emotional cluster of competencies, namely achievement orientation (working towards a standard of excellence, seeking out opportunities and taking action on them) and positive outlook (seeing good in others and in the current situation). More specifically, from the events described by the Sales Manager there emerged his positive expectations about the changes he was introducing in Alpha concerning the lean production management. He was able to identify the positive side of difficult situations and to feel confident about the work of his collaborators.

As far as Beta R&D assistant is concerned, after his degree in mechanical engineering, he worked in two companies operating in a sector different from the industry of Beta. Then, he decided to start a master program and after graduation he joined Beta. He has been with Beta for three and a half years. Over time his job has been enlarged, progressively adding new tasks that require frequent interactions with different units. At the beginning, he worked in Operations as assistant and he was in charge of the production scheduling. Then, he started to work in the R&D unit and to deal with the scheduling of new collection development as well as with innovative projects concerning new product development processes. Currently, he is in charge of all these tasks.

Concerning the competency profile of Beta R&D Manager, from the critical incident interview his ability emerged to identify many and various factors that impact upon a complex situation or event (system thinking). This competency enabled him to pursue firm-oriented goals instead of functional objectives. Moreover, over time he consolidated his background on the design process as well as on methodologies and tools for the organization of work processes, introducing innovative – both radical and incremental - changes in the testing procedure of the products, thus showing the competency of change catalyst. He also demonstrated the competency to sense the development needs of his collaborators and to bolster their abilities (developing others) as well as empathy that enables him to understand the others' feelings and perspectives, specifically to appreciate and understand people who have a different culture (social objectivity). In performing his job, he showed efficiency orientation (to perceive input/output relationships, which includes the concern for increasing the efficiency of action) as well as initiative (readiness to act on opportunities). Indeed, he felt free to decide how to use his time and to suggest process innovations in order to remove the inefficiencies related to the current procedures. To illustrate:

> *"I am extremely free to decide what I have to do or can do. I have a completely free rein, so I can employ my time in whatever way I want. I have two or three activities that I have to do, the rest is up to me. So any type of innovative idea that I have, anything I want to improve, even regarding the processes, anything that comes to mind and I am free to propose it and set it up. (Beta R&D assistant.)"*

To sum up, both the individuals characterized by an enacted personal ambidexterity developed their professional expertise in several firms operating in different sectors and functional areas. They also showed a complex competency profile in which a balanced combination of emotional and social competencies prevails over cognitive competencies.

Dominant learning orientation

The individuals characterized by a dominant learning orientation show a consistency between perceptions and behaviors which are both not balanced. This situation happens in the cases of the Delta R&D Manager and his/her assistant. In particular, from our data it emerged that both the R&D manager and his/her assistant perceive that their role requires more exploratory activities and, consistently with this perception, they behave according to a learning orientation toward exploration.

Our data reveal that R&D manager, who has been with Delta for three years, had developed prior work experience as technical design manager and then R&D manager, for sixteen years, in two companies operating in the telecommunications industry (the same sector as Delta) before joining Delta as R&D manager.

Moreover, from our analysis of the critical incident interviews emerged that the Delta R&D manager is characterized by the competency to manage the network of actors (both organizational and external ones) who are usually involved in the process of new product development (networking). To illustrate:

> *"I often use my interpersonal skills since my work requires the development of internal and external relationships. I go around a lot, visiting clients, technology providers… thus I am involved in a continuous flow of people that I meet at fairs or I contact because you know that they have new ideas or are starting new activities. Relationships are a very important source of new information."*

He also demonstrated the ability of information seeking, since he spent quite a lot of time looking for new data and information through unconventional ways and trying to find original interpretations of them (information gathering).

The R&D assistant showed a similar professional background. Indeed, after graduation he started to work in the telecommunications industry, first in the R&D unit of a multinational company and subsequently moving to a start-up operating in the same sector. He has been with Delta for four years, continuing to work in the same business unit where he developed his past work experience (i.e. R&D). As far as his competency profile is concerned, from the critical incident interview it emerged that he is characterized by adaptability (flexibility in handling change) and initiative. In particular, he told us that his motivation toward searching for new ideas and his engagement in putting into action new projects helped him to achieve important results, for instance in terms of the number of patents and percentage of new products. To illustrate:

> *"I challenge myself every day, I am open even to different organizational paths. Certainly, there has to be flexibility, you need to be almost like an entrepreneur in your company… I have brought several new ideas into my organizational unit. (Delta R&D assistant.)"*

Moreover, he performed behaviors aiming to develop a network of relationships with research centers, universities and consultancy companies in order to acquire new knowledge and expertise in different technological fields (networking). Finally, he narrates episodes in which he showed planning competency in organizing resources, people and activities. In this situation, the thematic analysis did not reveal any manifestation of the cognitive competencies.

