

İSMAİL AYBARS TUNÇDOĞAN

Decision Making and Behavioral Strategy

The Role of Regulatory Focus in Corporate Innovation Processes



Decision Making and Behavioral Strategy:

The role of regulatory focus in corporate innovation processes

Decision Making and Behavioral Strategy:

The role of regulatory focus in corporate innovation processes

Besluitvorming en behavioral strategy:

De rol van regulatory focus in innovatie processen in ondernemingen

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To My Family

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Chapter 1: Introduction

1.1 A Brief Look into the Field of Behavioral Strategy

Briefly put, behavioral strategy is a theory of “strategic decision making that incorporates the lessons of psychology” (Lovallo & Sibony, 2010, p. 3). More specifically, Powell, Lovallo and Fox define behavioral strategy in the following way: “Behavioral strategy merges cognitive and social psychology with strategic management theory and practice. Behavioral strategy aims to bring realistic assumptions about human cognition, emotions, and social behavior to the strategic management of organizations and, thereby, to enrich strategy theory, empirical research, and real-world practice” (2011, p. 1371). Indeed, the idea of employing the lens of psychology to examine issues of management is by no means new. A variety of different theoretical viewpoints and a large assortment of studies have made use of psychological constructs. For instance, the behavioral theory of the firm (Cyert & March, 1963) and the upper-echelons theory (Hambrick, 2007; Hambrick & Mason, 1984) as well as the studies on sensemaking (Weick, 1995), attention (Ocasio, 1997), emotions (Nickerson & Zenger, 2008) have taken a behavioral approach towards the strategic management field (Powell, Lovallo & Fox, 2011).

Yet, Powell, Lovallo and Fox propose three reasons why they “believe the time has come for new beginnings in behavioral strategy” (2011, p. 1369). First of all, they argue that, although strategy literature has employed some psychological constructs, strategy has not yet had a clear ‘behavioral movement’ (that economics and finance did), where strong links with psychology and neuroscience are formed. Secondly, there is ongoing behavioral research in the strategy field, but there still is a lack of theoretical grounding. Indeed, the results of the study by Nag, Hambrick and Chen (2007), which examined the relationships of strategic management with other fields, resonates with this idea. In their study, they show that the strategy literature is mainly built upon frameworks from the economics, sociology and marketing disciplines, and work on psychology is not at the core of strategic management. In other words, there may be papers that use psychological constructs, but the psychological theory has not yet become fully integrated into the field. Finally, the new technological developments in experimental psychology and neuroscience present us a variety of new methods for examining the decision-making mechanisms of the individuals and groups (Also see Powell, 2011).

Evidently, like its newly emerging counterparts in other areas (e.g. behavioral economics, behavioral finance, neuro-marketing), behavioral strategy has also been facing some initial criticism. Levinthal has given one such critique, and has argued that making a distinction between rational and

behavioral approaches is not necessary, “as any but the most trivial problems require a behavioral act of representation prior to invoking a deductive, ‘rational’ approach” (2011, p. 1517). In simpler terms, before we can develop rational/optimal solutions to a problem, we have to first understand the actual realities of the scenario at hand. Based on this argument, Levinthal suggests that “all approaches are behavioral” (ibid.).

Although Levinthal’s point is arguable (e.g. one can think of various counterfactual examples), Powell and colleagues follow a completely different line of reasoning to argue why it is necessary to coin a new term. In particular, they highlight the fact that although until now there have been various studies incorporating the lessons of psychology, there also is a lack of disciplinary unity in the field. In other words, without a label that demarcates the boundaries of the field, its core paradigms and core research questions, the literature becomes fragmented to the extent that different discussions within the same area cannot engage in fruitful exchanges anymore. By means of the label ‘behavioral strategy’, Powell and colleagues strive for bringing some major groups of these fragmented streams together and achieving at least some level of disciplinary unity. Indeed, not only the behavioral strategy literature, but also the wider strategy literature is known to both benefit and suffer from the double-edged sword of multiple paradigms (e.g. Gavetti & Levinthal, 2004; Volberda & Elfring, 2001). Certainly, on the upside, this multiplicity of paradigms provides the informational diversity required for the successful advancement of the field. However, on the downside, it is also worth noting that beyond a certain extent, the multiplicity of paradigms can also cause a lack of clear focus. To resolve this problem, Powell and colleagues suggest that we limit the scope of behavioral strategy to the three major paradigms of the field, which are the schools of reductionism, pluralism and contextualism (See table 1 below).

