



UvA-DARE (Digital Academic Repository)

Past Career in Future Thinking

How Career Management Practices Shape Entrepreneurial Decision Making

Engel, Y.; van Burg, E.; Kleijn, E.; Khapova, S.

DOI

[10.1002/sej.1243](https://doi.org/10.1002/sej.1243)

Publication date

2017

Document Version

Final published version

Published in

Strategic Entrepreneurship Journal

License

CC BY

[Link to publication](#)

Citation for published version (APA):

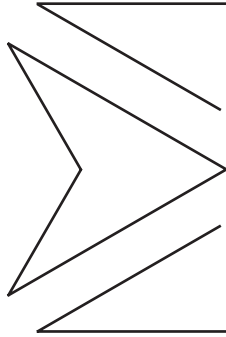
Engel, Y., van Burg, E., Kleijn, E., & Khapova, S. (2017). Past Career in Future Thinking: How Career Management Practices Shape Entrepreneurial Decision Making. *Strategic Entrepreneurship Journal*, 11(2), 122-144. <https://doi.org/10.1002/sej.1243>

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.



PAST CAREER IN FUTURE THINKING: HOW CAREER MANAGEMENT PRACTICES SHAPE ENTREPRENEURIAL DECISION MAKING

YUVAL ENGEL,^{1*} ELCO VAN BURG,² EMMA KLEIJN,² and SVETLANA N. KHAPOVA²

¹University of Amsterdam, Amsterdam, The Netherlands

²VU University Amsterdam, Amsterdam, The Netherlands

Research Summary: This study builds a grounded model of how careers shape entrepreneurs' preferences for causal and effectual decision logics when starting new ventures. Using both verbal protocol analysis and interviews, we adopt a qualitative research approach to induct career management practices germane to entrepreneurial decision making. Based on our empirical findings, we develop a model conceptualizing how configurations of career management practices, reflecting different emphases on career planning and career investment, are linked to entrepreneurial decision making through the imprint that they leave on one's view of the future, generating a tendency toward predictive and/or creative control. These findings extend effectuation theorizing by reformulating one of its most pervasive assumptions and showing how careers produce distinct pathways to entrepreneurial thinking, even prior to entrepreneurial entry.

Managerial Summary: Treating your own career as a start-up impacts how you make decisions when actually becoming an entrepreneur. Based on empirical findings, we explain why and how sets of career management practices are distinctively linked to the use of different logics when making entrepreneurial decisions. Individuals who throughout their careers have emphasized investments in skills and networks over efforts to forecast and plan develop a general view of the future in which creative control dominates predictive control. The opposite is true for those who rely on managing their careers through planning but remain passive in their career investments. Upon entry to entrepreneurship, these differences become relevant such that some entrepreneurs rely on attempts to predict the future while others actively try to create it. © 2016 The Authors. Strategic Entrepreneurship Journal published by Strategic Management Society.

'In my career, I hadn't really thought of myself as an entrepreneur, but I had thought that I was responsible for myself. So in a sense, I had the thought that I'm the owner of my own business, and being the owner of yourself, it's how do you invest in yourself,

how do you take responsibility for being better [...]?' I hadn't thought that the skill set of entrepreneurs, when I was going through as an employee, was the skills that I need. It was only later, when I started doing entrepreneurship, that I realized that those skills were the precise skills that would enable me to invest in myself and help me both create the future and adapt to the future.'

Keywords: career; career management practices; entrepreneurial decision making; effectuation; causation

*Correspondence to: Yuval Engel, University of Amsterdam, Plantage Muidergracht 12, 1018 TV, Amsterdam, The Netherlands. E-mail: y.engel@uva.nl

– Reid Hoffman, Founder of PayPal and LinkedIn

INTRODUCTION

When starting a new venture, entrepreneurs are confronted with decisions that can define and shape their venture's evolution (Aldrich, 1999). Studying the nature of cognitive differences in approaching these decisions is therefore essential for entrepreneurship research (Grégoire, Corbett, and McMullen, 2011; Shepherd, Williams, and Patzelt, 2015). Scholars have made significant progress in this regard by identifying and distinguishing between two decision-making logics that are commonly applied in entrepreneurial settings: causation and effectuation (Sarasvathy, 2001). This growing stream of research draws much legitimacy from an influential proposition and the persistent finding that experts—defined as highly experienced entrepreneurs—predominantly rely on effectuation when confronted by uncertainty (Dew *et al.*, 2009). In other words, an extensive career in starting and operating new ventures is argued to shape how entrepreneurs process information, reason, and make decisions.

However, mounting evidence shows that nonexperts, and even novice entrepreneurs, also often rely on effectuation (Brettel *et al.*, 2012; Engel *et al.*, 2014). Even when we accept that 'the relationship between entrepreneurial experience and the increased use of effectual logic is strong and significant' (Sarasvathy, 2012: 7), we are left to wonder what shapes the use of effectuation among entrepreneurs without prior entrepreneurial experience. In short, because direct founding experience is either missing or completely absent for most entrepreneurs (Sørensen and Fassiotto, 2011), theory provides a useful but incomplete answer to the question that we explore in this study: *how careers shape entrepreneurial decision making*.

We, therefore, aim to extend effectuation theory by challenging and refining one of its most dominant assumptions—that career experience exclusively refers to experience as an entrepreneur (Sarasvathy, 2008). Instead, we initially build on a broader sociological perspective of careers by acknowledging that career histories, even prior to entrepreneurial entry, generate qualitative differences in how individuals engage in entrepreneurial tasks (e.g., Burton, Sørensen, and Dobrev, 2016; Sørensen and Fassiotto, 2011). We then further distinguish our approach by augmenting the perspective of entrepreneurs as 'organizational products' (Freeman, 1986) with the recognition that individuals are also 'agents

of their career destinies' (Inkson and Baruch, 2008: 217), that is: the capacity to engage in career management practices over time (Arthur, 2014; King, 2004; Tams and Arthur, 2010). Inspired by these insights from contemporary career theory, we use in-depth interviews and verbal protocol analysis with 28 Dutch entrepreneurs to induct a set of career management practices (e.g., DiRenzo and Greenhaus, 2011; King, 2004) that, at first, do not seem to be tied to the task of establishing new ventures but rather become such if and when entrepreneurship is initiated (Aldrich and Yang, 2013). Subsequently, we develop an empirically grounded model that depicts the relationship between career management practices and entrepreneurial decision making.

This study makes several important contributions. First, we address the question of how entrepreneurs obtain their cognitive structures (Mitchell *et al.*, 2007) from a novel career perspective (Burton *et al.*, 2016). Thus, this study advances an important extension to effectuation theory (Read *et al.*, 2016; Sarasvathy, 2001) and broadens our knowledge on the antecedents of entrepreneurial decision making. Furthermore, we respond to calls to study the origins of entrepreneurial cognition (Grégoire *et al.*, 2011). Unlike previous efforts to bring the notion of a career into entrepreneurship research by focusing on careers as merely a succession of jobs or as a source of human and social capital (e.g., Davidsson and Honig, 2003; Sørensen and Fassiotto, 2011), our study is unique because we focus on career management practices as a relevant feature of what individuals do with their working lives and how they bring such practices to bear on the entrepreneurial process.

THEORETICAL BACKGROUND

Because this study aims to build a grounded theory that extends effectuation theory, we initially offer a brief overview of the relevant literature. Next, we introduce research on contemporary careers, which provides the background for inductively developing theory about how careers shape entrepreneurs' preferences for causal and effectual decision logics.

Causation and effectuation: entrepreneurial decision-making logics

In interpreting her groundbreaking study of expert entrepreneurs, Sarasvathy (2001) defines two distinctive types of decision-making logics—namely,

causation and effectuation. Causation is referred to as a rational reasoning model that emphasizes prediction and the discovery of opportunities that exist within a given problem space (Kuechle, Boulu-Reshef, and Carr, 2016; Sarasvathy, 2008). When an entrepreneur applies a causal logic, he/she will try to predict an uncertain future by starting with a given goal, focusing on the expected return, emphasizing competitive analyses, and attempting to avoid unexpected contingencies. Conversely, effectuation emphasizes a logic of creative control in which the entrepreneur focuses on the potential opportunities that can be crafted by applying existing means to reshape the problem space itself (Sarasvathy, 2001; Welter, Mauer, and Wuebker, 2016). Hence, when applying an effectual frame, entrepreneurs seek to control an unpredictable future by starting with a given set of means, focusing on what they can afford to lose, emphasizing partnerships, and exploiting unexpected contingencies as they arise.

Despite these differences, Sarasvathy (2001: 245) reminds us that ‘both effectuation and causation are integral parts of human reasoning and can occur simultaneously, overlapping and intertwining over different contexts of decisions and actions.’ Hence, in practice, an entrepreneur is expected to vary his/her use of these logics depending upon myriad factors, such as the decision context, his/her individual preference, or the venture’s life cycle (e.g., Berends *et al.*, 2014; Reymen *et al.*, 2015). Although we acknowledge these and other factors, we follow Sarasvathy’s (2008: 131) observation that they ‘do not rule out the argument that expert entrepreneurs may have *learned* to prefer an effectual logic.’ This view is consistent with a long line of scholars writing about how decisions tend to gravitate towards a certain ‘dominant logic’ (March, 2006; Mintzberg and Waters, 1985; Wiltbank *et al.*, 2006). Thus, we evince a particular interest in examining how the degree of emphasis on effectual or causal logic during the initiation of a new venture would be shaped by the idiosyncratic nature of one’s career.

The career literature and entrepreneurship

Given the theory-developing nature of this study, we refrain from limiting our purview to any

specific career framework or theory *ex ante*. Instead, we initially draw on a broader definition of a career as ‘an individual’s work-related and other relevant experiences, both inside and outside of organizations, that form a unique pattern over the individual’s life span’ (Sullivan and Baruch, 2009: 1543). In addition to recognizing movement between jobs, occupations, or industries, this definition emphasizes individuals’ interpretations of their career experiences and the decisions that shaped them.