To sum up, the analysis of the empirical evidence shows that this situation is characterized by individuals with prior work experience in the same industry and organizational function and a competency profile characterized by a prevalence of social competencies (networking and information gathering) or of emotional competencies (adaptability, initiative, planning).

Table 3
Classification of ambidexterity at the individual level comparing individuals' perceptions of learning orientation requested to them and their actual behaviors towards exploration and exploitation.

	ENACTED PERSONAL AMBIDEXTERITY *Cases:* Alpha sales manager, Beta R&D assistant *Individual characteristics:* Broad prior work experience (inter-functional, inter-firm and/or inter-industry experience) Competency profile characterized by a combination of emotional and social competencies	**DOMINANT LEARNING ORIENTATION** *Cases:* Delta R&D manager, Delta R&D assistant *Individual characteristics:* Narrow prior work experience (same business unit primarily in the same company) Competency profile dominated by emotional or social competencies
Unbalanced perceptions		
Balanced perceptions	**FULL PERSONAL AMBIDEXTERITY** *Cases:* Alpha R&D assistant, Alpha sales assistant, Beta sales assistant, Beta sales manager, Gamma R&D assistant, Gamma sales manager, Gamma sales assistant, Delta sales assistant *Individual characteristics:* Broad prior work experience (inter-functional, inter-firm and/or inter-industry experience) Competency profile characterized by a combination of emotional and social competencies	**PERCEIVED PERSONAL AMBIDEXTERITY** *Cases:* Alpha R&D manager, Beta R&D manager, Gamma R&D manager, Delta sales manager *Individual characteristics:* Narrow prior work experience (same business unit primarily in the same company) Competency profile dominated by emotional or social competencies
	Balanced behaviors	***Unbalanced behaviors***

Perceived personal ambidexterity

The individuals characterized by this type of personal ambidexterity perceive that a balance between exploration and exploitation is requested of them by their role but they behave in accordance with only one learning orientation. Specifically, in the cases analyzed, the R&D Managers of Alpha, Beta and Gamma as well as the Delta Sales Manager performed behaviors orientated more toward exploration. In other words, these individuals' behaviors are inconsistent with their perceptions.

From the third round of interviews it emerged that these individuals have each developed their work experience in the same functional unit and primarily in the same company or sector where they are currently employed.

Moreover, from the critical incident interviews a common profile of social and emotional competencies emerged, which seemed to spur these individuals to undertake variation-seeking activities instead of refinement of knowledge.

The competency achievement orientation has been demonstrated by specific behaviors of the R&D Managers of Alpha, Beta and Gamma who told us about their strong efforts to improve their own performance by setting measurable and challenging goals, in terms, for instance, of new original ideas and patents. Similarly, the Sales Manager of Delta declared that recently, in order to satisfy the request/need of an important customer, he did not try to sell an already existing product, for instance suggesting to modify it in order to personalize it, but instead proposed the development of a completely new product, even though the time for developing the new idea was short and thus there was the risk of losing the client before completing the project. The Delta Sales Manager also showed flexibility in handling change (adaptability) and initiating or managing change (change catalyst). Beside the competency of change catalyst, other social competencies characterized the competency profile of these individuals, namely networking and teamwork. The Alpha R&D Manager narrates episodes that pointed out his intent and concrete actions to build team identity and spirit or which showed his empathy in listening to others attentively and in understanding others' perspectives. The Gamma R&D Manager demonstrated the ability to promote a cooperative climate in groups and stimulate the participation of others, whereas the Delta

Sales Manager strove to nurture relationships with external partners. Similarly, the Beta R&D Manager described behaviors which aimed to activate relationships related to activities or projects with external partners as well as maintain cooperative working relationships. For example, he was able to identify the University centre whose research activities fit with the firm's technological needs and to establish a contact with a professor and his team who currently cooperate with Beta. To illustrate:

"I have a cultural approach toward innovation and for me innovation means research…We collaborate with the University and when I come up with new ideas I interact with the researchers…in this University I have found an outlet for my pleasure in creating new things. (Beta R&D manager.)"

In all cases cognitive competencies did not emerge from the analysis of the interviews.