Table 1. Three Schools of Behavioral Strategy
(Adapted from Powell, Lovallo & Fox, 2011)

	<u>Reductionist</u>	<u>Pluralist</u>	<u>Contextualist</u>
<i>Philosophical foundations</i>	Positivism, objectivism, materialism, scientific realism, verificationism	Nominalism, pragmatism, evolutionism	Phenomenology, existentialism, critical theory, postmodernism, symbolic interactionism, contextualism, social construction of reality
<i>Core processes of interest</i>	Individual decision making, intragroup decision making	Intergroup bargaining, problem solving, politics, conflict resolution, organizational learning, resource allocation	Sensemaking, perception, enactment, action generation
<i>Key psychological concepts</i>	Bounded rationality, prospect theory, heuristics and biases, dynamic inconsistency	Reference groups, social cognition, social identity theory, self-categorization	Cognitive schema, language, meaning, signs, ideology, action rationality, culture
<i>Linkages to traditional schools of psychology</i>	Structuralism, behaviorism, cognitive psychology, experimental social psychology, neuroscience	Functionalism, functionalist social psychology, gestaltism, evolutionary psychology	Existentialism, humanism, critical schools, feminist psychology, postmodern psychology
<i>Some contributors past and present</i>	Selten, Edwards, Simon, Von Neumann-Morgenstern, Luce-Raiffa, Tversky-Kahneman, Schelling, Akerlof, Smith, Thaler-Shefrin, Elster, Bazerman, Loewenstein, Camerer, Hogarth, Nisbett-Ross, Moore, Fox, Lovallo	March, Cyert, Simon, Lawrence-Lorsch, Tajfel, Turner, Fiske-Taylor, Bower, Miller, Kets de Vries, Hambrick, Levinthal, Denrell, Bromiley, Rumelt, Winter, Feigenbaum-Hart-Schendel	Weick, Starbuck, Pettigrew, Brunsson, March, Staw, Smircich, Hardy, Mintzberg, Thomas, Van Maanan, Abrahamson, Reger, Huff, Fiol, Porac, Dutton, Mezias, Lant, Milliken, Hodgkinson, Thomas, Bettis, Mitroff
<i>Studies in this thesis relating to these perspectives</i>	Studies 1, 2 and 4	Study 3	N/A

Furthermore, according to Powell and colleagues, establishing disciplinary unity in the area of behavioral strategy also requires the field to become specialized in a well-defined set of core research questions. In particular, they suggest that the behavioral strategy field should focus on “(1) scaling individual cognition to collective behavior; (2) defining the psychological underpinnings of strategy theory; (3) understanding complex judgment in organizations; and (4) improving the psychological architecture of the firm” (2011, p. 1380).

Four Goals of Behavioral Strategy (Powell, Lovallo & Fox, 2011)

- 1- Scaling individual cognition to collective behavior
- 2- Defining the psychological underpinnings of strategy theory
- 3- Understanding complex judgment in organizations
- 4- Improving the psychological architecture of the firm

In this thesis, along the lines of these goals, we are going to use psychological explanations to provide realistic insights into how innovation-related decisions are made. In particular, we will contribute to the area of behavioral strategy (Lovallo & Sibony, 2010; Powell et al., 2011) by examining *regulatory focus* (e.g. Higgins 1997, 1998 – see the next section for a brief review of the construct) as an antecedent of exploration-exploitation (e.g. Levinthal & March, 1993; March, 1991) and exploratory innovation (Alexiev, Jansen, van den Bosch and Volberda, 2010; McGrath, 2001; Sidhu, Volberda and Commandeur, 2004). In particular, regulatory focus is a psychological construct, the purpose of which lies in the need for proper adaptation for survival (Friedman & Förster, 2001, p. 1001) – precisely the same purpose as with exploration-exploitation and exploratory innovation (Levinthal & March, 1993; March, 1991). Furthermore, we will examine the use of regulatory focus theory for Behavioral Strategy beyond exploration-exploitation and exploratory innovation by investigating the effects of general managers’ regulatory focus on management team accountability and intra-organizational trust, which are two constructs indirectly linked with the emergence of innovation in corporations. While our focus in this thesis will be on examining regulatory focus as an antecedent of these phenomena directly or indirectly related to innovation, we will also examine (a) factors mediating the effects of regulatory focus (b) factors moderating the effects of regulatory focus, and (c) organizational and environmental antecedents of regulatory focus.