Careers have been the subject of inquiry in a growing set of entrepreneurship studies (e.g., Burton *et al.*, 2016; Sørensen and Fassiotto, 2011). Focusing on structural aspects of a career such as movement between different positions, jobs, occupations, and industries, this research has illuminated our understanding of careers as key inputs into entrepreneurial processes (Shane and Khurana, 2003). For the most part, however, career studies in the entrepreneurship literature have been informed by a strong sociological doctrine, which emphasizes the role of existing organizations in either prompting or hindering individuals’ entrepreneurial behavior and, thus, favors a portrayal of entrepreneurs as ‘organizational products’ (Freeman, 1986). Consequently, absent from extant theories are notions of individual career agency—‘the process of work-related social engagement, informed by past experiences and future possibilities, through which an individual invests in his or her career’ (Tams and Arthur, 2010: 630). This omission of agency from current discussions of careers in entrepreneurship research is somewhat surprising given Hannan’s (1988: 171) long-standing observation that ‘an obvious but easily overlooked fact is that new firms and new organizational forms are created by individuals trying to fashion careers.’ Thus, to complement extant scholarship about careers in entrepreneurship (Burton *et al.*, 2016), it is vital for this study to be informed by the literature on careers from multiple perspectives and in an interdisciplinary fashion (Arthur, Hall, and Lawrence, 1989; Gunz and Peiperl, 2007; Parker, Khapova, and Arthur, 2009).

Contemporary career literature has developed several frameworks to describe a wide variety of career paths, experiences, orientations, mind-sets, and practices (Sullivan and Baruch, 2009). Traditionally, careers were thought to comprise several linear stages, lined up hierarchically, that evolved

within the structure of one or two organizations (e.g., Rosenbaum, 1979; Super, 1957; Wilensky, 1961). However, continuing environmental changes and rising uncertainty levels owing to increased globalization and economic turbulence have ultimately led to the arrival of alternative or 'new' career types (e.g., DiRenzo and Greenhaus, 2011; Sullivan and Baruch, 2009). The 'boundaryless career' (Arthur and Rousseau, 1996), 'protean career' (Hall, 1996), and 'post-corporate career' (Baruch, 2006) are prime examples of such career models. In these career forms and unlike in the linear traditional career, one's working life is viewed as independent from organizational boundaries, and it can, therefore, evolve in multiple directions simultaneously (Arthur and Rousseau, 1996). Moreover, 'new' careers are often characterized by organizational and occupational mobility such that career transitions, both physically and psychologically, are much more frequent (Sullivan and Arthur, 2006). The increasing uncertainty present in one's career is therefore a fundamental element that distinguishes the new careers from the more secure employment reality of the traditional career.

With the emergence of different career models, researchers have also observed a large variety of related practices that individuals enact to address and manage their employment situations (Briscoe *et al.*, 2012; DiRenzo and Greenhaus, 2011). Indeed, considerable research attention is now directed toward understanding how individuals can proactively manage their careers (King, 2004; Lent and Brown, 2013). Accordingly, career management is a dynamic process involving co-occurring practices such as reputation and identity building, investments in skills and expertise, networking, and advice seeking (King, 2004; Parker *et al.*, 2009). A person for whom the traditional career represents the predominant employment reality is likely to engage in different career management practices than someone actualizing a new career (Sullivan and Baruch, 2009).

The rationale for examining the specific relationship between career management and decision making can be traced back to a basic insight in cognitive psychology (March and Simon, 1958): individuals tend to repeat things they have learned. Therefore, decision making is primarily a function of prior experience (e.g., Cyert and March, 1963; Gabrielsson and Politis, 2011; Gunz and Jalland, 1996; Ucbasaran, Westhead, and Wright, 2009). In

other words, if we accept the premise that careers are linked to the development of entrepreneurship-relevant habits and routines (Aldrich and Yang, 2013; Dew *et al.*, 2009; Sørensen and Fassiotta, 2011), we must also accept the possibility that practices of career management influence entrepreneurial decision making.

Hence, in this study, we focus on, first, how careers can serve as a vehicle of experience accumulation and, subsequently, on how the proactive interaction of experience in a career environment shapes one's preference for causal or effectual decision making. Accordingly, we offer valuable extensions to theories of entrepreneurial decision making by elaborating on the content and meaning of career management for entrepreneurship scholarship and, more specifically, by explaining how career management can drive causal and effectual decision making.

METHODS

Because the question we address in this study has yet to be investigated, our primary objective was to extend theory (Vaughan, 1992) by taking a grounded theory approach to inductively identify and understand the processes and mechanisms through which careers can be related to entrepreneurs' use of causation and effectuation. Hence, although we take effectuation theory as our vantage point on entrepreneurial decision making, we use a grounded theory approach (Glaser and Strauss, 1967) to induct relevant career-related concepts.

Sampling

Our sample comprised 28 entrepreneurs, all of whom are firm founders and/or owners of at least one venture. Potential respondents initially were identified through proximate professional contacts and subsequently were screened to ensure compliance with our theoretical sampling criteria. Our key theoretical sampling criterion, drawn from both the effectuation and career literatures, was entrepreneurial experience in terms of: (1) the number of ventures started; and (2) the number of career transitions (defined as a career change in employer, occupation, and/or industry) as an indicator of the type of career (traditional or 'new' career). To

ensure the comparability of the respondents, participants were required to have at least five years of work experience, either as employees or as self-employed individuals. Moreover, the sampling context was kept constant because all entrepreneurs were Dutch nationals and founded businesses based in The Netherlands. Table 1 provides further descriptive data on the sample.

Data collection

Data were collected in meetings with each respondent in which two data collection methods were used sequentially. The first part involved a think-aloud verbal protocol (Ericsson and Simon, 1993) in which the respondents were asked to think aloud

continuously as they were faced with decision-making assignments commonly required to set up a new venture (cf. Sarasvathy, 2008). Verbal protocols have been shown to be a productive method for studying cognitive processes and heuristic strategies employed by people in many problem-solving and decision-making tasks (Ericsson and Simon, 1993), including entrepreneurial tasks (Dew *et al.*, 2009). The protocol we adopted was the validated and empirically tested research instrument used by Dew *et al.* (2009) in which the respondents were asked to solve two problem assignments to transform an imaginary product, a game on entrepreneurship called *Venturing*, into a firm.

After the verbal protocol was completed, we conducted semi-structured interviews with each

Table 1. Sample characteristics

Respondent	Gender	Age	Education	Years as employee	Number of career transitions	Number of ventures started	Years of entrepreneurial experience	Current venture industry
R1	Male	51	University (dropout)	0	2	2	29	Publishing
R2	Male	48	PhD	11	2	1	6	Consultancy
R3	Male	50	Tertiary education	3	1	1	26	Retail
R4	Male	56	University	19	2	2	12	Consultancy
R5	Male	27	Professional education	2	1	1	3	Relational gifts
R6	Male	64	Professional education	2	1	2	38	Real estate and retail
R7	Male	51	University	16	3	2	9	Recruitment
R8	Male	42	Professional education	0	0	1	16	Retail
R9	Female	41	Professional education	0	0	1	17	Jewelry
R10	Female	52	Professional education	17	4	2	8	Recruitment
R11	Male	31	High school	8	2	2	3	Sport
R12	Male	36	Professional education	8	2	2	6	Real estate
R13	Male	48	Tertiary education	25	6	3	5	Insurance
R14	Male	54	Professional education	8	1	1	22	Transportation
R15	Male	53	University (dropout)	10	1	1	21	Accountancy
R16	Male	40	Tertiary education	17	3	1	5	Retail
R17	Male	41	University	11	3	1	3	Finance
R18	Male	40	Professional education	8	3	3	6	Web development
R19	Male	53	High school	11	4	4	23	Air cargo and retail
R20	Male	55	Professional education	23	6	2	4	Aircraft software
R21	Male	60	Professional education	3	3	3	31	Hospitality
R22	Male	45	University	3	1	1	16	Law
R23	Female	35	Professional education	12	2	1	1	Child daycare
R24	Female	39	Professional education	10	4	2	4.5	Event services
R25	Female	67	University	25	4	2	11	Law
R26	Male	43	Professional education	15	3	1	2	Software
R27	Male	61	Professional education	38	8	1	4	Finance
R28	Male	66	Tertiary education	41	1	1	5	Trade
Average		48.18		12.36	2.63	1.64	12.01	

respondent about his/her entire career. The interview protocol was designed to elicit a detailed and lengthy chronological narrative of the respondents' careers, starting from their highest educational level and continuing through the establishment of their (latest) venture. Each interview had a similar structure, but probes varied and were tailored according to the specific interview situation. Additionally, the participants were asked to provide a copy of their resumes and fill out questionnaires with career details in order to crosscheck the data acquired through the narratives. When we encountered missing data (in eight cases), secondary sources (e.g., professional networking sites such as LinkedIn) were consulted (cf. Chen and Thompson, 2016).

Making these combined efforts and following methodological recommendations in recent career studies (e.g., Chen and Thompson, 2016; Dokko and Gaba, 2012), we were able to reconstruct a complete career timeline for each respondent. These timelines included, when available, a listing of each job (recorded in chronological order), career transitions (including transitions between jobs, geographical locations, and industries), and whether a transition was voluntary or forced.

Analytic strategy

Both the think-aloud verbal protocols and the semi-structured interviews were recorded and transcribed thereafter. Next, we coded the verbal protocols by using the coding scheme developed by Reymen *et al.* (2015). Because our objective was to determine the respondents' decision-making orientations, we were able to use these preset elements. Based on the counts of codes in each transcript for the two decision-making logics, we labeled the respondents at the aggregate level as having a propensity toward either effectual or causal reasoning (difference of > 2 coded instances) and added a mixed preference category when this difference was too small (difference < 2). At the level of the individual dimensions of effectuation and causation, we coded a preference for an effectual or a causal principle (difference > 1) or a mixed preference (difference < 1). To assess the reliability of the coding, the second author independently coded semantic chunks from the verbal protocols. Comparison between the initial coding and this reliability check showed high inter-coder agreement

($k = 0.8$, Cohen, 1960). Any disagreements were discussed and resolved.