To sum up, individuals characterized by a perceived personal ambidexterity developed a narrow prior work experience and are characterized by a prevalence of social competencies (change catalyst, teamwork and networking) over emotional ones (achievement orientation and, in one case, adaptability).

Full personal ambidexterity

The individuals who are characterized by this type of personal ambidexterity showed a consistency between perceptions and behaviors that are both balanced towards exploration and exploitation. In the first round of interviews, these individuals maintained that, in accordance with their perceptions, their role requires both exploitative and exploratory activities. At the same time, according to our analysis of the critical incidents, they behaved coherently with their perceptions, i.e. they performed both exploratory and exploitative activities.

From the third round of interviews, it emerged that these individuals distinguish themselves for inter-firm and/or inter-functional experiences. For instance, the Delta Sales Assistant told us that he had worked in several firms as software developer and also as consultant before he was hired by Delta. After starting as developer in the R&D unit, he was promoted to R&D project leader and then he moved to the Sales unit where in a few years he became the operational manager. Similarly, the Gamma R&D Assistant told us that before joining Gamma he had worked for about six years in the Sales department of another company. Narrating this past work experience, the Assistant stated that:

"This [inter-functional experience] enabled me to adopt a commercial perspective, which is different from a technical approach, which is closed and more distant and remote …"

Moreover, describing his professional experience in Gamma, he added that:

"The characteristics and the responsibilities of my current job are very broad, this is due to the fact that during these last seven years at Gamma I have fulfilled a role which let me interact with all the organizational units in the company and I understood that compromises are fundamental in order to carry out the activities without jeopardizing the activities in other organizational units, and thus to strike a balance and do things in the best way. (Gamma R&D assistant.)"

The Gamma Sales Manager developed his professional experience in completely different industries (textile and manufacturing of products for waterproofing insulation) as area manager, then he joined Gamma ten years ago in the position of export manager. Before joining Gamma seven years ago, his assistant had also had two important prior experiences in the textile and the plastics sector, both in the sales functional area. The Alpha R&D Assistant had a firm tenure of three years and before joining Alpha worked in two different companies operating in a different sector (plastics); whereas the Sales Assistant, who has been working in Alpha for almost twenty years, did not work in other firms but had gained significant experience in other organizational units. Similarly, the Beta Sales Manager and Assistant have worked for Beta since graduation and before attaining their current positions were both employed in the Marketing department. From their narratives, it emerged that these individuals are aware of the peculiarities that characterize different units in terms of orientation and goals since they developed experiences in different functional areas, acquiring a wide "vision" and fulfilling multiple requirements. For instance, when the Beta Sales Assistant began to work in this unit, he felt he was more creative than his colleagues who seemed to have a more "economic" and "engineering" perspective. He reported to us that the perspective he developed working in the Marketing unit helped him on many occasions to take advantage of ideas coming from the customers he visited daily and to suggest improvements in the existing products and investments in new projects, thus contributing to retaining old customers and also attracting new ones.

Concerning the competency profile, we found that individuals in this situation are characterized by the following emotional and social competencies: achievement orientation, attention to details, teamwork and influence. Indeed, it emerged that these individuals not only strove to improve or meet a standard of excellence (achievement orientation), but they showed a strong concern for order, self discipline and attention to detail manifested by continuous checking and monitoring during the implementation of their actions (attention to details). Moreover, they also showed the ability to convince others in order to get them to support their ideas and suggestions (influence) as well as collaborating with others (teamwork). In his critical incident interview, the Alpha R&D Assistant emphasized the importance of being precise in the execution of his activities – manifested by a continuous checking of his work – but at the same time he showed a strong urge toward overcoming the current standard, in terms of functionalities and design features of the firm's products, by the generation of new ideas. Similarly, the Alpha Sales Assistant was able to set and achieve challenging goals in terms of sales standard of performance, to devote attention to detail when he introduced products into the market, to convince clients by appealing to their self-interest and to build close relationships with them. The Beta Sales Manager reported to us the actions he implemented in order to identify and develop a new business segment, but he described also his intent and related behaviors aimed at improving the performance of this business segment, demonstrating his precision in performing the activities as well as his attention to monitoring his results. In his narratives, also the Beta Sales Assistant manifested an orientation toward the achievement of challenging sales goals. He demonstrated his ability to foresee how people will respond to an argument and his ability to adapt and to pay attention to detail. We recognized similar competencies analyzing the interviews of the Sales Manager and Sales Assistant of Gamma, the Gamma R&D Assistant and the Delta Sales Assistant. Concerning cognitive competencies, only in one case (Delta Sales Assistant) were they specifically demonstrated through the intent to apply concepts, frameworks, or theories to interpret and explain situations (use of concepts).

