

## **Individual Ambidexterity in SMEs: Towards a Typology Aligning the Concept, Antecedents and Outcomes**

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### **Abstract**

Individual ambidexterity is of vital importance of the competitive advantage of organisations, especially SMEs. Yet the ambiguous conceptualisation in literature hinders our understanding of the concept, its antecedents and outcomes. The authors use a systematic review to capture the development of individual ambidexterity in the literature since 2007, identifying several major issues obstructing its conceptual clarity. The authors further propose a typology based on the exploration-exploitation relationship. By identifying different types of individual ambidexterity and linking the concept to the context of SMEs, this review offers conceptual clarity and directions for studying individual ambidexterity in SMEs for future research.

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## Introduction

This article focuses on the phenomenon of ambidexterity on the level of individual employees in small and medium-sized enterprises (SMEs). SMEs represent a vital component of most economies. However, the specific characteristics of SMEs make them more vulnerable in rapidly changing markets; for example, their financial and human resources are more limited than those of larger companies, and they tend to be less diversified in their activities, which reduces their flexibility (Chowdhury, 2011). Simultaneously maintaining existing performance within their industry while being innovative and adaptive is therefore of crucial importance for the survival of SMEs. Ambidexterity is defined as simultaneously -and equally successfully- pursuing exploitative activities (i.e., focused on the exploitation of current resources and their refinement, efficiency, implementation) and explorative activities (i.e., focused on discovery, flexibility, innovation). While larger organisations can achieve this simultaneity by structural separation, it is challenging for SMEs, especially individuals in SMEs, to manage both exploration and exploitation successfully. This systematic literature review not only offers a comprehensive overview of the literature on the concept, but also addresses problems such as what exploration and exploitation are, how they are related, as well as the antecedents and outcomes of individual ambidexterity, based on which a typology of individual ambidexterity is proposed and explained.

Given its relevance for firms, ambidexterity has gained attention in the organisational literature over the past decades, initially mainly at the organisational level. However, over the past decade, an increasing number of studies have observed that ambidexterity exists at multiple levels of analysis (Raisch et al., 2009). For example, Gibson and Birkinshaw (2004) discuss ambidexterity at the level of the individual, arguing that every employee could potentially contribute to the creation of value for an existing organization while reacting appropriately to changes in their environment. Various studies show that ambidexterity at the individual level not only benefits individual performance (Mom et al., 2015), but it also acts as an important source of organisational ambidexterity and can thus be considered an important source of organisational success (Birkinshaw and Gibson, 2005; Good and Michel, 2013). Moreover, it is suggested that individual ambidexterity helps companies reach the full potential of organisational ambidexterity (Schnellbacher et al., 2019). Even if an organisation could evenly distribute its employees over either explorative or exploitative roles, to reach the full potential of organisational ambidexterity, the results of exploration and exploitation must still be

integrated with each other, which requires individual ambidexterity (Schnellbacher et al., 2019).

The need to foster ambidexterity at the individual level is more urgent in SMEs than in larger sized organizations because SMEs – in contrast to larger companies – have neither the organisational structure nor the resources to separate explorative activities (e.g., innovation, research and development) from more routine tasks (e.g., marketing and sales). Chang and Hughes (2012) reviewed the relevant literature and identified several differences between SMEs and larger companies. These differences seem to increase the challenges facing most SMEs in terms of managing tensions, contradictions, and trade-offs when pursuing ambidexterity, including their limited human and financial resources and managerial expertise, the absence or minimal presence of bureaucracy, and different operating conditions and characteristics. Such differences make it difficult for SMEs to achieve ambidexterity at the organization level by means of a structural separation of explorative and exploitative activities or even to manage ambidexterity at multiple levels. Individual employees in SMEs are therefore more often required to oscillate between different tasks and roles (Carmeli and Halevi, 2009). In many small service firms, for instance, “a single employee delivers the service rather than a ‘team’ of employees” (Sok et al., 2018, p. 374). Similarly, customer service representatives in small firms are often expected to cross-sell products in the process of delivering service (Jasmand et al., 2012). Due to SMEs’ structural limitations, SMEs most likely rely on individuals’ initiative, which makes individual ambidexterity crucial to SMEs (Gasda and Fueglistaller, 2016). Moreover, SMEs’ flat and informal structures, as well as their vertical knowledge flows, support the development of ambidextrous activities, especially at the individual level. Both Chang and Hughes (2012) and Gasda and Fueglistaller (2016) emphasise the importance of gaining a deeper understanding of ambidexterity at the individual level to help SMEs pursue ambidexterity.

The growing interest in ambidexterity and the importance of individual ambidexterity for SMEs make this field difficult to ignore. Although a literature review by Snehvrat et al. (2018) suggests that individual ambidexterity has been explored since at least 2007 and that the number of studies focusing on this level of analysis has shown an impressive increase in the past three years, the field still suffers from imprecise and often ambiguous definitions (O'Reilly and Tushman, 2013; Simsek et al., 2009). For instance, it is unclear whether exploration and exploitation necessarily occur simultaneously or whether employees rapidly switch between

them. By analysing the exploration-exploitation relationship, we propose a typology for four different types of individual ambidexterity relating to four different relationships between exploration and exploitation. Moreover, although studies have considered the antecedents and consequences (outcomes) of individual ambidexterity separately, so far, there has been no comprehensive review, leaving an important gap in our understanding of individual ambidexterity. Therefore, we also provide a summary of the antecedents and outcomes for each type of ambidexterity in our typology, which will help form a more comprehensive network for understanding individual ambidexterity as well as what factors affect it and what outcomes it may lead to. The resulting conceptual ambiguity has also resulted in different operationalisations of the construct. For instance, Lee and Lee (2016) show that individual-level ambidexterity can be operationalised as the absolute difference between exploitation and exploration or alternatively as the multiplicative interaction between them. The conceptual ambiguity has further led to a lack of consistency among the studies in the field. Practically, this lack of conceptual clarity has made it difficult to make recommendations on how to foster individual ambidexterity in a specific context such as SMEs. As scholars conceptualize the relationship between exploration and exploitation differently, their recommendations are subject to their own and others' different understandings.

In this study, we contribute to the field by developing a typology for four types of individual ambidexterity, based on a structured review of the extant literature on individual-level ambidexterity and investigation of the concept specifically in the context of SMEs. A systematic literature review allows us to assess the state of the art in the literature on this topic by using a multi-stage review strategy (Turner et al., 2015; Pittaway et al., 2004). Thus, with this literature review, we address the question *“How is individual ambidexterity conceptualised in the literature, and what does this conceptualisation mean for the identification of the antecedents and consequences of individual ambidexterity in SMEs?”*

First, we review the extant literature on individual ambidexterity, and, second, we contribute to the gap in the research with regard to individual-level ambidexterity within the context of SMEs. This approach will help in the identification of the major problems of conceptualising the phenomenon. We further categorise individual ambidexterity into four different types, each related to a specific organisational context. This categorisation will help organisations, especially SMEs, support the development of the type of individual ambidexterity that is most appropriate for their context. Theoretically, reviewing the different definitions of individual

ambidexterity in the literature will help us form a clearer and more comprehensive view of the field and obtain a better understanding of how different conceptualizations have developed. When it becomes clear how individuals view the relationships between exploration and exploitation and why they respond to them differently, more tailor-made recommendations can be made for how organisations, especially SMEs, can help individual employees become more ambidextrous. Practically, a clearer understanding of what individual ambidexterity entails and how individuals comprehend the relationship between exploration and exploitation will facilitate companies, especially SMEs, in fostering ambidextrous behaviour, which will, in turn, help enhance their financial performance and long-term survival (Raisch et al., 2009).