Next, turning to the career data, we initially used the career histories for each respondent (cf. Dokko and Gaba, 2012) to plot a graphical career timeline. On these timelines, which were used in the first round of cross-case analyses, we depicted codes for the number of career transitions, number of industries, number of ventures, and industry uncertainty. Subsequently, we moved over to the career narratives and used an open coding strategy (Corbin and Strauss, 1990; Glaser and Strauss, 1967) to identify themes and categories with potential research significance. Our first round of coding resulted in a large set of descriptive codes. During the second coding phase, we systematically reassessed the original descriptive codes and refined them by consolidating codes into more-abstract and general groupings. We then compared different groupings of the codes with the verbal protocols that had been categorized previously (i.e., propensity toward effectuation, propensity toward causation, or mixed preference) to identify possible patterns and relationships. At this point, we were also able to move up a level of analysis and start plotting each individual respondent in accordance with these categories. We particularly searched for the theoretical dimensions underlying these categories to understand how they fit together into a coherent image (e.g., Pratt, Rockmann, and Kauffmann, 2006). Thus, we went back and forth between our empirical categories and the literature in search of clarity in our inducted constructs. In addition, we focused our efforts on explaining how these themes relate to entrepreneurial decision making and, more specifically, effectuation theory. Our data analysis process is summarized in Figure 1.

FINDINGS

Step I: cross-case analyses based on respondent characteristics

Based on both the effectuation and career literatures and consistent with our theoretical sampling, we explored the effect of entrepreneurial experience and the number of career transitions on the preference for either causal or effectual decision making. Table 2 presents a cross-case summary of the findings concerning the decision-making preferences in our sample.

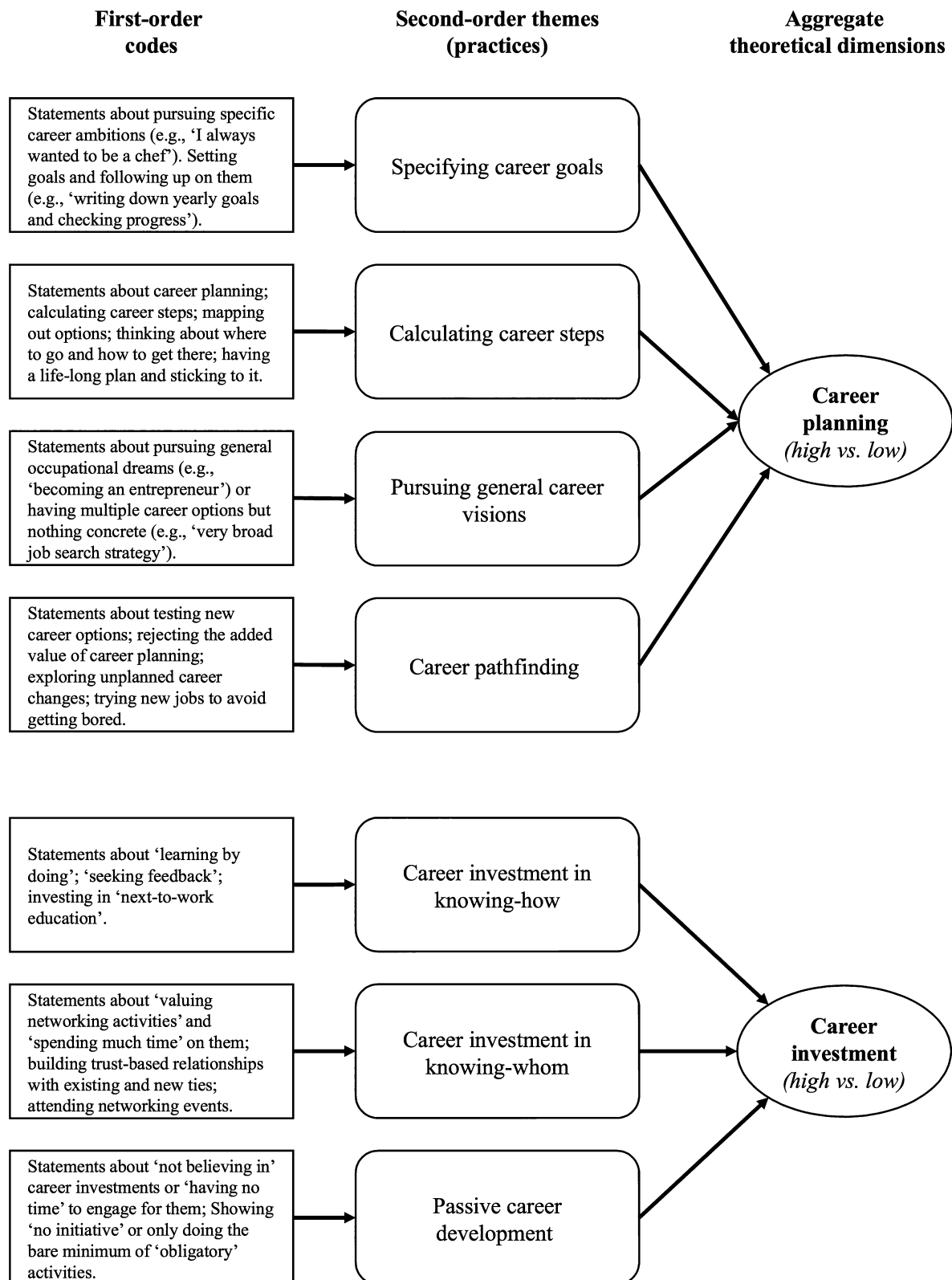


Figure 1. Data structure

Table 2. Cross-case summary of findings

Case	Career planning emphasis	Career investment emphasis	Decision-making emphasis	Frequently used causal principles	Frequently used effectual principles
R1	Low	Medium	Effectuation		No clear differences
R2	High	Medium	Causation	Principles 1 and 3	
R3	Medium	Medium	Mixed	Principle 3	
R4	Low	High	Effectuation		Principles 1 and 3
R5	Medium	Low	Causation	Principles 2 and 3	
R6	Low	Medium	Effectuation		Principles 1 and 3
R7	High	Low	Causation	No clear differences	Principle 4
R8	Medium	Low	Causation	Principle 3	
R9	Low	Medium	Effectuation		Principles 1, 2, and 4
R10	Low	High	Effectuation		Principle 3
R11	Medium	Medium	Causation	Principle 3	
R12	Low	Low	Effectuation		Principle 3
R13	Medium	High	Mixed	No clear differences	No clear differences
R14	Medium	Low	Causation		Principle 3
R15	Low	Medium	Effectuation		Principles 1 and 3
R16	Medium	Medium	Mixed		Principle 1
R17	Low	Medium	Effectuation		Principle 3
R18	Low	Medium	Effectuation		Principles 1, 3, and 4
R19	Low	Medium	Mixed	No clear differences	Principle 1
R20	Medium	Medium	Mixed	Principle 1	
R21	Low	Medium	Effectuation		Principle 1
R22	Low	Medium	Mixed		No clear differences
R23	Low	Medium	Effectuation		Principle 3
R24	Low	Medium	Effectuation		Principles 1 and 3
R25	Medium	Medium	Mixed	No clear differences	No clear differences
R26	High	Medium	Causation	Principle 3	
R27	Low	Medium	Mixed	No clear differences	No clear differences
R28	Low	Low	Mixed	No clear differences	No clear differences

Causation principles: [P1 Goal-oriented, P2 Avoiding, P3 Competitive analysis, P4 Expected return]; Effectuation principles: [P1 Means-oriented, P2 Leveraging, P3 Partnerships, P4 Affordable loss]

The effectuation literature shows the effect of entrepreneurial experience on the use of effectual decision making (e.g., Dew *et al.*, 2009; Dew *et al.*, 2015). Therefore, we split our sample into two equal groups—the first consisting of novices who remained in their first ventures and the other consisting of serial entrepreneurs (see Table 3, Panel A). As a group, the serial entrepreneurs indeed had a higher tendency to use effectual decision making. However, we also found effectual decision making in the novice group (cf. Engel *et al.*, 2014), which warrants further inquiry into how (pre-entrepreneurial) careers shape entrepreneurial decision making.

Similarly, in the career literature, ‘new’ career types, such as the boundaryless career, represent careers with multiple career transitions and higher levels of uncertainty than traditional careers

(Arthur and Rousseau, 1996). Because effectuation theory refers to uncertainty as its core boundary condition (Perry, Chandler, and Markova, 2012; Sarasvathy, 2001), individuals who experienced more uncertainty in their careers might develop effectual decision-making tendencies. However, to the extent that this distinction can be captured by examining the number of career transitions, the analysis summarized in Table 3 (Panel B) does not show clear patterns.

To further explore how career differences are related to effectual and causal decision-making preferences, we analyzed the complete career timelines of all individuals. This analysis shows differences in not only the number of career transitions and the number of ventures a person was involved in (elements consistent with our theoretical sampling) but also the number of different industries and the

Table 3. Summary of cross-case analyses

	Panel A			Panel B			Panel C			Total sample
	Cross-case analysis by entrepreneurial experience			Cross-case analysis by number of career transitions			Cross-case analysis by career management configurations			
	Novice [1 venture started]	Serial [more than 1 venture started]	Low number of career transitions [0-1]	Medium number of career transitions [2-3]	High number of career transitions [4 or more]	More career planning and less career investment	Equal emphasis	Less career planning and more career investment		
Number of cases	14	14	8	13	7	6	7	15	28	
Number of females	2	3	1	1	3	0	1	4	5	
Average age	46.1	50.2	47.3	45.9	53.6	44.2	49.3	49.3	48.2	
Average number of ventures started	1.0	2.4	1.0	1.8	2.3	1.2	1.6	1.9	1.7	
Average years of entrepreneurial experience	10.5	13.5	15.8	8.5	8.5	9.7	8.6	14.6	12	
Average number of career transitions	1.9	3.4	0.8	2.5	5.1	1.7	2.7	3.0	2.6	
Number of causal cases	5	2	3	4	0	6	1	0	7	
Number of mixed cases	5	4	3	1	5	0	5	4	9	
Number of effectual cases	4	8	2	8	2	0	1	11	12	

uncertainty in these industries (indicated by multiple transitions or short-term jobs). Graphical inspection and coding of these timelines was combined with the analysis of effectual and causal preferences (as presented in Table 2). This graphical inspection suggests that people with long entrepreneurial careers prefer effectual decision making, and a similar pattern can be found for people who worked in industries with higher levels of uncertainty and/or worked in larger numbers of industries.