In this manner, all papers in this thesis contribute to the second, third and fourth research questions posed by Powell and colleagues. Moreover, we will make use of the upper-echelons and social identity theories to examine the effects of the (collective) regulatory foci of the management teams on their organizational units. Likewise, we will consider how the regulatory focus of the general manager changes the behavior of the management team, and how that changes the tendencies of the individual within the whole company. In doing so, we will also contribute to the first issue raised by Powell and colleagues. All in all, the issues examined by this thesis reside within the boundaries of the four core research questions proposed by Powell and colleagues, and build particularly on the reductionist (and partially on the pluralist) schools of behavioral strategy research.

1.2 Regulatory Focus Theory

In the psychology literature, there are two kinds of ends an individual may struggle to attain; avoiding pain and seeking pleasure, and “this principle underlies motivational models across all levels of analysis in psychology, from the biological to the social” (Higgins 1998: 1). On the other hand, the regulatory focus theory differs from its predecessors by suggesting that avoiding pain and seeking pleasure are not the two extremes of a continuum, but are two separate mechanisms. Therefore, all individuals try to both avoid pain and seek pleasure, although to differing extents. The regulatory focus of an individual stems from his or her upbringing and is relatively stable (Wallace, Johnson & Frazier, 2009), although contextual elements can also shift an individual’s regulatory focus temporarily (Shah, Higgins & Friedman, 1998; Wallace et al., 2009). The chronic nature of the regulatory focus determines the individual’s default strategy for coping with the environment, whereas its ability to shift temporarily in accordance with contextual elements allows the individual to adapt to daily changes in the environment.

Prevention focus is the 'avoiding pain' component of regulatory focus, and is “concerned with security, responsibilities and safety” (Shah, Higgins & Friedman, 1998, p. 287). When individuals are focused more on prevention, they try to minimize mistakes by concentrating in detail on the threats in the environment, and becoming 'appropriate' within the norms (Friedman and Förster, 2001; Förster and Higgins, 2005; Pennington and Roese, 2003; Semin, Higgins, Gil, Estourget and Valencia, 2005). This kind of orientation is evident in statements such as “I must not get fired from this job” or “I should not appear rude in front of my colleagues.” On the other hand, promotion focus is the 'approaching pleasure' component of regulatory focus, and is concerned with “advancement, growth,

aspirations and accomplishment” (Shah et al., 1998, p. 287). Hence, when they are focused more on promotion, they try to maximize gains by seizing opportunities in the environment (Friedman and Förster, 2001; Förster and Higgins, 2005; Pennington and Roese, 2003; Semin, Higgins, Gil, Estourget and Valencia, 2005). An individual focusing on promotion might say, for example, “I want to learn as much as possible from this course” or “I want to be a successful person.” Regulatory focus literature discusses the various factors surrounding this essential principle, which has crucial effects on behavioral, emotional and decision-making tendencies (*cf.* Brockner and Higgins, 2001; Crowe and Higgins, 1997; Wang and Lee, 2006; Zhao and Pechmann, 2007). Some differences in the effects of promotion and prevention foci on the tendencies of the individual are listed below (Table 2).

Table 2. The General Attributes of Regulatory Focus

(From Das & Kumar, 2010, who adapted it from multiple other studies)

	Promotion	Prevention
Outcomes	Sensitivity to presence or absence of positive outcomes	Sensitivity to presence or absence of negative outcomes
Judgment strategies	Eagerness	Vigilance
Strategic orientation	Approach	Avoidance
Attitudinal orientation	Preference for change	Preference for stability
Emotional experiences	Elation and dejection	Relaxation and agitation
Consideration of alternative hypotheses	Yes	No
Pursuing goal-directed action	Later	Earlier
Relative emphasis in decision making	Speed	Accuracy

Source: Adapted from Forster, Higgins, & Bianco (2003: 161-162); Freitas, Liberman, Salovey, & Higgins (2002: 121); Higgins (1998: 10, 11, 17, 30); Liberman, Idson, Camacho, & Higgins (1999: 1143); Liberman, Molden, Idson, & Higgins (2001: 15-17); Molden, Lee, & Higgins (2008: 170-180).