In the following sections, we first provide an overview and discussion of the studies on the topic of individual ambidexterity on a range of subjects across various contexts, followed by a discussion of the methodology used in this structured literature review. We then review the literature in more detail. Based on that discussion, we analyse the existing definitions of individual ambidexterity and the antecedents and outcomes of individual ambidexterity as well as how they are connected to and affected by the context and characteristics of SMEs. We also propose a typology for the different types of individual ambidexterity based on the different relationships between individual exploration and exploitation, and we provide a detailed explanation of each type with the definitions, contexts, antecedents, and outcomes of each type from the existing literature. We conclude with the theoretical and practical implications of this review and suggest avenues for future research.

### **Individual ambidexterity**

Despite the fact that individual ambidexterity has been studied for only a decade, in the past three years, the number of studies focusing on this level of analysis has increased markedly (see, e.g., Gasda and Fueglistaller, 2016; Good and Michel, 2013). To date, researchers have studied individual ambidexterity from different perspectives, targeting different individuals (e.g., managers and non-managerial employees) while studying it across different contexts (e.g., larger organisations and SMEs). This wide variety of perspectives and contexts may have contributed to the conceptual ambiguity surrounding individual ambidexterity. We review the literature on the ambidexterity of managerial and non-managerial employees as well as the literature on individual ambidexterity.

Studying the characteristics of ambidextrous managers, Mom et al. (2009) suggest that individual ambidexterity can be viewed as a combination of individual exploration (“searching for, discovering, creating, and experimenting with new opportunities”) and individual exploitation (“selecting, implementing, improving and refining existing certainties”) (Mom et al. 2007). They also note that “the essence of managers’ exploration activities is creating variety in experience” and “the essence of managers’ exploitation activities is creating reliability in experience” (Mom et al., 2007, p. 4). This observation is supported by Laureiro-Martínez et al. (2010) who define exploration as behaviour that includes searching for alternatives and disengagement from the current task and exploitation as behaviour that helps to optimise task performance. In a similar vein, Rogan and Mors (2014) review the previous literature and categorised the ambidextrous behaviour of senior managers into four main areas of behaviour including the “allocation of resources between new and existing businesses, selective cross-fertilization of knowledge between the new and existing businesses, resource mobilization and opportunity identification as associated with exploitation and exploration, respectively” (Rogan and Mors, 2014). Although Rogan and Mors (2014) do not provide a specific definition of individual ambidexterity for senior managers, they provide four specific circumstances/contexts where individuals are confronted with the choice of whether to adopt ambidextrous behaviours. Both studies take into account the content of the ambidextrous behaviour of managers, and instead of considering ambidexterity simply in terms of activity, they focus on investigating its content (Turner et al. 2013).

Rather than investigating managers’ individual ambidexterity, another group of researchers focuses on the non-managerial level. In a study by Rosing and Zacher (2016), exploration at the individual level is defined as “behaviours related to experimentation, searching for alternative ways to accomplish a task, and learning from errors” and individual exploitation as “relying on previous experience, putting things into action, and incrementally improving well-learned actions” (Rosing and Zacher, 2016, 695-696), which is similar to Mom et al.’s (2007) interpretation. Inspired by March (1991) and studies on organisational learning, Holmqvist and Spicer (2012) describe the “ambidextrous employee” as someone who is no longer bound by traditional organisational restrictive controls. In ambidextrous employees, self-exploration and self-exploitation, which refer to the employees’ abilities “to use their alleged independence to express their resourcefulness as well as to submit themselves to continuous self-scrutiny and audit in the name of accountability” (Costea et al., 2007, p. 253), are encouraged, as is maintaining a balance between the two activities. In a study examining the ambidextrous

behaviours of customer service representatives in a call-centre, Jasmand et al. (2012) describe the duties of these individuals as providing high-quality and low-cost customer service while generating revenues by engaging in cross- and up-selling. Regarding the specific content of exploration and exploitation, Lowik et al. (2016) suggest that exploratory activities entail searching for new market opportunities and product development, which require developing new knowledge and skills whereas exploitative activities concern routine-like processes, such as serving existing customers, and achieving short-term goals, which are executed based on experience and current knowledge.

As individuals are confronted with the choice of being ambidextrous under certain circumstances, contextual factors are important when investigating the concept of individual ambidexterity (Rogan and Mors, 2014). Regarding the contexts in which researchers have conducted studies on individual ambidexterity, several industries have been explored, including the service industry, academic institutions, and the manufacturing industry. Individual ambidexterity in the service industry is commonly referred to as service-sales ambidexterity, and the most common definition is the achievement of both service quality and revenue generation (Gabler et al., 2017) or the improvement of productivity while flexibly catering to customer needs (Yu et al., 2018). Studies investigating individual ambidexterity in academic institutions mainly focus on the knowledge perspective. For example, Benavides and Ynalves (2018) define the ambidextrous behaviour of professors as the ability to successfully manage conflicts of interests among various sectors such as academia, industry and government. Similarly, Kaiser et al. (2018) refer to ambidextrous scientists as individuals with both academic and industry-specific experience. Some studies (e.g., Chang et al., 2016) suggest that individual ambidexterity in academic institutions includes academic excellence (e.g., publications) and commercialisation, which essentially refers to pursuing interests in both academic and industry sectors. Another prevalent context that attracts the attention of researchers is the manufacturing industry. Although Sok and O’Cass (2015) suggest that the two incompatible elements of individual ambidexterity in manufacturing firms are creativity and attention to detail, other studies (e.g., Ajayi et al., 2017) refer only to exploration and exploitation in general.

Despite the subjects and contexts of individual ambidexterity identified in the studies discussed above, researchers (e.g., Holmqvist and Spicer, 2012; Bledow et al., 2009) do seem to agree on the idea that individual ambidexterity is a self-regulated activity that combines individual

exploration and exploitation. Through self-management, ambidextrous individuals regulate, monitor and control their own behaviour to cope with the tensions and contradictory demands that arise from managing both exploration and exploitation (Holmqvist and Spicer, 2012). However, what individual exploration and exploitation entail differs across industries and positions within organisations. In general, despite these differences, individual exploration entails new or alternative knowledge and skills while individual exploitation entails existing experience and present knowledge that help optimise existing job tasks.

## **Methodology**

A systematic literature review allows us to assess the state of the art in the literature on a given topic using a multi-stage review strategy (Pittaway et al., 2004). In this review, we followed the suggestions of Armstrong et al. (2007) to first identify the scope of this literature review by identifying the research gaps and forming a clear research question. A comprehensive search for literature was then performed to find all relevant studies using explicit inclusion/exclusion criteria. After collecting and studying all the studies, relevant information was extracted from them to generate the findings of this study.