Collectively, these cross-case analyses indicate that careers indeed affect entrepreneurs' decision-making preferences. However, such quantitative differences and the analysis of the career timelines, while hinting at general tendencies, do not allow clear conclusions concerning how careers shape effectual and/or causal decision making. Therefore, we turn to an in-depth inductive analysis of the career narratives themselves. As we detail later, this analysis points to career management practices as important underlying mechanisms that shape careers and decision-making preferences. A summary of our results is also compared with previous cross-case analyses (see Table 3, Panel C), and it shows much clearer patterns that we describe, interpret, and elaborate on below.

Step II: career management practices

Our analysis of entrepreneurs' careers exposed seven career management practices that are particularly relevant with regard to their relationship with entrepreneurial decision making. We start by defining and illustrating these second-order themes, which are clustered in two career management configurations: (1) career planning; and (2) career investment. Although these configurations of practices are not mutually exclusive, they represent distinct and theoretically meaningful approaches to career management. We show that whereas our inducted constructs pertain to what individuals do to manage their careers, they also are closely related to how individuals think about entrepreneurial decision problems. Illustrations from the study itself (see also Table 4) are used to elucidate the concepts and their relationships.

Career planning

We observed clear differences in how the entrepreneurs addressed planning in their careers. Some

were consumed with the idea that their future career should be actively planned and forecasted, whereas others adapted their careers based on emerging possibilities and options. We found four practices that individuals enacted in planning their future careers: (1) specifying career goals; (2) calculating career steps; (3) pursuing general career visions; and (4) career pathfinding.

Specifying career goals

Interviewees who were very specific in their career goals talked about particular goals they had in mind, such as 'becoming a manager.' They were then able to entertain the promise of long-term job security and, often together with their employing organization, establish clear paths for their career development in a sequence of positions carrying increasing responsibility, status, and rewards. This type of focus on career goals appeared repeatedly in the interviews:

'Above all, thinking ahead and not getting caught up in details with the things you are doing today. So above all, thinking like what do I want to achieve? Where do I have to go? And how am I going to get there? And what do I need to get there?...Maybe others think differently, but I am really into thinking about where I want to go.' [R20]

Calculating career steps

People who calculate their career steps carefully consider the moves required to reach their intended career goals. They develop mental career paths that ideally they would take, and career options are evaluated against this plan. As one interviewee remarked:

'Every year, I write down what I would like to have achieved, and every half year and also every month, I adjust it so that I know what I would have achieved at the end of the month.' [R2]

In this respect, respondents who managed their careers by cautiously calculating every step were very strategic and reported that without a clear plan, without a trajectory to their goals, they felt

Table 4. Supporting quotes for inducted career management practices

Career management practice	Exemplary evidence
Career planning	
Specifying career goals	<i>'I have a vision concerning where I want to be and what I want to do from now until I am around the age of 50 or so. But that is what I always have done and how I arranged my life...to accomplish those things.'</i> [R16]
Calculating career steps	<i>'I like to think ahead to not get lost in the details of the daily stuff. So I think in particular about what do I want to achieve? Where do I want to go? And how should I do that?...This probably is something personal for me. Other entrepreneurs might think differently, but I am really focused on where I want to go.'</i> [R20]
Pursuing General career visions	<i>'You cannot enforce goals...it all depends on the moment and opportunity...you cannot force things to happen.'</i> [R28]
Career pathfinding	<i>'It was actually just a bit of opportunism...I just came along and I said 'it looks nice and it is easy to make some money with it.' At that moment, I was in fact quite bored at my work and did not have a challenge...At that moment, this came along, and I did it for half a year.'</i> [R3]
Career investments	
Career investments in knowing-how	<i>'Yes [I am] always [busy with enlarging skills and knowledge]. Apart from the fact that in my profession, you have to earn a certain amount of education points a year that are obligatory...I tend to spend a lot more time on it. I do this because it interests me, but also to stay up to date...and be more knowledgeable than my opponent.'</i> [R22]
Career investments in knowing-whom	<i>'Some people know more than me about a certain topic, and I can ask them for advice or just talk with them. So, sometimes, I think, that's a good idea or that's a bad idea, or I need to shape that idea. Then, I just go to people to drink a cup of coffee with people. That's what I am constantly doing.'</i> [R18]
Passive career development	<i>'In general, I will only invest in learning something when I need it. I [would] rather focus on the things I want to accomplish than spending my time on those things.'</i> [R14]

lost. Consequently, the career timelines of these respondents show continuity in that they stayed within one industry or with a few related employers before moving into entrepreneurship in the same domain.

Pursuing general career visions

In contrast with people who manage their careers by specifying clear career goals, some individuals expressed broader aspirations that can be perceived only as long-term visions for their careers. When talking about their dreams of following a career that they 'like,' they often described their career management not as a race after any particular position or job, but as the constantly changing pursuit of whatever they liked doing at any given moment. Their career timelines, thus, typically show multiple, occasionally quite unconnected, career

transitions. For instance, referring to his choice regarding his domain of study, one interviewee stated:

'I did not aim for a specific diploma or something; I just wanted to do things that I liked, and one of those was French literature, and another one translating...' [Interviewer]: *'Why did you eventually choose to study law?'* [Respondent]: *'Well, yes, because it was just very general and, like many others of my generation and maybe now as well, I thought, let's do that; it is at least a very broad study domain.'* [R1]

Another respondent talked about his career choices and how he eventually became the owner of a large confectioning business only by following a broader vision of 'working with his hands:'

'I thought, I want to do something with my hands, working with food and so on. First, I wanted to become a cook, and I also became confectioner and also baked bread. Then, I felt, I don't like to make bread, and don't like to cook, so I became a confectioner.' [R16]

The absence of specific goals does not imply that these people do not have any idea about the future; rather, they have very broad career goals that can be described as dreams or visions.

Career pathfinding

A radically different attitude toward career planning is embedded in the practice of career pathfinding. These individuals expressed disbelief in the pursuit of career goals because they did not find having a particular plan for their working lives useful or even meaningful. The analysis of the career timelines shows that these entrepreneurs often were active in industries with high levels of uncertainty and/or switched between industries, rendering long-term planning meaningless. Often, the renunciation of goals was explained in terms of responses to uncertainty about their career futures:

'I really moved away from that whole idea of planning...It is too difficult to plan your way. The market is changing continuously...I do not have goals; it forms more along the way.' [R12]

Others had actually rejected the idea of career planning and goal setting altogether and reached a point at which they perceived their careers as a flow of experiences that just 'happened to them.'

Interestingly, we found that many of the respondents expressed instances of career pathfinding, often motivated by the idea that the future is not predictable, at least not to an extent that is sufficiently useful to warrant deliberate career planning.

Career investment

We also observed a cluster of career management practices that broadly reflects what individuals actually do to invest in their careers. Accordingly, our data could be grouped meaningfully into three

practices that appeared prominently in the respondents' accounts of their career investments: (1) career investments in knowing-how, referring to the development of human capital; (2) career investments in knowing-whom, referring to networking and social capital accumulation; and (3) passive career development.

Career investments in knowing-how

Investments in career-related expertise such as the accumulation of relevant knowledge, skills, and experiences were among the most often mentioned practices. Individuals with greater investments in knowing-how explained that it was very important to them and that they spent much time on actively investing in themselves:

'I have always been consciously and actively involved in self-development. That is part of the process. If you stop developing, no new opportunities will arrive on your path...I have always [been], and still am, busy with that with the same energy and determination.' [R10]

These investments in the acquisition of new knowledge or skills could later become relevant for subsequent career stages. Some individuals carefully thought about what they needed, whereas others just developed themselves in areas that they deemed interesting in the present.

Career investments in knowing-whom

Many of the interviewees reported actively investing in knowing people and building trusted relationships through active networking. Some of them do this with a clear goal in mind, whereas others more or less wander around and network because they like to do so. For example, one interviewee expressed that he loves to network because doing so generates new career options:

'I believe in enlarging your network. Always explore things...as you never know when this will be helpful.' [R3]

However, not all of those who invest in knowing-whom do so to the same extent. Some of them focus on only a specific set of people. For instance, they do not invest in obtaining new contacts in particular; rather, they invest in maintaining a small network that is essential for their current career position.

Passive career development

In contrast with individuals who stated that they really valued investing in knowing-how and knowing-whom, others reported that such activities were less important to them. They stated, for instance, that they did not believe in such actions or that they did not have sufficient time for them. As one individual stated,

‘I do not engage much in educating myself and never really have... You have people who are very active in networking and attend every opportunity to do so, but I am not such a person... I basically think it is nonsense... I do not gain anything from it. In general, I will only invest in learning something when I need it. I rather focus on the things I want to accomplish than spending my time on those things.’ [R14]

Also, they did not attempt to manage their careers by focusing on employability or career opportunities through investments in knowing-how or knowing-whom. Instead, career decisions were made incrementally by taking one step at a time, depending upon what came along. They merely responded to available means and factors in their environment through which their career took shape. This stance is perhaps best captured by how one of the respondents evaluated his career:

‘It all evolved by itself. You know, I never really searched for the things I ended up doing. It always came to me, and I responded [to it]... I never looked to reach something. And even now... I do not network... I have never approached customers. Customers always come to me.’ [R15]

Others explained that their careers just moved without any direct interference in the sense that

they lacked interest in working toward anything beyond their current needs. Overall, the intensity with which respondents reported investing in their careers varied; some people persistently and actively created career opportunities, whereas others took more passive stances toward career management.