A recent addition to the regulatory focus theory is the concept of collective regulatory focus. Indeed, regulatory focus originated as an individual-level construct, but is recently examined also at higher units of analysis. A few years ago, using insights from the social identity and social categorization theories (i.e. Hogg and Terry, 2000), Faddegon, Ellemers and Scheepers (2008) have extended the regulatory focus theory to account for more than individual level phenomena. In particular, they used the idea of multiple selves (i.e. the individual self and the collective self) in order to show that not only individuals, but collective bodies such as teams, can have a regulatory focus as well. Indeed, by a series of experiments, they were able to show that individuals are quite cognizant of the regulatory focus of their group, and act accordingly. More recently, a number of articles have examined the impacts of regulatory focus at different levels of analyses, such as the team or organization (e.g. Das and Kumar, 2011; Rietzschel, 2011; Spanjol et al. 2011). Table 3 below lists a number of illustrative examples regarding the use of the Regulatory Focus theory in the areas of psychology and management.

Table 3. Illustrative Examples of the Applications of the Regulatory Focus Theory in the areas of Psychology and Management

<u>Study</u>	<u>Topic</u>	<u>Main Finding</u>
<i>Examples from the Psychology Literature:</i>		
<i>Friedman & Förster (2001)</i>	Creativity	Promotion focus has a positive effect on creativity.
<i>Förster and Higgins (2005)</i>	Attention	Individuals in a promotion focus show attention to the bigger picture, whereas in a prevention focus, individuals show attention to details.
<i>Hamstra, Bolderdijk & Veldstra (2010)</i>	Risk	Promotion focus increases everyday risk-taking.
<i>Gino & Margolis (2011)</i>	Ethical behavior	Promotion focus may cause individuals to engage in unethical behaviors.
<i>Examples from the Management Literature:</i>		
<i>Kark & van Dijk (2007)</i>	Leadership	Promotion focus is associated with a transformational leadership style, and prevention focus with a transactional one.
<i>Herzenstein, Posavac & Brakus (2007)</i>	Purchasing	Promotion focused individuals have a higher tendency of buying really new products
<i>Das & Kumar (2011)</i>	Corporate Alliances	Organizations' regulatory foci have an effect on their tendencies to engage in opportunistic behavior within different stages of the alliance development process.
<i>Conroy & O'Leary-Kelly (2014)</i>	Work-related identity loss	Promotion- and prevention-related emotional residue have different effects on the individual's healing process after the loss of a work-related identity.

1.3 Dissertation Overview

This thesis consists of four different studies directly or indirectly related to the emergence of innovation in corporate settings. The first study draws on regulatory focus theory and builds on Mom, van den Bosch & Volberda (2007, 2009) to explicate the link between a manager's regulatory focus and exploration-exploitation activities. The second study tests this link, and also illuminates an organizational and a contextual antecedent of regulatory focus at workplace. The third study takes this relationship to a higher level of analysis. Drawing upon the recent insights by Faddegon, Scheepers & Ellemers (2008) that regulatory focus is also a part of the collective self, we examine the regulatory foci of management teams on the exploratory innovation levels of their organizational units. While doing so, we also examine the organizational coordination mechanisms mediating this relationship. The fourth study is on intra-organizational trust, and in two ways serves a complementary function in this thesis. On the one hand, the intra-organizational trust concept plays a role in the emergence of innovation (especially exploitative innovation) in organizations (e.g. Jansen, van den Bosch & Volberda, 2006; Un, 2010), which links it to the rest of the studies in this thesis. On the other hand, it allows us to show that regulatory focus theory can be used to explain the emergence of corporate phenomena beyond innovation, and emphasizes the broader future importance of regulatory focus theory for the area of behavioral strategy.