The scope of the review is demarcated by the focus of this study on the conceptualisation of individual ambidexterity and how the concept can be best understood in the context of SMEs. To meet the requirement of developing clear and precise aims and objectives, the scope of this literature review is defined as follows: 1) Only studies focusing on ambidexterity (or both exploration and exploitation or equivalent) at the individual level will be included (individual ambidexterity including multi-level studies). 2) Studies published since 2007 will be included. Although Birkinshaw and Gibson (2005) suggest adopting contextual ambidexterity to foster ambidextrous individuals and highlight the importance of ambidextrous individuals, no study focused solely on ambidexterity at the individual level until Mom et al. (2007). Reviews such as the one by Snehvrat et al. (2018) have also chosen Mom et al. (2007) as the starting point of the study of individual ambidexterity, which is viewed as seminal on the topic of individual ambidexterity (cited by 480 studies). Mom et al.'s definition and operationalisation of individual ambidexterity are widely used (e.g., Tempelaar and Rosenkranz, 2019; Zacher et al., 2016). 3) We reviewed studies from all journals that are accessible instead of only focusing on journals with high impact factors to eliminate publication bias (which refers to excluding literature from sources such as book chapters or conference abstracts) and reviewer selection



bias (Ahmed et al., 2012). 4) The focus of this literature review was on theoretical issues, or more precisely, issues concerning the conceptualisation of individual ambidexterity, specifically in SMEs.

After identifying the scope of the review, we continued to search the literature for studies that focused on individual ambidexterity. In our preliminary search for literature in April, 2019, we used the search term ‘individual ambidexterity’ in both the Web of Science database and on Google Scholar. A total of 136 and 279 studies, respectively, were returned from both searches, and 148 studies remained after we eliminated the duplicated results returned from both databases. Thereafter, by manually reviewing the abstract, theory, and methodology, we selected the studies that contained ‘individual ambidexterity’, ‘individual exploration and exploitation’, or any two paradoxical elements on the individual level that could be seen as individual ambidexterity. We followed the suggestions of Junni et al. (2015) for more specific requirements for studies to be included. Quantitative studies were required to have ambidexterity (or exploration and exploitation combined) as a variable while qualitative studies were required to have an explicit discussion of ambidexterity. Additionally, for a conceptual paper to be included in the review, it was also required to contain an explicit discussion of ambidexterity. Some papers were eliminated during this process such as quantitative studies that did not include ambidexterity (or the equivalent of the combination of exploration and exploitation) as a variable, qualitative or conceptual work without a clear definition or explicit discussion of ambidexterity, executive summaries of a special issue, or publications that adopted other uses of ‘ambidexterity’ outside the field of management. The number of studies included after this elimination process was 65.

After the preliminary examination of the included studies, we found that “service-sales ambidexterity” (or “sales-service ambidexterity”) is another term widely used to refer to the ambidexterity shown by salespersons or service employees (e.g., Jasmand et al., 2012; Yu et al., 2013). In these studies, salespeople are required to perform service activities while they generate sales, and vice versa. For a salesperson, selling existing products can be seen as *exploitation* while providing service requires the employee to inquire into the (potential) needs of the customer, which can be considered an *exploration* of new opportunities. To be more inclusive, we performed a second search following the same procedure but with the search term “service-sales ambidexterity”, which returned 84 studies from Google Scholar and seven from the Web of Science. After eliminating the duplicate literature that had already been included

in the first search and following the same inclusion/exclusion criteria, the final collection of papers included in this review contained 69 studies.

Of the 69 studies in our review, six were conceptual or theoretical papers and 63 were empirical studies. Of the 63 empirical studies, 13 were qualitative (based on case studies and/or interviews), 48 were quantitative (used survey data and subsequent statistical analysis), and two studies used both qualitative and quantitative approaches. To examine the overall research interest in individual-level ambidexterity in recent years, we mapped the number of studies per year. Figure 1 shows the number of studies included in this literature review from 2007 to early 2019, where there is a spike in the number of publications in 2015. The number of quantitative and qualitative studies and the numbers of empirical and conceptual studies each year are also presented in Figure 1.

[Insert Figure 1. Number of Studies in the Sample per Year]

To clarify the conceptualisation of individual ambidexterity in SMEs, we discuss the literature about the definition itself as well as the literature about its antecedents and consequences. By including the definitions, antecedents and outcomes of individual ambidexterity in SMEs in the process of conceptualisation, we can gain a more holistic and comprehensive understanding of the concept, which will help researchers as well as practitioners to better understand the concept and the phenomenon and help improve the implementation of individual ambidexterity in organisations.

Upon reviewing the main viewpoints regarding individual ambidexterity in the studies included in this literature review, we noticed several inconsistencies regarding the concept. First, the relationship between these two fundamental elements of individual ambidexterity greatly affects the conceptualisation. Regarding the relationship between individual exploration and individual exploitation, most studies have focused on either one or two of the four aspects namely, simultaneous pursuit, rapidly switching between tasks, the balance dimension, and the combined dimension (see Table 1).

Second, the studies suggest that both personal characteristics (e.g., prior work experience) and contextual factors both inside and outside of organisations (e.g., different industries) may affect

individual ambidexterity. Investigating the antecedents of individual ambidexterity, both personal and contextual, is thus crucial to the conceptualisation.

Third, most studies that have considered the outcomes of individual ambidexterity focused only on positive outcomes such as the increased performance outcomes of individuals. However, negative outcomes such as cognitive strain and burnout also exist. Learning how these negative outcomes are linked to individual ambidexterity can help scholars more holistically understand the concept and help organisations, especially SMEs, develop measures to mitigate the production of negative outcomes. In the following sections, we introduce the three inconsistencies in more detail and consider the context of SMEs.

### **Individual ambidexterity: Simultaneous or switching? Combined or finding balance?**

Despite the different tasks of individual exploration and exploitation, researchers seem to agree that exploration and exploitation somehow co-exist in individual ambidexterity. The literature on individual ambidexterity shows that, regarding the relationship between exploration and exploitation, the typology by Simsek et al. (2009) may be transferrable to the individual level. Simsek et al.'s (2009) typology of the relationships between exploration and exploitation at the organisational level integrates the temporal and structural dimensions of organisational ambidexterity. Translating this to individual ambidexterity, the temporal dimension reflects one of the unresolved debates surrounding the conceptualisation of individual ambidexterity: whether it is the simultaneous pursuit of both orientations or rapidly switching between them. Even though the structural dimension cannot be directly used at the individual level, individuals do manage explorative and exploitative activities in different ways. More recently, following Cao et al. (2009), several studies (e.g., Lee and Lee 2016) consider two other relationships between exploration and exploitation, namely, the combined dimension, defined as the combined extent to which subjects engage in exploratory and exploitative activities (Cao et al., 2009), and the balance dimension, referring to “a close relative balance between exploratory and exploitative activities” (Cao et al., 2009, p. 781). After reviewing the literature on individual ambidexterity, we find that most studies have adopted one or two of the four views regarding the relationship between exploration and exploitation (see Table 1). Despite the number of different views from literature, fundamentally, there are four major relationships between exploration and exploitation which represent two dimensions that coexist (the time and the balance dimensions, which will be discussed in more detail in the discussion).