Step III: linking career management to entrepreneurial decision making

Linking these career management practices to effectuation and causation preferences, we found no obvious one-to-one link between any single career management practice and either effectual or causal decision making. Nevertheless, a number of patterns emerge when looking at entrepreneurial decisions in light of particular combinations of career management practices, such that key mechanisms in this relationship are exposed. In particular, the configuration of career planning intensity and career investment intensity has clearer connections to entrepreneurial decision making in terms of effectuation and causation. We interpret this finding as indicative of general underlying mechanisms that operate both on career management practices and on entrepreneurial decision making. Specifically, we theorize that this mechanism consists of the general stance individuals take toward their future with respect to either their careers or their entrepreneurial endeavors. In our sample, some of the entrepreneurs acknowledged this general mechanism quite explicitly:

‘Throughout my whole life, I actually only had positions that I kind of created myself... I had no master plan or anything. Through my contacts and by using who I am, I just considered what I wanted and could do; that’s about how it evolved.’ [Interviewer]: ‘How does this relate to your entrepreneurship?’ [Respondent:] ‘Yes, I do just what I think that should be done... On the one hand, I take into account my own qualities and energy, and on the other hand, I try to adapt to the market. The process of adapting to what is needed and what I can contribute requires creativity.’ [R24]

Hence, it appears that viewing the future in terms of its affordance for predictive and/or creative control represents a powerful mechanism that is relevant to career management practices even before it becomes

relevant to entrepreneurial decision making. Moreover, this finding suggests the possibility that how individuals come to manage their careers can shape their subsequent decisions in an entrepreneurial context. Below, we present a grounded model that conceptualizes how the configurations of career management practices shape one's general view of the future in terms of predictive and creative control which, in turn, drives preferences for effectuation and causation. Figure 2 depicts this grounded model.

Emphasis on predicting the future

Our analysis clearly shows that the degree of emphasis on predicting the future is a repeating theme regardless of the specific domain for its application (i.e., in career management or in entrepreneurship). In our sample, causal decision making is consistently favored by those who engaged in career planning but simultaneously played down the importance of career investments. To illustrate how general career management practices shape entrepreneurial decision making, we turn to R7, an entrepreneur who, after leaving university, had a short experience as a founder and then worked 16 years for a large publishing company. In 2000, he returned to entrepreneurship full time when he was invited by a former colleague to form a new start-up that offers recruiting services. Figure 3 provides a graphic illustration of his career timeline.

R7 reflected on his career management practices as follows:

'I am definitely someone who calculates. Taking decisions based on as much good information as possible so to say...I am not someone who intentionally engages in networking. I do not attend network gatherings and those sort of things...I doubt whether you actually benefit from it.'

This entrepreneur was passive about career development but also engaged in calculating his career steps, and he followed specific career goals. As with the other seven causal respondents in our sample, he carries with him a notion of career foresight as a leading idea.

'You have to at least know what you are doing and which direction you want to go to...You need a certain vision. At that point in time, I am there, then I am there, and then I am there.'

This general view of the future as a fixed entity that allows planning and calculation seems to have shaped his approach to making decisions, for instance, regarding the competitive positioning of the venture's products and services:

'It is always important to know who your competitors are...Look, eventually you need

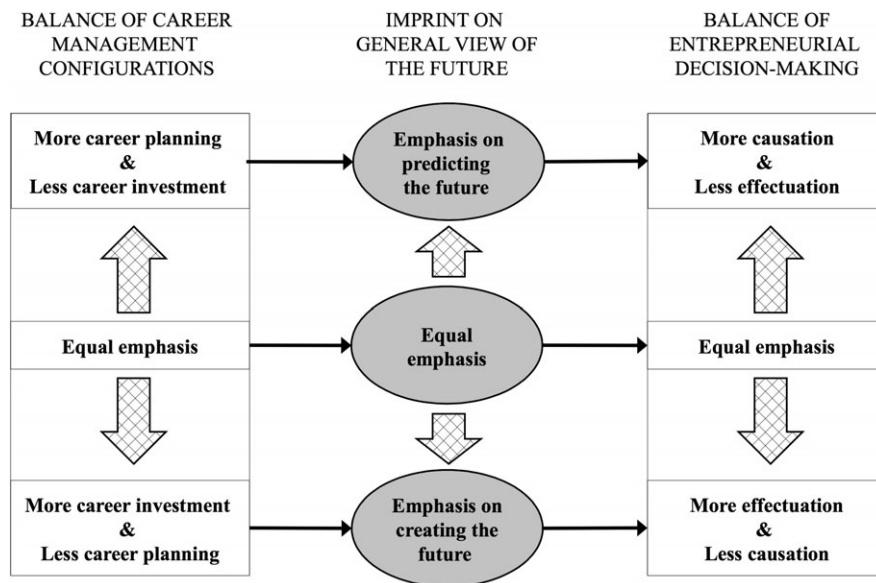


Figure 2. A conceptual model of the relationship between career management and entrepreneurial decision making

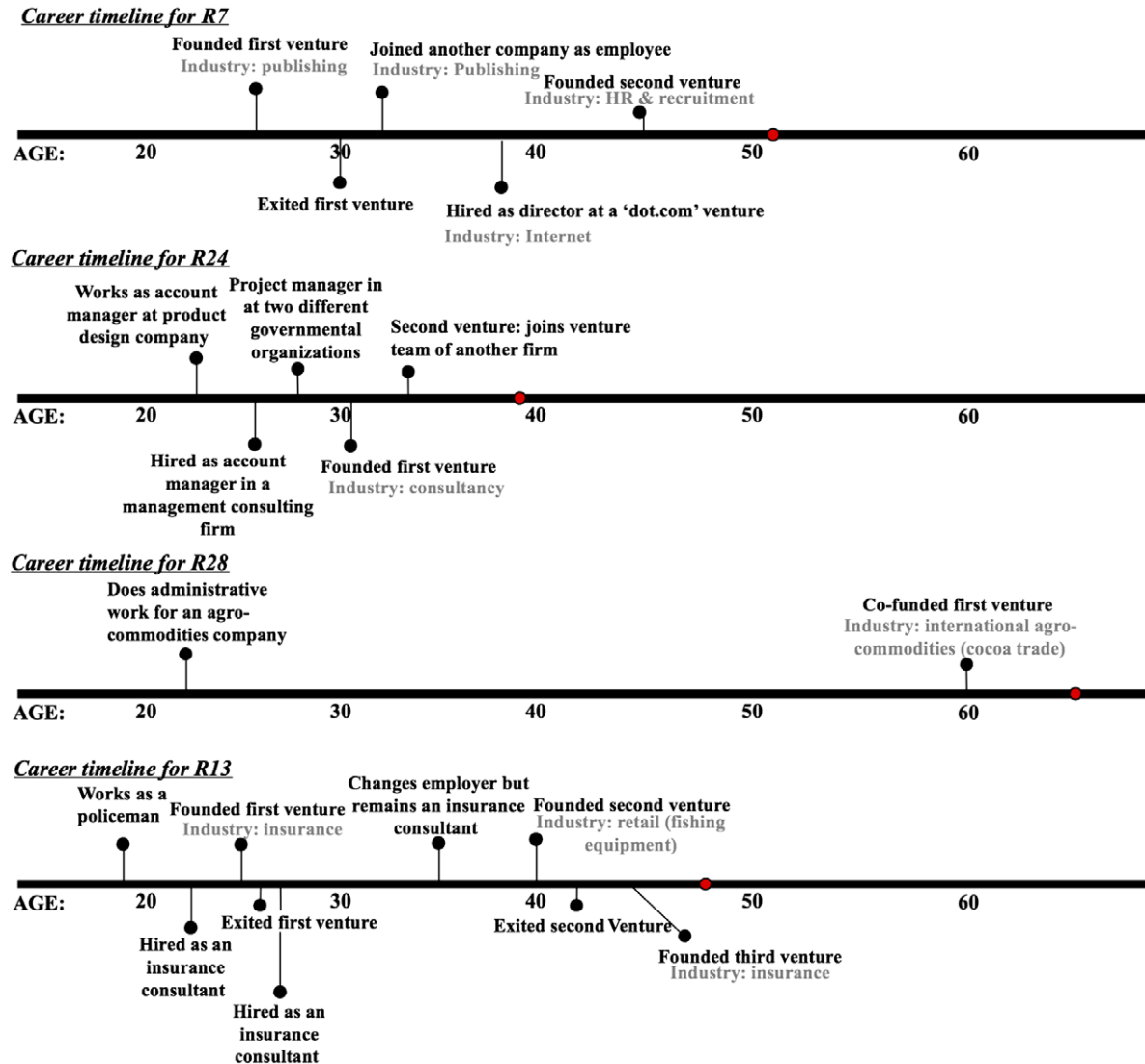


Figure 3. Career timelines

to outperform your competitors, if you are in a competitive market. You need the right positioning...You need to have an idea of the size of the market...You also want to know the price elasticity; what will people pay for such a product?’

Thus, by seeing specific goals and calculations as integral parts of planning for the future, this entrepreneur and other individuals emphasized causation over effectuation in their entrepreneurial decision processes, particularly by using a causal

approach to the market via competitive analysis rather than partnerships (see Table 2).

Emphasis on creating the future

As opposed to a focus on prediction, our analysis also showed how people who see a yet-to-be-made future as a function of their creative efforts often express this perception as their dominant view on career management and, subsequently, in their effectual approach to entrepreneurial decision making. In fact, the most effectual individuals in our

sample were also the ones who negated planning in their careers and instead focused on actively shaping them by continuously making career investments. We illustrate how the general career practice of creating the future translates into an effectual logic with the example of R24, an entrepreneur with a background in technical product design and a previous career of approximately 10 years in different organizations and functions. She started her own company 2.5 years ago (at the time of the interview) together with a cofounder, and her company focuses on connecting innovative managers across multiple large corporations. Her career timeline is presented in Figure 3. R24 explained how she started her career by reasoning from her means:

‘I did not really know what I wanted to do...I had studied industrial design [because] I had the feeling that it suited me. I enjoyed technology and natural sciences and had a lot of affinity with product development...and through some people I knew from my last internship, I found a job in that field. I guess it was an appropriate start of my career.’