Table 4. The Role of Regulatory Focus in Each of the Four Studies

<u>Name of the Study</u>	<u>Role of Regulatory Focus</u>	<u>Dependent Variable</u>	<u>Role of Other Variables</u>
- <i>Regulatory Focus as a Psychological Micro-Foundation of Managers' Exploration and Exploitation Activities</i>	Antecedent	Exploration and Exploitation of a Manager	Moderator
- <i>A Manager's Regulatory Focus as a Mediator of Organizational and Environmental Antecedents of a Manager's Exploration and Exploitation Activities</i>	Mediator	Exploration and Exploitation of a Manager	Antecedent
- <i>Management Team Regulatory Focus and Exploratory Innovation: The Mediating Role of Organizational Coordination Mechanisms</i>	Antecedent	Exploratory Innovation of an Organizational Unit	Mediator
- <i>Selecting Managers for Strategic Fit: General Managers' Prevention Focus as an Antecedent of Management Team Accountability and Intra-Organizational Trust</i>	Antecedent	Intra-Organizational Trust	Mediator

Study 1: Regulatory Focus as a Psychological Micro-Foundation of Managers' Exploration and Exploitation Activities

In this first study, we examine regulatory focus as an antecedent of managers' exploration and exploitation activities. Managers' exploration and exploitation activities are important in two ways. First of all, they are the two primary components of managers' ambidexterity, which links them to the managers' performance levels. Secondly, it is necessary to understand the micro-foundations of ambidexterity at the level of the individual manager, so as to be able to construct overarching models of organizational ambidexterity. In this conceptual study, we first link the outcomes of regulatory focus with the definitions of exploration and exploitation, allowing us to create a strong link between the two concepts. Next, using the motivation-ability-opportunity (MAO) schema, we delineate the boundaries of this framework.

Table 5. Theoretical and Methodological Underpinnings of Study 1

Title:	Regulatory Focus as a Psychological Micro-Foundation of Managers' Exploration and Exploitation Activities
Outcome:	Manager's Exploration and Exploitation Activities
Predictor:	Manager's Regulatory Focus
Method:	Conceptual
Unit of Analysis:	Individual Manager
Main Contribution:	Conceptually linking regulatory focus and exploration-exploitation (This study is relevant for the second, third and fourth goals of Behavioral Strategy)

Study 2: A Manager's Regulatory Focus as a Mediator of Organizational and Environmental Antecedents of a Manager's Exploration and Exploitation Activities

In this second study, we test the relationship conceptually elucidated in the first study. In particular, we examine the effects of managers' regulatory focus on their exploration and exploitation activities. Furthermore, we examine an organizational (i.e. decentralization) and contextual (i.e. environmental

dynamism) antecedent of regulatory focus. We tested our hypotheses using a sample of 224 managers from a big four accountancy and consultancy firm. As we expected, managers with a stronger promotion focus showed a higher tendency towards exploration activities, whereas managers with a stronger prevention focus had higher a tendency towards exploitation activities. Moreover, also in line with our expectations, regulatory focus partially mediated the effects of decentralization and environmental dynamism on the managers' exploration and exploitation activities.

Table 6. Theoretical and Methodological Underpinnings of Study 2

Title:	A Manager's Regulatory Focus as a Mediator of Organizational and Environmental Antecedents of a Manager's Exploration and Exploitation Activities
Outcome:	Manager's Exploration and Exploitation Activities
Predictor:	Decentralization and Environmental Dynamism
Mediator:	Manager's Regulatory Focus
Method:	Survey
Unit of Analysis:	Individual Manager
Sample:	224 managers
Data source:	Big-Five Accountancy and Consulting Firm
Main Contributions:	<ul style="list-style-type: none"> ▪ Developing a conceptual framework showing the indirect effect of decentralization and environmental dynamism on manager's exploration and exploitation activities through their effects on the manager's regulatory focus. ▪ Empirically testing the relationship between regulatory focus and exploration-exploitation. ▪ Taking a step in illuminating the contextual and environmental antecedents of this regulatory focus in organizational settings. ▪ This study is relevant for the second, third and fourth goals of Behavioral Strategy.