[Insert Table 1. The Exploration-exploitation Relationship in the Literature]

One group of studies emphasizes simultaneity, that is, the simultaneous pursuit of exploration and exploitation at the individual level. For example, individual research ambidexterity is defined as “the ability to which academic scientists can simultaneously achieve research publication and research commercialisation at the individual level” (Chang et al., 2016, p. 9) in the investigation of individual research ambidexterity in entrepreneurial universities. In another example, growth versus work-life balance ambidexterity refers to “the pursuit of both financial outcomes in the form of growth and non-financial outcomes in the form of quality of work life simultaneously” (Snell et al., p. 530). Within this group of definitions, studies discuss the relationship between elements such as service and sales objectives (e.g., Yu et al., 2013), alignment and adaptability (Hodgkinson et al., 2014), attention to detail and creativity (Sok and O’Cass, 2015). Some studies refer only to elements such as exploitation and exploration (e.g., Swart et al., 2016) or conflicting tasks and goals (Agnihotri et al., 2017). It is not difficult to recognize that what exploration and exploitation entail in the aforementioned studies tends to be rather general and to fit into rather broad categories. It remains unclear whether individuals necessarily undertake conflicting tasks that usually require different knowledge and mind-sets *at the same time*.

Conversely, critics of the rapid switching approach argue that individual ambidexterity entails switching (or shifting) between individual exploration and individual exploitation (Good and Michel 2013; Johansson 2015; Kauppila and Tempelaar 2016; Schultz et al. 2013; Sok et al. 2016). Bledow et al. (2009) describe individual ambidexterity as ‘the capability of individuals to perform contradictory activities and switch between different mind-sets and action sets (e.g., switching from unconstrained creativity to scrutinising the usefulness of ideas)’ (p. 322). The definition of individual ambidexterity in Good and Michel (2013), which is “the individual-level cognitive ability to flexibly adapt within a dynamic context by appropriately shifting between exploration and exploitation” (p. 437), points out that the individual’s cognitive flexibility matters when behaving ambidextrously. Kauppila and Tempelaar (2016) propose that “rather than being a psychological trait, ambidexterity is an individual’s behavioural capacity to engage in and alternate between opposing task elements” (p. 1022). Studies adopting the switching perspective tend to view exploration and exploitation as opposing or contradictory elements while the pursuit of ambidexterity requires alternating between the two opposing elements. However, studies also show that the interrelationship between exploration

and exploitation implies that the two elements/activities can both be kept maintained at high levels despite the need to balance them (Lubatkin et al., 2006). Similarly, there is a complementarity view, maintained by researchers such as Farjoun (2010), proposing that “rather than opposing one another, elements of exploitation and exploration potentially enable each other” (p. 217).

Thus, instead of focusing on simultaneity or switching between exploration and exploitation, another group of studies has added the aspect of balance to the conceptualisation of individual ambidexterity. Upon investigating entrepreneurs' ambidextrous behavioural patterns, Volery et al. (2015) define ambidexterity at the individual level as “the ability to pursue both exploration and exploitation with equal dexterity” (p. 113), which reflects another balance dimension. Both Ajayi et al. (2017) and Rosing and Zacher (2016) propose defining individual ambidexterity as “an individual’s balanced pursuit of exploitative and explorative activities” (Ajayi et al., 2017, p. 664). The latter authors also specified that “the balance of exploration and exploitation is exploration and exploitation being essentially the same, independent of their absolute values (i.e., high or low)” (Rosing and Zacher, 2017, p. 696). However, according to Rosing and Zacher (2016), a balance between exploration and exploitation as well as a high level of both exploration and exploitation are necessary for optimal performance.

Another perspective that is often adopted by researchers when defining individual ambidexterity is the combined dimension. One of the most cited definitions across the literature is the one by Mom et al. (2015), who define managerial level ambidexterity as “a manager’s behavioural orientation toward combining exploration and exploitation-related activities within a certain period of time.” From a knowledge-based view, Keller and Weibler (2015) consider ambidexterity “combining new knowledge with existing knowledge equally at the individual level of analysis” (Keller and Weibler, 2015, p. 56), which coincides with the findings of Cao et al. (2009), who suggest that ambidexterity is fostered by close interrelations between existing and new knowledge.

Despite the four types of relationship discussed in the literature, there are some exceptions such as Zimmermann et al. (2018) who state that the tension between exploration and exploitation is less stable and uniform than suggested by the previous literature. This evolving and dynamic tension presents individuals with substantial challenges that require them to be flexible and agile when managing that tension. Similarly, focusing more on the individual actors,

Havermans et al. (2015) suggest that individuals should use their own judgement when managing ambidexterity, meaning that they must adapt their levels of exploration and exploitation according to the dynamics of the environment while maintaining both at high levels. Although favouring the sequential approach, Bledow et al. (2009) agree that as the dynamics of markets change over time, the relative importance of exploration and exploitation changes accordingly.

The identified disagreements stem from how the relationships between exploitation and exploration are interpreted, as either conflicting with or complementary to each other. Studies that favour the simultaneous and combined dimension consider exploration and exploitation to be complementary. In studies where exploration and exploitation are considered to generate internal competition for resources, tensions, and trade-offs, the authors argue that individuals cannot simultaneously explore and exploit at a single point in time; one must allocate time and resources between the two and maintain a balance between them. This view is in line with Awojide et al.'s (2018) notion regarding the differences between a structural and behavioural approach to ambidexterity. According to Awojide et al. (2018), a structural approach to managing exploration and exploitation considers the two to compete for the same resources and that individual ambidexterity is about managing the trade-offs and finding the appropriate degree of emphasis between the two. The behavioural approach, however, emphasises the complementary effects of pursuing both exploration and exploitation and that it is necessary for individuals to pursue both on a daily basis.

According to Turner et al. (2013), Farjoun's (2010) duality theory, which states that "stability and change... can be considered as a duality" (Turner et al., 2013, p. 186), applies to the exploitation (stability) and exploration (change) relationship. It allows an enhanced understanding of ambidexterity at the individual level, which is of great relevance to the context of SMEs. Investigating the mutually enhancing effects of individual exploration and individual exploitation may aid SMEs in their development of ambidexterity at the individual level. Other researchers, such as Cao et al. (2009), who focus on SMEs, find that companies of relatively smaller sizes suffer from limited resources, and the balance dimension of ambidexterity is more suitable considering their unique characteristics. In contrast, it is more beneficial for companies of larger size, such as international firms, to adopt the combined dimension of ambidexterity. According to Patterson and Kerrin (2014), unlike larger

companies, SMEs – due to their resource constraints – should focus on managing trade-offs between exploration and exploitation.