This creative view of the future is combined with a certain disbelief about the efficacy of planning in general (e.g., ‘I didn’t have a master plan or something’). The interesting part here is that, just as some respondents treated their careers as always being ‘under construction,’ she—and other individuals in our sample—reasoned similarly in making venturing decisions. For instance, when talking about her market approach, she stated,

‘You know, I only have a small firm. I do not think big. My business partner is more someone who thinks big. I am more like...I am really one with a real open approach to a meeting and discussions, while he [the cofounder] is one who uses all kinds of gigantic Excel sheets to calculate his revenues.’ [R24]

Moreover, she stated that she would like to approach the market by using partnerships and information that is readily available (see also Table 2 for the most frequently applied effectual principles by R24). In general, the analysis as

presented in Table 2 shows that most entrepreneurs with a preference for effectuation tend to frequently use the principles of means-orientation and pre-committed partnerships. However, some also explicitly expressed decision-making logics that reflected the other effectual principles, for instance, by leveraging unforeseen opportunities, in the sense that ‘always, if a door closes, there are also one or two or three doors that open’ [R1]. Both in their careers and as entrepreneurs, these individuals preferred the general effectual logic in that they followed their own preferences and wishes and believed that the future is up to them:

‘You’re in control of your own destiny. So, if you are convinced and have passion about something you are doing, you can create your own market.’ [R17]

Equal emphasis on predictive and creative control

Quite a substantial subset of the entrepreneurs in our study shows a mix of predictive and creative views of the future both in their careers and in the venturing decisions they make. Some of them seem to hold this mix of views of the future because they are just not very outspoken in their decisions; rather, they are more reactive or adaptive. To a degree, these individuals left their careers to chance by maintaining an overall passive stance toward their career development. They held no predetermined goals that prescribed the course of action to take, nor did they attempt to manage their careers by focusing on employability or career opportunities through career investments. Instead, they made career decisions incrementally by taking one step at a time solely depending upon what came along. This stance can be best captured by how R28 evaluated his career and move into entrepreneurship (his career timeline is presented in Figure 3):

‘I worked 36 years for the same boss at the same position, you can say I just dragged along...I rolled into it. I never had the ambition to become a founder and director of a business. At some point, it just happened; I just wait and see where the ship runs aground.’ [R28]

This career behavior is characterized by lower levels of both predictive and creative control. In other words, such entrepreneurs were initially reactive, in which case planning based on a predictive view of the future is not necessary because there is no predetermined direction. This behavior is also not based on a creative view of the future, because these individuals remained inactive in constructing their careers through building up career capital. This mix of creative and predictive views of the future in his career also imprints decision making in the venturing scenario, which shows a combination of both causal (i.e., competitive analysis) and effectual decision making (i.e., affordable loss thinking):

‘Normally, I would make a business plan to determine what I really want...But I would still do it [start the venture under uncertain circumstances and lack of information]. You just need to start slowly and, eh, if it fails, it fails.’ [R28]

Because of the adaptive stance they maintained throughout their career, these entrepreneurs did not have preset preferences for any type of decision-making reasoning when setting up new ventures.

In contrast, some people appeared to combine explicit creative and predictive views of the future in their careers and in their venturing decisions. They were driven by clear and predetermined goals that they wished to achieve. Simultaneously, however, these people also engaged in activities to accumulate their career capital. They continuously tried to become better at what they did, learned new skills, and met new people, and they were aware of future career opportunities that might result from these actions. For instance, R13 (see career timeline in Figure 3) engaged in planning his career in quite some detail while also investing in the possibilities to obtain the positions he wanted:

‘I resigned from the police, and I moved, and I really went and lived on the bare minimum in order to be able start working at the insurance agency. So, it was really a long-term investment. I was convinced that when you have your diploma...you can make the next step. And well, in the end, that happened.’ [R13]

His approach to venturing decisions also shows this mix of predictive and creative views of the future. For instance, reflecting on his market approach, he has an effectual-means orientation and wants to use partnerships. However, this approach is combined with competitive positioning and more-predictive market analysis:

‘To get information, it is a matter of talking with a broad group of potential customers—presenting them with ideas. Yes, it would be best to combine that with a market study, yet I am someone who quite explicitly focuses on a set of close contacts and gets them to do the work, as these close contacts are really close and want to help me. So, if they come with answers, you know that it’s all right...Thus, for a market study that delivers some numbers, there you can use an external firm to get that information; this is our product, and we select 5,000 potential customers and ask them what they think about it with focused questions about product and price.’ [R13]

This entrepreneur—and similar others—had no propensity to employ either type of decision-making logic in new venture creation. His career practices show behavior based on both a predictive and creative view of the future. Moreover, with respect to the task of setting up a new venture, both views are used fairly equally and interchangeably.

To summarize, we observed and interpreted several patterns aligned with career management practices on the one hand and subsequent entrepreneurial decision making on the other hand. Our proposed conceptual model (Figure 1), which is supported by our analysis of individual career management practices (Table 4), their unique configurations (see detailed comparison in Table 3), and their patterns across our sample (Table 2) illustrate these important findings. We now turn to position our results in light of the broader research stream on entrepreneurial decision making and careers.

DISCUSSION

The aim of this study was to extend effectuation theory by developing a grounded theory about how career management practices influence

entrepreneurial decision making. Based on qualitative data obtained from 28 entrepreneurs, we present a grounded model that links different configurations of career management practices to different decision-making logics in an entrepreneurial setting. Each configuration of practices is characterized by varying levels of career planning and career investment, and our model shows how the characteristics of these career management practices are analogous to the notion of predictive and creative control guiding one's general view of the future. In doing so, we not only substantiate existing work about control and prediction in entrepreneurship (Kuechle *et al.*, 2016; Welter *et al.*, 2016; Wiltbank *et al.*, 2006)—or simply confirm prior studies on effectuation (e.g., Perry *et al.*, 2012; Read *et al.*, 2016)—but also offer an original and meaningful contribution. Specifically, we position one's view of the future, enacted and developed over the course of a career, as a key mechanism through which careers shape causal and effectual decision making. Building on this central insight, we make several complementary contributions.

First, the key take away from this study is that by adopting a broader view on careers, rather than narrowing our gaze to activities that are clearly within the purview of entrepreneurship, one can identify distinct pathways to the development of entrepreneurial thinking, even prior to entrepreneurial entry. We, therefore, demonstrate what Burton *et al.* (2016: 237) alludes to in writing that 'there is much to be learned by conceiving of entrepreneurship not solely as a final destination, but as a step along a career trajectory.' Nowhere is this message clearer than in effectuation research, in which the focus has been exclusively on notions of entrepreneurial expertise and career experience as an entrepreneur (e.g., Dew *et al.*, 2009; Read and Sarasvathy, 2005). Hence, as our primary contribution, we extend effectuation theory by reformulating one of its most dominant assumptions and essentially showing that the foundation of experiences that contribute to the development of effectual thinking is much wider than what is experienced within the entrepreneurship context *per se*, as it can include events, actions, and decisions that predate entry to entrepreneurship. With this point in mind, we subscribe to Sarasvathy's (2001) earlier assertion that effectual reasoning might be more general and that it is indeed ubiquitous in human decisions overall. This is in line with

the literature on the experiential essence of entrepreneurial thinking (Krueger, 2007), which suggests focusing on the study of developmental experiences and the lessons learned from those experiences. It is also consistent with the career perspective on entrepreneurship (Burton *et al.*, 2016), which addresses the ordering of career experiences, their timing and duration, and the context in which they unfold.

Notably, our data point to interesting links between how people actively address an uncertain future in one domain (career management) and how they then apply their experience in another (starting a new venture). As Welter *et al.* (2016: 10) speculate: 'if the entrepreneurial experiences represent a track record of coping with uncertainty, one could argue that there may be other experiences that are non-entrepreneurial and still may constitute the build-up of similar expertise.' By illustrating this point empirically and showing how effectuation theory is related to careers, we also join a growing stream of studies that demonstrate the existence of effectual thinking in domains other than entrepreneurship, such as marketing (Read *et al.*, 2009) and R&D management (Brettel *et al.*, 2012). Altogether, our emergent theoretical model of how careers shape entrepreneurial decision making has the potential to reinvigorate research on the origins of effectual decision making, on its boundary conditions, and on how one enters and exits those boundaries (Arend, Sarooghi, and Burkemper, 2015). This potential speaks to the deepening dialogue between prominent scholars in the field about new directions in the evolution of effectuation theory (Arend, Sarooghi, and Burkemper, 2016; Read *et al.*, 2016).

In a broader sense, our findings contribute to research on entrepreneurial cognition and decision making. Researchers in this area have been occupied mainly with the effect of cognitive variables on relevant outcomes and less with the origins or development of these variables (Grégoire *et al.*, 2011; Shepherd *et al.*, 2015; Walsh, 1995). Our study attends to this gap by focusing on the antecedents of a specific cognitive variable, namely, entrepreneurs' preference for a dominant decision-making logic. Our analysis clearly shows that career practices that emphasize planning and assume that the future can be predicted shape more-causal decision making when individuals move into entrepreneurship. In contrast, career practices that emphasize career investments rather

than career planning are linked to more-effectual decision making. These findings provide answers to recent calls to gain a better understanding of entrepreneurs' cognitive differences (Grégoire *et al.*, 2011; Grégoire *et al.*, 2015; Mitchell *et al.*, 2007) and speak to ongoing efforts to clarify the origins of effectual thinking (Baron, 2009; Dew *et al.*, 2009; Engel *et al.*, 2014; Engel, Kaandorp, and Elfring, 2017; Gabrielsson and Politis, 2011) by showing that an important source can be found in the study of careers.