To sum up, in all the above-mentioned cases, inter-firm and/or inter-functional work experiences and a balanced profile of emotional and social competencies, which are prevalent over cognitive ones, emerged as a common characteristic.

Discussion

Our research shows that, in order to examine ambidexterity at the individual level, the analysis of individuals' perceptions needs to be complemented with the observation of their actual behaviors, since individuals may show inconsistency between the kind of learning orientation they perceive as requested by their role and the kind of learning orientation they actually perform. More specifically, comparing individuals' role perceptions with their actual behaviors, we contribute to existent research on personal ambidexterity, proposing the following classification of situations that may emerge at the individual level: (i) enacted personal ambidexterity; (ii) dominant learning orientation; (iii) perceived personal ambidexterity; (iv) full personal ambidexterity.

Whereas the first three situations are characterized by an unbalance between exploration and exploitation in individual's perceptions and/or behaviors, the last situation is characterized by a balance both in perceptions and behaviors.

By investigating why an individual falls into a specific situation among the four mentioned above, we identified common and different individual characteristics across these situations. More specifically, from our analysis, the importance of individuals' prior work experience emerges, highlighting that individuals who fall into the situations of "full personal ambidexterity" and "enacted personal ambidexterity" are those who have worked in several firms, even operating in sectors which are different from that of their current company, and/or in different business units. At the same time, our analysis reveals that individuals who have developed their work experience only in the same business unit fall into the situations of "perceived personal ambidexterity" and "dominant learning orientation." This result seems to provide empirical support that individuals' prior work experience affects their actual behaviors towards exploration and exploitation.

As discussed in the literature background, some authors included the type of prior knowledge (generalist vs specialist) and specifically prior work experience (in other companies and/or organizational units) in their contributions on ambidexterity and innovation (Kang & Snell, 2000; Mom et al., 2009; Un, 2010). With reference to these studies, in accordance with Mom et al. (2009), we found that balanced behaviors are not performed by individuals who have developed their experience working for a long time (only) in their current positions. However, in addition to Mom et al. (2009), we found that ambidextrous managers are individuals who, before obtaining their current position, worked in other business units in the same company and/or in other companies (within the same or in other business units), often operating in different sectors, thus acquiring a broad prior knowledge. Furthermore, unlike the contributions of Kang and Snell (2000) and Un (2010), our evidence supports the idea that individual prior inter-functional and/or inter-firm work experience promotes not only exploration, but exploration and exploitation simultaneously. Such a type of prior work experience seems to contribute to building up a broad prior knowledge which fosters the individuals' "entrepreneurial ability" to identify and exploit opportunities both of experimentation and search for efficiency (Corbett, 2005; Shane, 2000; Short, Ketchen, Shook, & Ireland, 2010). On the contrary, an individual's narrow prior work experience seems to build up a specialist prior knowledge which leads the individuals to behave depending on the information they had acquired, the functional biases and cognitive limits they suffer, all of which affect the individual's search and recognition of opportunities for experimentation or efficiency, as occurs in the situations of "dominant learning orientation" and "perceived personal ambidexterity."

Therefore, we suggest the following relationships to be tested by further research:

Proposition 1a. *Individuals who have developed a broad prior work experience (inter-functional, inter-firm and/or inter-industry experience)tend to perform balanced behaviors.*

Proposition 1b. *Individuals who have developed a narrow prior work experience (same business unit primarily in the same company) tend to perform unbalanced behaviors.*

Our findings also show that individuals fall into the different situations of personal ambidexterity identified above depending on their competency profile. In particular, our empirical evidence highlights that individuals in the situations "enacted personal ambidexterity" and "full personal ambidexterity" have a set of competencies different from the competency profile which characterizes individuals falling into the other two situations. Specifically, in the first two situations, in which individuals behave balancing exploration and exploitation activities, we identified a competency profile in which emotional and social abilities are prevalent over the cognitive competencies and combine with each other. In accordance with behavioral competency literature, which points to the fact that the possession of the emotional competencies reinforces the manifestation of social competencies in determining effective behaviors (Goleman et al., 2002), this finding seems to suggest that the two clusters of competencies interact in promoting balanced actual behaviors.