Despite the apparently contradictory propositions by Farjoun (2010) and Cao et al. (2009), we suggest that the two views can be reconciled. As Good and Michel (2013) mention, whether they do so in a simultaneous or rapidly sequential way, individuals must respond to the changing requirements by switching between different tasks and mind-sets. Moreover, under conditions of time pressure and resource scarcity, individuals make their own judgements about how to divide their time and resources between the conflicting demands of exploitation and exploration. Following the propositions of Papachroni et al. (2016), we argue that the relationship between exploration and exploitation (complementary, conflicting or interrelated) results from different perceptions of different individuals who can then make their own judgements as to how to best spend their time and implement specific management approaches (integration, temporal balancing or separation).

### **Antecedents of individual ambidexterity**

The antecedents of individual ambidexterity (De Ruyter et al., 2014), for example individual drivers such as locomotion and assessment (Jasmand et al., 2012), and contextual drivers such as empowerment, team support, and transformational leadership (Yu et al., 2013) have only been discussed recently. Both types of drivers contribute to service-sales ambidexterity. In a similar vein, Raisch et al. (2009) state that organisational mechanisms and individual ambidexterity (ambidextrous individuals) are complementary to each other when they enable ambidexterity. By understanding both personal characteristics and (internal and external) contextual factors, we can more comprehensively conceptualise individual ambidexterity, as Hempel (1952) proposes that an empirical analysis can be used to define a concept by listing its necessary and sufficient conditions.

Considering the importance of antecedents, we further review the antecedents of individual ambidexterity as discussed in the literature. Based on Junni et al.'s (2015) model of HR and organisational antecedents of ambidexterity, we categorise the antecedents of individual ambidexterity in the literature from 2007 to early 2019, as shown in Table 2. The review conducted by Junni et al. (2015) offers an extensive framework of studies that have investigated the HR and organisational antecedents of ambidexterity until 2014. As a considerable number



of studies have appeared since then, we add to the existing framework by reviewing the literature from 2007 to early 2019. Table 2 presents 56 studies. Some of the studies were excluded from Table 2 because they investigate outcomes of individual ambidexterity rather than its antecedents (e.g., Gabler et al., 2017; Rosing and Zacher, 2017) or because they investigate the antecedents of ambidexterity at levels of analysis other than the individual level (e.g., Hodgkinson et al., 2014).

[Insert Table 2. Antecedents of Individual Ambidexterity from the Literature from 2007 to Early 2019]

To date, researchers proposed various personal characteristics to be related to the development of individual ambidexterity, including a locomotion orientation (Jasmand et al. 2012), networks (Rogan and Mors 2014), individual competence (Johansson 2015), cognitive strain (Keller and Weibler 2015), employees' learning orientation (Yu et al. 2015), self-belief and passion (Snell et al. 2015), intrinsic motivation (Kao and Chen 2016), and perceived role expectations (Löwik et al. 2016). These authors observed that some individuals seem to be able to take on contradictory tasks while others fail to do so and that exploring individuals' personal competences is the key to explaining this phenomenon. For instance, according to Snell et al. (2015), individuals' strong self-belief and passion for successfully performing their jobs can enhance their ability to work ambidextrously. Yu et al. (2015) note that employees' learning orientation has a positive influence on service-sales ambidexterity in such a way that it enables individual employees to utilise new knowledge and combine it with their existing knowledge to improve their abilities in performing conflicting tasks.

In addition to personal competences, both internal and external contextual factors play a role in forming and aiding individual ambidexterity. For example, organisational mechanisms are sometimes required to enable ambidexterity at the individual level (Volery et al., 2017). Similarly, organisational and environmental antecedents can influence the development of the balance dimension of ambidexterity (Chang et al., 2011), which is of great relevance to SMEs, as suggested above. Regarding the internal organisational factors, Gibson and Birkinshaw (2004) were first to propose that ambidexterity can be better developed through an appropriate organisational context, which comprises the four characteristics of stretch, discipline, support and trust. In a later study, Mom et al. (2009) confirmed the positive relationships among connectedness, cross-functional interfaces, decision-making autonomy and managerial



ambidexterity. Upon investigating individual research ambidexterity in entrepreneurial universities, Chang et al. (2016) find organisational flexibility to be critical to the ambidexterity of department leaders, which entails both academic and commercialisation activities. Some studies, e.g., Jansen et al. (2006), reveal that external environmental conditions, such as competition and rapidly evolving technology, also play a role in affecting ambidexterity: intertwined dynamic and competitive environments can encourage the pursuit of ambidexterity and make the process more effective. It can be concluded from the aforementioned studies that contextual factors influence individual ambidexterity as much as personal characteristics and must be taken into consideration when investigating the antecedents of individual ambidexterity.

Furthermore, various studies show that personal characteristics and contextual factors are interrelated in affecting individual ambidexterity following Raisch et al.'s (2009) proposition that ambidexterity is likely to be a function of closely interrelated individual and organisational effects. Other studies, for example, Ajayi et al. (2017) show that mutual respect, openness and trust among employees contribute to the fostering of a knowledge-sharing culture that positively affects individual ambidexterity. Yu et al. (2013) show that individual perceptions of specific organisational antecedents play an important role in affecting ambidexterity at the individual level, and also confirm that service-sales ambidexterity is positively related to perceptions of empowerment and team support, which reinforces the idea that both organisational context and individual differences in perception should be considered when managing an ambidextrous strategy. This is in line with our previous statement that we should take into consideration individual perceptions when conceptualising individual ambidexterity.

Considering the unique context of SMEs, individual employees in SMEs are influenced by different mechanisms than employees in larger organisations. Referring to the categories in Table 2, we discuss the differences between SMEs and larger companies in their structures, culture, external environment, social relationships, and HR practices/systems. Structurally, SMEs have flat hierarchies, organic structures, and less formalisation (Hafkesbrink et al., 2012). Individuals are more closely and horizontally connected in an informal manner in that organisational structure, and they are generally given more decision-making autonomy. SME culture can be described as less diverse, more flexible and more industry-specific, which helps these enterprises to maintain flexibility in volatile and competitive environments (Hafkesbrink

et al., 2012). This flexibility in the organisational context is of crucial importance for individuals because they must flexibly adapt to the demands of exploration and exploitation when pursuing ambidexterity, which makes SMEs the ideal context for ambidextrous individuals. The external environment facing most SMEs entails uncertainty and competition, which pose extra challenges for SMEs that lack resources (Prajogo and McDermott, 2014). To meet the changing demands from the external environment and stand out from their competitors, firms often strive to offer innovative products or services. Moreover, SMEs may implement certain cost-control strategies (e.g., economise on staff) to at least maintain performance outcome levels (Chang and Hughes, 2012). Regarding the social relationships in SMEs, connectedness is the most researched antecedent. It refers to the extent to which individuals work together through direct contact (e.g., informal conversations) within the firm (Chang and Hughes, 2012; Prajogo and McDermott, 2014). This work is enabled by the unique structure of SMEs and is sometimes discussed in the literature under the category of organisational structure (e.g., Chang and Hughes, 2012; Prajogo and McDermott, 2014). Various HR practices and systems can be used to stimulate individual ambidexterity, as suggested in the literature (e.g., Caniëls and Veld, 2016; Prieto-Pastor and Martin-Perez, 2015). Common practices/systems include high-involvement HR systems and high-performance HR systems as well as modes of compensation and the use of incentives.