A related contribution is made to research involving entrepreneurs' careers (Burton *et al.*, 2016). Career experience is relevant because 'unlike time spent with family or on informal instruction, working as an employee or manager can build a direct connection to specific habits and routines that might prove useful for nascent entrepreneurs' (Aldrich and Yang, 2013: 68). Considering prior work on careers in entrepreneurship, our study is original because we study and conceptualize how careers shape entrepreneurial decision making by attending to career management practices as manifestations of individual agency that not only pre-date entrepreneurial entry but also are outside the scope of traditional sociological research on careers in entrepreneurship. In doing so, we draw on a contemporary understanding of careers—not only as repositories of individual knowledge and arenas for learning (Aldrich and Yang, 2013; Bird, 1996), but also as adaptable and malleable patterns in one's working life (King, 2004; Tams and Arthur, 2010; Weick, 1996). A growing number of management and organization scholars adopt this view to better understand the resources that individuals develop and carry with them as they make substantial changes to their careers (Dokko and Rosenkopf, 2010; King, 2004; Lent and Brown, 2013). Such a focus can complement efforts by entrepreneurship scholars to understand better how different experiences are related to key variables within this domain (Burton *et al.*, 2016; Elfenbein, Hamilton, and Zenger, 2010; Reuber and Fischer, 1999; Roach and Sauermann, 2015). As Sørensen and Fassiotto (2011: 1325) note: 'we need stronger claims about what it is people learn and how that learning is relevant to the entrepreneurial decision.'

Identifying career management practices that relate to the extent to which individuals emphasize predictive and creative control in their decisions enables us to zoom in on the important aspects of

what people learn in their careers and explore further how career management shapes subsequent preferences to employ effectual heuristics and/or causal planning. We claim not that any process of career management is, by definition, specific to entrepreneurship, but that some processes, because they relate to decision making under uncertainty, affect entrepreneurial decision making *if and when* entrepreneurship is initiated later in one's career. Thus, to the extent to which one's career can be framed in terms of its relevance to the creation of a new venture (cf. Aldrich and Yang, 2013), our findings illuminate an entirely new path for future investigations.

Finally, we also see great promise in what effectuation theory can contribute to the study of careers. Wiltbank *et al.* (2006) have demonstrated already that one's view of the future, in terms of creative and predictive control, is relevant to a host of theories in strategic management. We propose to extend the applicability and relevance of these concepts to the study of careers. As our analysis showed, different configurations of career management practices can be differentiated in accordance with their emphasis on predicting and/or creating the future. Career theory has been struggling to differentiate between a great number of career models (e.g., Sullivan and Baruch, 2009). As predictive and creative control assist us in seeing the differences between theories of strategic management (Wiltbank *et al.*, 2006) and entrepreneurship (Kuechle *et al.*, 2016) more clearly, they may serve as a valuable conceptual tool for career researchers to delineate and clarify the boundaries of different career theories. Indeed, when speaking about effectuation, prediction, and control, Welter *et al.* (2016: 17) remind us that 'to truly distinguish entrepreneurship as a field, these concepts must be further developed into refined theories that can contribute to other fields within business and beyond.' We heed such calls to make more connections between emerging entrepreneurship theories and organizational scholarship (Baron, 2010; Sørensen and Fassiotto, 2011; Welter *et al.*, 2016).

Limitations and possible alternative explanations

This research has a number of limitations. The first limitation concerns the sample on which we based

our analysis. Although we believe that the sample size used in this research is suited for theory extension and that it is in line with the methodological traditions of protocol studies (e.g., Dew *et al.*, 2009), we acknowledge that a larger sample size would increase the external validity of our findings. Second, we relied on interviews, a questionnaire, and web-based information (e.g., Chen and Thompson, 2016) to retrieve the entrepreneurs' career histories; thus, there is a risk that retrospective bias affected our data. Therefore, we advise future studies to employ alternative data collection methods to gather data on career histories that optimize retrospective recall, such as the life history calendar method (Nelson, 2010) or sequence analysis (Vinkenburg and Weber, 2012), to avoid this possible bias.

In addition, given our choice of method and our interpretation of the findings, we acknowledge the possibility of alternative explanations for the patterns we observed in the data. To an extent, both career practices and entrepreneurial decision-making preferences might be driven by underlying individual characteristics. Thus, people's careers might be not only influenced by what they did and how they thought about it but also a function of the person who selects into this type of career (Elfenbein *et al.*, 2010; Roach and Sauermann, 2015). However, basic characteristics of the individuals in our sample do not appear to differentiate effectual and causal decision makers (see Tables 1 and 3). In addition, prior research suggests that careers might shape one's cognition independently of dispositional attributes (Crossland *et al.*, 2014). Hence, although we acknowledge the challenge of refuting such alternative accounts based on our data, we refer readers to a growing stream of studies that largely establish career as an independent and significant explanatory variable in later decision-making preferences (for an overview see Schoar and Zuo, 2011). We add to that Sarasvathy and Dew's (2008) claim that apart from the case of self-efficacy (e.g., Engel *et al.*, 2014), no published work to date has shown any association between psychological traits and effectual thinking. Hence, although we cannot, based on our data, reject the possibility that some unobservable stable individual difference governs both career management and entrepreneurial decision making, we find our explanation at the very least equally plausible.

CONCLUSION

We set out to study how the careers of entrepreneurs influence their preference for employing either causal or effectual reasoning in the process of new venture creation. Therefore, we aimed to extend effectuation research by developing theory about careers as an antecedent of entrepreneurial decision making. Using verbal protocols and semi-structured interviews, we retrieved qualitative data on a sample of entrepreneurs concerning their decision-making approaches in the present and the history of career management practices they used throughout their working lives. The results showed that the configurations of career management practices in terms of career planning and career investment rest on the same principles of predictive and creative control that underlie causal and effectual reasoning. We then proposed a model that depicts these patterns of relationships and provided supporting evidence for this interpretation of the data. Our findings reveal important insights on the genesis of entrepreneurial decision making more generally and effectuation theory in particular.

ACKNOWLEDGEMENTS

The study was supported by a grant from the Netherlands Organisation for Scientific Research (NWO) under project number 017.007.108. We would like to thank Mike Wright (coeditor) and two anonymous reviewers. Errors and omissions remain the authors' responsibility.

REFERENCES

- Aldrich HE. 1999. *Organizations Evolving*. SAGE Publications: Thousand Oaks, CA.
- Aldrich HE, Yang T. 2013. How do entrepreneurs know what to do? Learning and organizing in new ventures. *Journal of Evolutionary Economics* **24**: 59–82.
- Arend R, Sarooghi H, Burkemper A. 2015. Effectuation as ineffectual? Applying the 3E theory-assessment framework to a proposed new theory of entrepreneurship. *Academy of Management Review* **40**(4): 630–651.
- Arend RJ, Sarooghi H, Burkemper AC. 2016. Effectuation, not being pragmatic or process theorizing, remains ineffectual: responding to the commentaries. *Academy of Management Review* **41**(3):549–556.

- Arthur MB. 2014. The boundaryless career at 20: where do we stand, and where can we go? *Career Development International* **19**(6): 627–640.
- Arthur MB, Hall DT, Lawrence BS. 1989. *Handbook of Career Theory*. Cambridge University Press: New York.
- Arthur MB, Rousseau DM. 1996. *The Boundaryless Career: A New Employment Principle for a New Organizational Era*. Oxford University Press: New York.
- Baron RA. 2009. Effectual versus predictive logics in entrepreneurial decision making: differences between experts and novices: does experience in starting new ventures change the way entrepreneurs think? Perhaps, but for now ‘caution’ is essential. *Journal of Business Venturing* **24**(4): 310–315.
- Baron RA. 2010. Job design and entrepreneurship: why closer connections = mutual gains. *Journal of Organizational Behavior* **31**(2/3): 370–378.
- Baruch Y. 2006. Career development in organizations and beyond: balancing traditional and contemporary viewpoints. *Human Resource Management Review* **16**(2): 125–138.
- Berends H, Jelinek M, Reymen I, Stultiëns R. 2014. Product innovation processes in small firms: combining entrepreneurial effectuation and managerial causation. *Journal of Product Innovation Management* **31**(3): 616–635.
- Bird A. 1996. Careers as repositories of knowledge: considerations for boundaryless careers. In *The Boundaryless Career: A New Employment Principle for a New Organizational Era*, Arthur MB, Rousseau DM (eds). Oxford University Press: New York; 150–168.
- Brettel M, Mauer R, Engelen A, Küpper D. 2012. Corporate effectuation: entrepreneurial action and its impact on R&D project performance. *Journal of Business Venturing* **27**(2): 167–184.
- Briscoe JP, Henagan SC, Burton JP, Murphy WM. 2012. Coping with an insecure employment environment: the differing roles of protean and boundaryless career orientations. *Journal of Vocational Behavior* **80**(2): 308–316.
- Burton MD, Sørensen JB, Dobrev SD. 2016. A careers perspective on entrepreneurship. *Entrepreneurship Theory and Practice* **40**(2): 237–247.
- Chen L-W, Thompson P. 2016. Skill balance and entrepreneurship evidence from online career histories. *Entrepreneurship Theory and Practice* **40**(2): 289–305.
- Cohen J. 1960. A coefficient of agreement for nominal scales. *Educational and Psychological Measurement* **20**(1): 37–46.
- Corbin JM, Strauss A. 1990. Grounded theory research: procedures, canons, and evaluative criteria. *Qualitative Sociology* **13**(1): 3–21.
- Crossland C, Zyung J, Hiller NJ, Hambrick DC. 2014. CEO career variety: effects on firm-level strategic and social novelty. *Academy of Management Journal* **57**(3): 652–674.
- Cyert RM, March JG. 1963. *A Behavioral Theory of the Firm*. Prentice Hall: Englewood Cliffs, NJ.
- Davidsson P, Honig B. 2003. The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing* **18**(3): 301–331.
- Dew N, Read S, Sarasvathy SD, Wiltbank R. 2009. Effectual versus predictive logics in entrepreneurial decision making: differences between experts and novices. *Journal of Business Venturing* **24**(4): 287–309.
- Dew N, Read S, Sarasvathy SD, Wiltbank R. 2015. Entrepreneurial expertise and the use of control. *Journal of Business Venturing Insights* **4**: 30–37.
- DiRenzo MS, Greenhaus JH. 2011. Job search and voluntary turnover in a boundaryless world: a control theory perspective. *Academy of Management Review* **36**(3): 567–589.
- Dokko G, Gaba V. 2012. Venturing into new territory: career experiences of corporate venture capital managers and practice variation. *Academy of Management Journal* **55**(3): 563–583.
- Dokko G, Rosenkopf L. 2010. Social capital for hire? Mobility of technical professionals and firm influence in wireless standards committees. *Organization Science* **21**(3): 677–695.
- Elfenbein DW, Hamilton BH, Zenger TR. 2010. The small firm effect and the entrepreneurial spawning of scientists and engineers. *Management Science* **56**(4): 659–681.
- Engel Y, Dimitrova NG, Khapova SN, Elfring T. 2014. Uncertain but able: entrepreneurial self-efficacy and novice’ use of expert decision-logic under uncertainty. *Journal of Business Venturing Insights* **1**: 12–17.
- Engel Y, Kaandorp M, Elfring T. 2017. Toward a dynamic process model of entrepreneurial networking under uncertainty. *Journal of Business Venturing* **32**(1): 35–51.
- Ericsson KA, Simon HA. 1993. *Protocol Analysis, Revised Edition: Verbal Reports as Data*. MIT Press: Cambridge, MA.
- Freeman J. 1986. Entrepreneurs as organizational products: semiconductor firms and venture capital firms. In *Advances in the Study of Entrepreneurship, Innovation, and Economic Growth*, Libecap G (ed). JAI Press: Greenwich, CT.
- Gabrielsson J, Politis D. 2011. Career motives and entrepreneurial decision-making: examining preferences for causal and effectual logics in the early stage of new ventures. *Small Business Economics* **36**(3): 281–298.
- Glaser BGA, Strauss ALA. 1967. *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Transaction Publishers: New Brunswick, NJ.
- Grégoire DA, Corbett AC, McMullen JS. 2011. The cognitive perspective in entrepreneurship: an agenda for