On the contrary, in the situations of "dominant learning orientation" and "perceived personal ambidexterity", in which emerged a prevalence of exploration or exploitation behaviors, the individuals manifested more frequently emotional or social competencies. In other words, a prevalence of explorative or exploitative behaviors seem to be performed by individuals characterized by a dominant cluster of abilities.

Accordingly, we suggest the following propositions to be tested by further research:

Proposition 2a. *Individuals who have a competency profile characterized by a combination of emotional and social competencies tend to perform balanced behaviors.*

Proposition 2b. *Individuals who have a competency profile dominated by emotional or social competencies tend to perform unbalanced behaviors.*

Considering the above proposed classification summarized in Table 3, in two situations ("enacted personal ambidexterity" and "perceived personal ambidexterity") an inconsistency between perceptions and behaviors emerges. In accordance with the role and cognitive theories, this inconsistency may reveal issues of role ambiguity and role conflict, (Kahn et al., 1964; Katz & Kahn, 1966) and give rise to problems of cognitive dissonance (Cooper, 2007; Festinger, 1957).

In particular, if we assume that a firm is striving to pursue both exploration and exploitation, requiring their employees to achieve both the kinds of learning orientation, in the situation of "enacted personal ambidexterity", the unbalanced perceptions might reveal a problem of communication and interpretation of the role expectations which at the individual level may determine a situation of unclear information about what the role requests (role ambiguity) or of incongruity among the different role requests (role conflict). Moreover, in this situation, individuals may experience tensions deriving from the inconsistency between their perceptions and behaviors, thus striving to pursue consonance in order to reduce these tensions. Potentially, they

may change their perceptions, aligning them to the already performed balanced behaviors or they may change their behaviors, aligning them to unbalanced perceptions. Therefore, we suggest the following propositions:

Proposition 3a. *When individuals show an enacted personal ambidexterity, to reduce cognitive dissonance, they tend to move toward a full personal ambidexterity changing their role perceptions in order to align them with their balanced behaviors.*

Proposition 3b. *When individuals show an enacted personal ambidexterity, to reduce cognitive dissonance, they tend to move toward a dominant learning orientation changing their behaviors in order to align them with their balanced behaviors.*

However, the individual spontaneous shift from an "enacted learning orientation" to a "dominant learning orientation" (proposition 3b) seems less likely if we consider our findings on the characteristics possessed by the individuals who perform actual balanced behaviors. Indeed, it should imply that, when they perform their job, the individuals no longer apply all the knowledge they accumulated over time through prior work experience and/or no longer activate the combination of social and emotional competencies.

Similarly, in the situation of "perceived personal ambidexterity", individuals spontaneously tend to reduce the tensions experienced due to the cognitive dissonance caused by the inconsistency between their perceptions (balanced) and their behaviors (unbalanced). More specifically, individuals may change their perceptions, shifting towards "dominant learning orientation" or they may modify their behaviors thus shifting towards "full personal ambidexterity." However, according to our findings on individuals' characteristics that favor ambidextrous behaviors, in order to change their behaviors towards a balanced orientation these individuals should possess a broader prior work experience and a competency profile characterized by a mix of emotional and social competencies. For this reason, it is more likely that in order to pursue cognitive consonance these individuals will spontaneously change their perceptions, not their behaviors. Thus, we suggest the following proposition:

Proposition 4. *When individuals show a perceived personal ambidexterity, to reduce cognitive dissonance, they tend to move toward a dominant learning orientation changing their role perceptions in order to align them with their unbalanced behaviors.*

Differently, in the situation of "dominant learning orientation", since individuals experience a consistency between perceptions and behaviors, they do not tend to spontaneously move toward the other situations of individual ambidexterity. Accordingly:

Proposition 5. *In a situation of dominant learning orientation, individuals will not spontaneously change their perceptions or their behaviors towards a balanced orientation between exploration and exploitation.*