Due to the unique characteristics of SMEs, employees are often confronted with the requirement that they take on tasks outside of their existing job roles. As discussed above, ambidextrous individuals are able to cope with the tensions of managing both exploration and exploitation through self-management (Holmqvist and Spicer, 2012). They interpret those tasks and make choices based on their own knowledge and intuitions, largely due to the lack of organisational structures and measures for managing individual ambidexterity. They also have enough leeway to independently divide their time between explorative and exploitative activities. Thus, it is highly likely that individual ambidexterity is a self-regulated activity in SMEs, and the decision-making process of individuals is deeply influenced by both personal and organisational characteristics.

### **Outcomes of individual ambidexterity**

Investigating the outcomes of individual ambidexterity has always been prevalent in the literature. Of particular interest has been the relationship between individual ambidexterity and

the performance outcomes of individual employees as well as more distant outcomes such as organisational performance. It is increasingly being argued that the excessive pursuit of individual ambidexterity is also likely to lead to negative outcomes, one of the foremost being work intensification (Geary and Trif, 2011). However, few studies have examined the negative outcomes related to the implementation of individual ambidexterity such as stress, cognitive strain, and burnout (e.g., Keller and Weibler, 2015). By including the outcomes of individual ambidexterity in the conceptualisation process, the concept becomes more complete and more comprehensive, which will help researchers as well as practitioners to better understand the concept and the phenomenon, thus facilitating the implementation of individual ambidexterity in organisations.

Studies have examined the relationship between individual ambidexterity and employee performance as well as more distal outcomes such as organisational performance outcomes. Rosing and Zacher (2016) find that individuals show better performance outcomes when they engage in high levels of exploration and exploitation and when exploration and exploitation are at approximately the same level (e.g., in a small service company, a salesperson generates sales whilst providing an adequate amount of customer service). A more comprehensive framework regarding the antecedents, outcomes and moderators of ambidextrous behaviours among frontline employees (Kao and Chen, 2016) shows that intrinsic motivation is positively related to individual ambidexterity, which in turn improves service performance. A positive relationship between individual ambidexterity and performance effects across different organisational levels is also shown by Schnellbacher et al. (2019), confirming that fostering ambidexterity at the individual level can indeed improve organisational performance outcomes.

To achieve individual ambidexterity, employees must conduct both exploitative and exploratory tasks. Organisations often provide resources such as ability-enhancing training programmes, motivation-enhancing incentives, and opportunity-enhancing decision-making autonomy (Mom et al., 2018) to stimulate individual employees' ambidexterity. There is little doubt that ambidexterity-enhancing resources lead to better performance outcomes. However, with limited time and energy, employees can be overly "stretched" or even "strained" as a result of managing contradictory tasks (Gibson and Birkinshaw, 2004). Keller and Weibler (2015) find empirical evidence that a manager's level of ambidexterity is (to a certain extent) positively related to cognitive strain. Taking a behavioural ambidexterity approach, Hunter et al. (2017) suggest that asking individuals to simultaneously juggle exploration and exploitation

is very stressful for them because of the conflicting roles it demands. However, certain personal competences could mitigate the negative outcomes of individual ambidexterity. For instance, an individual with a better ability to handle work stress would encounter less stress resulting from pursuing individual ambidexterity (Zhang et al., 2019).

## **Discussion**

Although the research on individual ambidexterity has become more prevalent over the past decade, no unifying conceptualisation of the term individual ambidexterity has been discussed systematically. One of the main reasons for the lack of a unifying conceptualisation is the relationship between the two fundamental elements of individual ambidexterity: exploration and exploitation. To date, researchers have suggested four major possibilities, namely, the simultaneous pursuit of both orientations, rapidly switching between these two activities, the balance dimension, and the combined dimension. These perspectives essentially exist because the simultaneity and combined perspectives view exploration and exploitation as mutually enhancing and complementary to each other while the switching and balance perspectives identify them as conflicting, which would result in trade-offs (Cao et al. 2009; Simsek et al., 2009). Studies so far have typically focused on one or two of the possibilities; however, there is no integrative framework that considers the full complexity of the relationships between exploration and exploitation. To map out the types of individual ambidexterity resulting from these relationships, we propose a two-by-two typology (Figure 2) to depict the types of individual ambidexterity by referring to Simsek et al.'s (2009) typology of organisational ambidexterity.

In constructing our typology, we first identified two dimensions of individual ambidexterity with regard to the four relationships between individual exploration and exploitation that we discovered in the recent literature. We used the first dimension, 'temporal dimension,' from Simsek et al. (2009), as it contains the same element, simultaneous and sequential, and it applies to both the organisational and individual levels. As discussed above, simultaneous refers to the pursuit of both exploration and exploitation at the same time, and sequential refers to switching or shifting from exploration to exploitation, or the other way around. The second dimension distinguishes between the balance dimension and the combined dimension, as suggested by Cao et al. (2009). Balance refers to maintaining a balance between exploration

and exploitation, and combined refers to the combined magnitude of exploration and exploitation.

Our typology includes four types of individual ambidexterity based on the two dimensions described above, namely, simultaneous-balanced, simultaneous-combined, sequential-balanced, and sequential-combined individual ambidexterity. We believe that different theoretical groundings, antecedents and outcomes for each type of organisational ambidexterity identified in the study of Simsek et al. (2009) can be applied at the individual level. For instance, Ajayi et al. (2017) state that employees' simultaneous pursuit of both explorative and exploitative activities is hindered by the rigid flow of resources, rules and regulations, which means they must find a balance when pursuing both exploitative and explorative activities, which resembles simultaneous-balanced individual ambidexterity in the typology. In their study, organisational context (e.g., knowledge-sharing context) is found to be an antecedent of individual ambidexterity, and increasing employee engagement is a result of individual ambidexterity. As each type of individual ambidexterity is more than simply a definition, we further explored the existing literature to establish, for each type of individual-level ambidexterity, 1) the context in which they have been studied; 2) the antecedents that have been studied (all the antecedents are taken from the existing literature, and there might be interrelations among them); and 3) the outcomes that have been studied. A summary of the example definitions, research contexts, antecedents and outcomes for each type of individual ambidexterity from the existing literature is presented in Table 3.

[Insert Figure 2. A Proposed Typology of Individual Ambidexterity]

[Insert Table 3. An Explanation of Four Types of Individual Ambidexterity]

Second, the antecedents of individual ambidexterity are a source of ambiguity, increasing the difficulty of conceptualising the forms of individual-level ambidexterity. By reviewing the literature, we now know that the extent to which employees are ambidextrous varies within and across contexts. The variance stems from both personal characteristics and the contexts faced by employees. Nishii and Wright (2008) propose that individuals' perceptions of HR practices act as antecedents of their attitudes and behaviours, and the difference in perceptions largely depends on individuals' personal characteristics (e.g., educational background, prior work experience). Individuals perceive and react differently to the antecedents of individual

ambidexterity, such as HR practices, which further leads to variations in organisational performance, as suggested by Nishii and Wright (2008). It may be possible to extend the study of Nishii and Wright (2008) by investigating other antecedents in addition to HR practices and testing whether the difference in individual perceptions acts as a moderator of the relationship between organisational antecedents and individual ambidexterity.