- future research. *Journal of Management Studies* 48(6): 1443–1477.
- Grégoire DA, Cornelissen J, Dimov D, Burg E. 2015. The mind in the middle: taking stock of affect and cognition research in entrepreneurship. *International Journal of Management Reviews* 17(2): 125–142.
- Gunz HP, Jalland RM. 1996. Managerial careers and business strategies. *Academy of Management Review* 21: 718–756.
- Gunz HP, Peiperl M. 2007. *Handbook of Career Studies*. SAGE Publications: London, U.K.
- Hall DT. 1996. Protean careers of the 21st century. *Academy of Management Executive* 10: 8–16.
- Hannan MT. 1988. Social change, organizational diversity, and individual careers. *Social Structure and Human Lives, Social Change and the Life Course* 1: 161–174.
- Inkson K, Baruch Y. 2008. Organizational careers. In *Handbook of Macro-organizational Behavior*, Clegg S, Cooper CL (eds). SAGE Publications: Thousand Oaks, CA; 209–223.
- King Z. 2004. Career self-management: its nature, causes and consequences. *Journal of Vocational Behavior* 65(1): 112–133.
- Krueger NF. 2007. What lies beneath? The experiential essence of entrepreneurial thinking. *Entrepreneurship Theory and Practice* 31(1): 123–138.
- Kuechle G, Boulu-Reshef B, Carr SD. 2016. Prediction- and control-based strategies in entrepreneurship: the role of information. *Strategic Entrepreneurship Journal* 10(1): 43–64.
- Lent RW, Brown SD. 2013. Social cognitive model of career self-management: toward a unifying view of adaptive career behavior across the life span. *Journal of Counseling Psychology* 60(4): 557–568.
- March JG. 2006. Rationality, foolishness, and adaptive intelligence. *Strategic Management Journal* 27(3): 201–214.
- March JG, Simon HA. 1958. *Organizations*. Wiley: New York.
- Mintzberg H, Waters JA. 1985. Of strategies, deliberate and emergent. *Strategic Management Journal* 6(3): 257–272.
- Mitchell RK, Busenitz LW, Bird B, Marie Gaglio C, McMullen JS, Morse EA, Smith JB. 2007. The central question in entrepreneurial cognition research, 2007. *Entrepreneurship Theory and Practice* 31(1): 1–27.
- Nelson IA. 2010. From quantitative to qualitative: adapting the life history calendar method. *Field Methods* 22(4): 413–428.
- Parker P, Khapova SN, Arthur MB. 2009. The intelligent career framework as a basis for interdisciplinary inquiry. *Journal of Vocational Behavior* 75(3): 291–302.
- Perry JT, Chandler GN, Markova G. 2012. Entrepreneurial effectuation: a review and suggestions for future research. *Entrepreneurship Theory and Practice* 36(4): 837–861.
- Pratt MG, Rockmann KW, Kaufmann JB. 2006. Constructing professional identity: the role of work and identity learning cycles in the customization of identity among medical residents. *Academy of Management Journal* 49(2): 235–262.
- Read S, Dew N, Sarasvathy S, Song M, Wiltbank R. 2009. Marketing under uncertainty: the logic of an effectual approach. *Journal of Marketing* 73(3): 1–18.
- Read S, Sarasvathy S. 2005. Knowing what to do and doing what you know. *Journal of Private Equity* 9(1): 45–62.
- Read S, Sarasvathy S, Dew N, Wiltbank R. 2016. Response to arend, Sarooghi, and Burkemper (2015): cocreating effectual entrepreneurship Research. *Academy of Management Review* 41(3): 528–556.
- Reuber AR, Fischer E. 1999. Understanding the consequences of founders' experience. *Journal of Small Business Management* 37(2): 30–45.
- Reymen IMMJ, Andries P, Berends H, Mauer R, Stephan U, van Burg E. 2015. Understanding dynamics of strategic decision making in venture creation: a process study of effectuation and causation. *Strategic Entrepreneurship Journal* 9(4): 351–379.
- Roach M, Saueremann H. 2015. Founder or joiner? The role of preferences and context in shaping different entrepreneurial interests. *Management Science* 61(9): 2160–2184.
- Rosenbaum JE. 1979. Tournament mobility: career patterns in a corporation. *Administrative Science Quarterly* 24: 220–241.
- Sarasvathy S. 2001. Causation and effectuation: toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review* 26: 243–263.
- Sarasvathy S. 2008. *Effectuation: Elements of Entrepreneurial Expertise*. Edward Elgar Publishing: London, U.K.
- Sarasvathy S. 2012. Worldmaking. In *Advances in Entrepreneurship, Firm Emergence and Growth*, Corbett AC, Katz JA (eds). Emerald Group Publishing Limited; Bingley, U.K. 1–24.
- Sarasvathy S, Dew N. 2008. Effectuation and over-trust: debating Goel and Karri. *Entrepreneurship Theory and Practice* 32(4): 727–737.
- Schoar A, Zuo L. 2011. *Shaped by booms and busts: how the economy impacts CEO careers and management styles*. Working paper, National Bureau of Economic Research, Cambridge, MA. Available at: <http://www.nber.org/papers/w17590> (accessed 8 November 2016).
- Shane SA, Khurana R. 2003. Bringing individuals back in: the effects of career experience on new firm founding. *Industrial and Corporate Change* 12(3): 519–543.

- Shepherd DA, Williams TA, Patzelt H. 2015. Thinking about entrepreneurial decision making: review and research agenda. *Journal of Management* **41**(1): 11–46.
- Sørensen JB, Fassiotto MA. 2011. Organizations as fonts of entrepreneurship. *Organization Science* **22**(5): 1322–1331.
- Sullivan SE, Arthur MB. 2006. The evolution of the boundaryless career concept: examining physical and psychological mobility. *Journal of Vocational Behavior* **69**(1): 19–29.
- Sullivan SE, Baruch Y. 2009. Advances in career theory and research: a critical review and agenda for future exploration. *Journal of Management* **35**(6): 1542–1571.
- Super DE. 1957. *The Psychology of Careers: An Introduction to Career Development*. Harper & Row: New York.
- Tams S, Arthur MB. 2010. New directions for boundaryless careers: agency and interdependence in a changing world. *Journal of Organizational Behavior* **31**(5): 629–646.
- Ucbasaran D, Westhead P, Wright M. 2009. The extent and nature of opportunity identification by experienced entrepreneurs. *Journal of Business Venturing* **24**(2): 99–115.
- Vaughan D. 1992. Theory elaboration: the heuristics of case analysis. In *What Is a Case?*, Becker H, Ragin C (eds). Cambridge University Press: New York; 173–202.
- Vinkenburg CJ, Weber T. 2012. Managerial career patterns: a review of the empirical evidence. *Journal of Vocational Behavior* **80**(3): 592–607.
- Walsh JP. 1995. Managerial and organizational cognition: notes from a trip down memory lane. *Organization Science* **6**: 280–321.
- Weick K. 1996. Enactment and the boundaryless career: organizing as we work. In *The Boundaryless Career: A New Employment Principle for a New Organizational Era*, Arthur MB, Rousseau DM (eds). Oxford University Press: New York; 40–57.
- Welter C, Mauer R, Wuebker RJ. 2016. Bridging behavioral models and theoretical concepts: effectuation and bricolage in the opportunity creation framework. *Strategic Entrepreneurship Journal* **10**(1): 5–20.
- Wilensky HL. 1961. Orderly careers and social participation: the impact of work history on social integration in the middle mass. *American Sociological Review* **26**(4): 521–539.
- Wiltbank R, Dew N, Read S, Sarasvathy S. 2006. What to do next? The case for non-predictive strategy. *Strategic Management Journal* **27**(10): 981–998.