Conclusions

Our research contributes to the existing literature on ambidexterity at individual level in three ways. First, we added to the analysis of actual behaviors, performed by individuals who are expected to fulfill ambidextrous roles, the investigation of their perceptions on the learning orientation requested of them by their role. In doing so, we suggest a classification of personal ambidexterity, which compares the individuals' perceptions with their actual behaviors highlighting that individuals with ambidextrous role may show balanced or unbalanced perceptions and at the same time they may perform behaviors which are consistent or inconsistent with their perceptions. Second, unlike prior studies which focus on organizational and contextual factors that may enable and support employees to become ambidextrous, our study advances the research on the individual factors as antecedents of personal ambidexterity, suggesting the relevant role of prior work experience and competency profile. Third, we provide empirical evidence on the influence of individuals' perceptions in sustaining or jeopardizing their balanced or unbalanced behaviors. More specifically, we offer insights on how individuals' perceptions, potential role tensions (i.e. role ambiguity and role conflict) and cognitive dissonance may contribute to distance from or to get close to a situation of "full personal ambidexterity". We summarized our contributions in more formal terms suggesting propositions, on the one hand, on the relationship between individual characteristics and ambidextrous behaviors and, on the other, on shifts from one type of personal ambidexterity to another, which can be tested by future research.

Moreover, some managerial implications can be drawn. First, the exclusive focus on only individuals' perceptions or only individuals' behaviors offers a partial perspective in the analysis of personal ambidexterity. Firms need to be aware of the complexity of achieving a "full personal ambidexterity" and should take into account both individual perceptions and behaviors. Moreover, our analysis provides suggestions to firms on how to promote "full personal ambidexterity." First, our research points to the need to clarify and communicate appropriately the requirements of ambidextrous roles, in order to avoid problems of role ambiguity, role conflict and or cognitive dissonance. Second, our findings on factors which influence balanced behaviors suggest how to manage human resources in order to promote "full personal ambidexterity" by recruiting and selecting people on the basis of criteria such as the past inter-functional or inter-firm experience or the combination of emotional and social competencies which enable them to pursue effective ambidextrous behaviors. Moreover, training should be aimed to modify employees' personal characteristics, for instance through specific programs aimed at developing broad work experiences and/or building individuals' competency profiles. In this regard, series of longitudinal and clinical studies have provided evidence on successful training processes that yield sustained behavioral change and development in the set of emotional and social competencies (Boyatzis, 2007).

Finally, in our study, some limitations can be highlighted. First, we did not investigate how the organizational expectations of ambidextrous roles have been communicated. This analysis can complement the study of individuals' role interpretation and activation. Second, we did not consider how the differences in terms of type and variety of individual prior work experience (inter-functional, inter-firms and inter-industry) may influence differently the ability of reconciling both explorative and exploitative activities as required by ambidextrous roles. This could represent a promising line of future research. Third, in the investigation on emotional and social competencies as determinants of ambidextrous behaviors may benefit from a multi-rater approach, involving in the evaluation of individual competencies other actors such as supervisors, collaborators, and colleagues. Finally, our exploratory study did not investigate the mutual relationship between individual prior work experience and competency profile in affecting personal ambidexterity. Future research should explore whether they operate as substitutes in promoting a balanced orientation towards exploration and exploitation, or whether they complement each other, supporting and reinforcing themselves reciprocally.

Appendix A. Customized vocabulary used for the content analysis

Exploration	Exploitation
Adventure	Accelerate
Anticipate	Adaption
Astound	Adjustment
Autonomy	Applied_research
Being_the_first	Automate
Breaking_away	Aversion_to_risk
Change	Bureaucracy
Create	Caution
Creativity	Centralization
Decentralization	Certainty
Development	Certification
Discontinuity	Clarity
Discovery	Codification
Distant_search	Commercial_alliance
Diversify	Continuity
Diversity	Control
Dynamic	Correct
Evolution	Correction
Expand	Customer_loyalty
Expansion	Deep_background
Experimentation	Defend
Explore	Differentiate
Fantasy	Efficiency
Far_beyond	Execution
Flexibility	Existing_clients
Forefront	Existing_markets
Freedom	Existing_partners
Idea	Existing_products
Innovation	Fast
Invent	Formalization
Inventive	Implementation
Long_term	Improvement
Low_codification	Incremental_innovation
Low_formalization	Local_search
Low_standardization	Modular_production
New	Operational_strategies
New_clients	Perfecting
New_markets	Planning
New_partners	Practicality
New_products	Precision
Novelty	Predictability
Open_mentality	Procedure
Patent	Program
Planning	Prudence
Proactive	Rationalization
R&D_alliance	Reactive
Release	Reduction_of_costs
Revolution	Refinement
Risk	Reliability
Search	Restyling
Slow_learning	Result-based_objective
Something_extra	Routine
Spirit_of_initiative	Rules
Start_Up	Serial_production
Tacit_knowledge	Short_term
Transform	Shorten
Uncertainty	Stability
Vary	Standardization
Wide_background	Up-date
	Variant
	Verification

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