Third, we included the outcomes of individual ambidexterity when we considered the concept as a whole. There is a noticeable research gap regarding the negative outcomes of individual ambidexterity. Identifying the negative outcomes can help the field form a more holistic individual ambidexterity network and help HR practitioners identify appropriate HR practices to mitigate the negative impacts. Moreover, as suggested in the HRM literature, there appear to be a range of relationships between positive and negative outcomes such as parallel outcomes, conflicting outcomes and mutual gains (van de Voorde et al., 2012). The mutual gains perspective suggests that performance outcomes and employee well-being can be enhanced simultaneously while the conflicting outcomes perspective contends that the development of performance outcomes is always at the expense of employee well-being and vice versa (van de Voorde et al., 2012). However, to date, no study in the ambidexterity literature has investigated how positive outcomes (e.g., performance outcomes) and negative outcomes (e.g., stress or strain) are related. Both the differences in the relationship between exploration and exploitation and the differences in individuals' perceptions of the antecedents of individual ambidexterity could lead to different relationships between positive and negative outcomes of individual ambidexterity. Future studies should investigate the possible causes of these relationships with respect to the outcomes.

## **Conclusion**

The number of studies devoted to individual ambidexterity is growing rapidly. However, in our search of the literature, no review thus far has exclusively focused on the concept of individual ambidexterity or taken into consideration the context of SMEs. The present systematic literature review addresses this gap in the literature by comprehensively reviewing the concept of individual ambidexterity, including its antecedents and outcomes. From the review of the existing literature on individual ambidexterity, three main conclusions can be reached. First, individual ambidexterity is a self-regulated activity in such a way that individuals make their

own decisions on how to best distribute their resources over explorative and exploitative tasks. This self-management is affected by both individual characteristics and organisational contextual factors. Second, there are many types of relationship between exploration and exploitation based on two dimensions, namely, the time dimension and the balance dimension. Third, individual ambidexterity leads to both positive and negative outcomes. These conclusions offer further theoretical and practical implications and limitations, and they open up avenues for future research.

Our literature review makes both theoretical and practical contributions to the field of individual ambidexterity. Theoretically, we integrate the ideas from different streams of literature on individual ambidexterity and have built a typology to facilitate a more comprehensive understanding of the concept of individual ambidexterity. To do this, we consider the organisational and personal antecedents of individual ambidexterity, the relationship between individual exploration and exploitation, and the positive and negative outcomes of individual ambidexterity. Especially regarding the relationship between individual exploration and exploitation, we propose a typology of individual ambidexterity combining the temporal and balance dimensions. The typology of individual ambidexterity provides a clearer picture of the concept, which heretofore has lacked focus in the previous research. Future studies can refer to this typology when identifying different types of individual ambidexterity. By doing so, individuals exhibiting different types ambidexterity can be categorised accordingly, and organisations can provide more specific HR practices (e.g. training programmes) for each type. However, the typology is based only on the existing literature. Thus, future studies should try to define each type more accurately and develop measurements for each type of individual ambidexterity. Future empirical studies should also explore the antecedents and outcomes of each type of individual ambidexterity in specific organisational contexts. For instance, Cao et al. (2009) find that pursuing balance is more beneficial to resource-constrained firms such as SMEs because they must manage the trade-offs between explorative and exploitative activities whereas the combination of these two activities is more beneficial to larger firms with access to sufficient resources. Future studies should investigate whether simultaneous or sequential ambidexterity is more suitable for a specific organisational context. We provide an overview of the viewpoints in the literature regarding the relationship between exploration and exploitation. We believe that (to a certain extent) individuals, as agents of ambidexterity at the individual level, consciously make their own judgements and decisions based on whether they perceive exploration and exploitation to be at opposite ends

of the spectrum or synergetic and complementary. Future studies should further investigate which factors contribute to individual differences in perception (e.g., personal characteristics or organisational contextual factors). Additionally, to date, scant research has investigated how the antecedents of individual ambidexterity might be interrelated, which opens up opportunities for future research. For instance, it could be beneficial, both theoretically and practically, to investigate the personal characteristics and contextual factors that mitigate the negative outcomes of work stress that result from pursuing individual ambidexterity.

Practically, by considering the differences between SMEs and larger organisations, we contribute to the attainment of individual ambidexterity in SMEs. The pursuit of ambidexterity has become imperative for most organisations. Considering the unique context of SMEs, fostering ambidexterity at the individual level has been suggested as the most suitable way to develop ambidextrous SMEs. SMEs' unique structure and culture (e.g., less formalisation, more connectedness, and more flexibility) strengthen the interplay between organisational and personal factors, both of which affect the attainment of individual ambidexterity. Moreover, as suggested in the literature (e.g., Hafkesbrink et al., 2012), individual perceptions play an important role in how well individuals can act ambidextrously, such that individuals' personal competences and their perceptions of the organisational antecedents may lead to different levels of individual ambidexterity. Therefore, SMEs can utilise the personal characteristics that are beneficial for developing individual ambidexterity in their recruiting and selection process to recruit individuals with ambidexterity potential. By investigating individuals' perceptions of contextual factors (e.g., formalisation, centralisation and connectedness), we can form a clearer understanding of how individuals respond to contextual factors. This may help HR practitioners (in SMEs) implement more effective practices when developing individual ambidexterity. Moreover, by referring to the types of individual ambidexterity introduced in our typology, SMEs can identify which type of individual ambidexterity is most suitable for their organisation based on their organisational context and external environment. They can then adopt more specific HR practices or provide a more suitable context to facilitate the appropriate type of individual ambidexterity.



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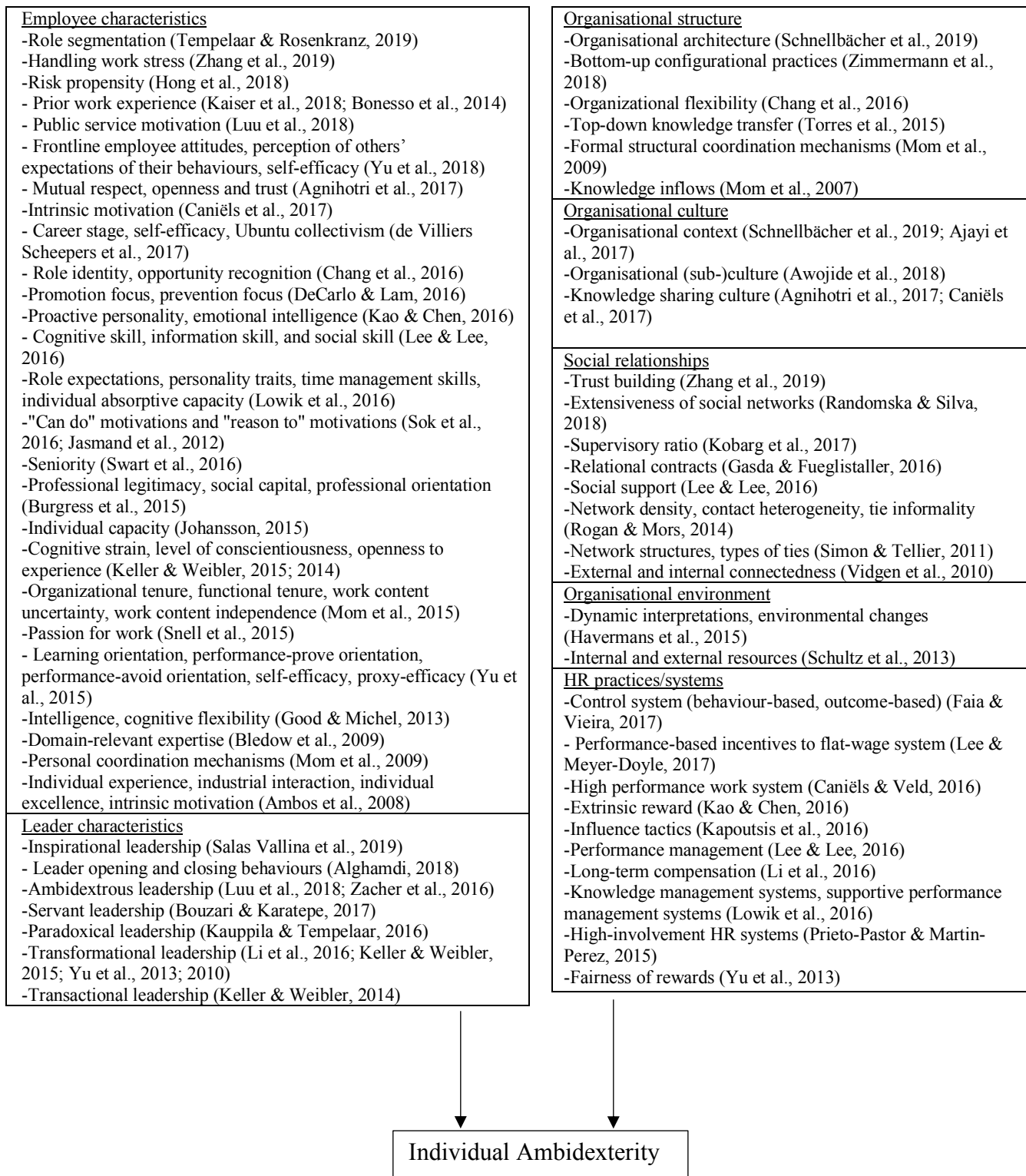
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**Table 1. The Exploration-exploitation Relationship in the Literature**

<b>Viewpoint regarding exploration-exploitation relationship</b>	<b>Studies</b>
<b>Simultaneity</b>	Agnihotri et al. (2017); Bouzari and Karatepe (2017); Caniëls et al. (2017); Snell et al. (2015); Turner et al. (2015); Hodgkinson et al. (2014); Yu et al. (2010)
<b>Switching between tasks</b>	Lee and Meyer-Doyle (2017); Lee and Lee (2016); Löwik et al. (2016); Burgess et al. (2015); Keller and Weibler (2014);
<b>Balanced dimension</b>	Dubard Barbosa et al. (2019); Tempelaar and Rosenkranz (2017); Rapp et al. (2017)
<b>Combined dimension</b>	Rosing and Zacher (2017); Johansson (2015); Mom et al. (2007); Mom et al. (2009)
<b>Simultaneous-balance</b>	Salas Vallina et al. (2019); Alghamdi (2018); Benavides and Ynalvez (2018); Ajayi et al. (2017); Gabler et al. (2017); Chang et al. (2016); Gasda and Fueglistaller (2016); Torres et al. (2015); Vidgen et al. (2011);
<b>Simultaneous-combined</b>	Caniëls and Veld (2016); Sok and O'Cass (2015)
<b>Sequential-balance</b>	Agnihotri et al. (2017); Hong et al. (2018); Sok et al. (2018); de Villiers Scheepers et al. (2017); Kobarg et al. (2017); Swart et al. (2016); Keller and Weibler (2015); Good and Michel (2013); Simon and Tellier (2011); Laureiro-Martínez et al. (2010)
<b>Sequential-combined</b>	Schnellbacher et al. (2019); Kauppila and Tempelaar (2016); Li et al. (2016); Mom et al. (2015); Snell et al. (2015)
<b>Evolving over time or depending on the perspective</b>	Agnihotri et al. (2017); Awojide et al. (2018); Havermans et al. (2015); Bledow et al. (2009) (sequential);

**Table 2. Antecedents of Individual Ambidexterity from Literature in 2007-Early 2019**



**Table 3. An Explanation of Four Types of Individual Ambidexterity**

<b>Type of Individual Ambidexterity</b>	<b>Example definition from literature</b>	<b>Context</b>	<b>Antecedents (might interact with each other)</b>	<b>Outcomes</b>
<b>Wire dancer (Simultaneous-balance)</b>	To be ambidextrous, workers should be able to be explorative and exploitative simultaneously in equal amounts (Alghamdi, 2018).  When simultaneously achieving research publication and research commercialization at the individual level, (individuals) are encouraged to make their own judgments about how to sustain an optimal balance of academic works (Chang et al., 2016).	Knowledge intensive context, SMEs (resource constrained organisations with fewer regulations)	Inspirational leadership; ambidextrous leadership; job autonomy; training; less bureaucracy; opportunity recognition; relational contracting	employee engagement; commitment to service quality; job performance; role conflict
<b>Synergist (Simultaneous-combined)</b>	Individual ambidexterity is the behavioural orientation of employees towards combining exploitation and exploration related activities...simultaneously (Caniëls et al., 2017).  The extent that new product innovation's effect on performance can be enhanced when the individual engages in high levels of creativity and attention-to-detail simultaneously within the form of combined individual ambidexterity (Sok and O'Cass, 2015).	Organisations facing changing demands and need rapid innovations	Empowerment	innovative work behaviour; financial performance
<b>Pendulum (Sequential-balance)</b>	An ambidextrous manager as someone who is equally engaged in exploration and exploitation tasks with equal dexterity to avoid path dependency and obsolescence of knowledge and competencies.	Continuous learning context, rapidly changing environment	Handling work stress; social support; seniority (career stage); self-efficacy; individual enabling action; leadership; network structures	Performance outcomes; cognitive strain

	Exploration and exploitation tasks have to be conducted consecutively and in close correspondence to the situational context (Keller and Weibler, 2015)			
<b>Juggler (Sequential-combined)</b>	Individual ambidexterity consists of combining the exploration of new opportunities and the exploitation of existing capabilities over a period of time. In contrast to companies, which can distribute these different approaches among organizational units or team members, individuals cannot simultaneously explore and exploit at a single point in time. Individuals have to overcome the challenges of distributing resources between exploration and exploitation and how to integrate the outcomes to generate better results (Schnellbacher et al., 2019).	SMEs (with flatter structure); uncertain and interdependent work contexts; organisations facing changing demands and rapid innovation	Organisational architecture; organizational context; self-efficacy; paradoxical leadership; transformational leadership; tenure; high-involvement HR systems; management support	Performance outcomes