Study 3: Management Team Regulatory Focus and Exploratory Innovation: The Mediating Role of Organizational Coordination Mechanisms

Faddegon, Scheepers & Ellemers (2008) argue that regulatory focus is not only a part of the schema of the individual self, but of the collective self as well. Indeed, the experimental studies they

conducted corroborate that individuals are very sensitive to and cognizant of the regulatory focus of their groups, and when they are embedded within a group, their regulatory focus shifts towards that of the group. Drawing upon this insight, we investigated the regulatory focus at the management team level. Furthermore, in line with the assumptions of the upper-echelons theory (Hambrick, 2007; Hambrick & Mason, 1984), we hypothesized that the regulatory focus an organizational unit's management team would have an effect on that unit's level of exploratory innovation. In particular, we expected management teams' regulatory focus to have an effect on the level of exploratory innovation of the unit by means of its effect on the management teams' use of organizational coordination mechanisms (i.e. centralization, formalization and connectedness). Using survey data from 748 managers from 69 organizational units of a multinational semiconductor company, we tested our hypotheses. Results showed that the effects of promotion and prevention foci of the management team on exploratory innovation through their effect on the centralization and connectedness of the organizational unit were in line with our expectations. In particular, promotion focus of the management team was positively associated with the exploratory innovation of the organizational unit, whereas the association of prevention focus was negative. Furthermore, centralization and connectedness fully mediated the effects of management team's regulatory focus on the organizational unit's exploratory innovation level. Our hypotheses about formalization, on the other hand, were not supported.

Table 7. Theoretical and Methodological Underpinnings of Study 3

Title:	Management Team Regulatory Focus and Exploratory Innovation: The Mediating Role of Organizational Coordination Mechanisms
Outcome:	Exploratory Innovation of an Organizational Unit
Predictor:	Regulatory Focus of the Management Team
Mediator:	Centralization, Formalization and Connectedness
Method:	Survey
Unit of Analysis:	Organizational Unit
Sample:	69 organizational units (aggregated responses of 748 managers)
Data source:	Multinational Semiconductor Firm
Main Contributions:	<ul style="list-style-type: none">▪ Examining the relationship between regulatory focus and exploratory innovation at a higher unit of analysis.▪ Elucidating the mediators of this relationship.▪ This study is relevant for the second, third and fourth goals of Behavioral Strategy.

Study 4: Selecting Managers for Strategic Fit: General Managers' Prevention Focus as an Antecedent of Management Team Accountability and Intra-Organizational Trust

As previously explained, one of our reasons for selecting intra-organizational trust was to demonstrate the utility of the regulatory focus theory for the area of behavioral strategy, by going beyond concepts directly related to innovation. In addition to this, we also aimed to contribute to the literature examining regulatory focus in work settings:

The results of the two recent meta-analyses (Gorman et al., 2012; Lanaj et al., 2012) examining the work-related outcomes of regulatory focus show that there is a strong research emphasis on the beneficial effects of one dimension of regulatory focus (promotion focus) and its advantages over the other dimension, but our knowledge about the workplace advantages of prevention focus is limited. However, according to the wider literature on regulatory focus, both dimensions of regulatory focus offer distinct benefits for survival, and depending on the circumstances either focus could be advantageous. This suggests that the studies of work-related outcomes of regulatory focus may have overlooked some of the positive effects of prevention focus. This bias is problematic for the literature

on selecting managers for strategic fit, as the uneven research emphasis on the positive effects of promotion focus makes it appear to be ‘better’ than prevention focus in work contexts. Using survey data from 145 Dutch general managers, we examined the positive effects of general managers’ prevention focus on management team accountability and intra-organizational trust – two key organizational constructs (while also showing that general managers’ promotion focus does not have a positive effect on these constructs). By doing so, we hope to show that, depending on the context, either dimension of regulatory focus can be beneficial and preferable.

Table 8. Theoretical and Methodological Underpinnings of Study 4

Title:	Selecting Managers for Strategic Fit: General Managers’ Prevention Focus as an Antecedent of Management Team Accountability and Intra-Organizational Trust
Outcome:	Intra-Organizational Trust
Predictor:	Regulatory Focus of the General Manager
Mediator:	Management Team Accountability
Method:	Survey
Unit of Analysis:	Organizational Unit
Sample:	Cross-industry sample of 145 Dutch general managers
Data source:	Erasmus Competition and Innovation Monitor
Main Contributions:	<ul style="list-style-type: none"> ▪ Going beyond exploration-exploitation in examining the applications of the regulatory focus theory in the area of behavioral strategy. ▪ Shifting the overemphasis on promotion focus by examining the relative advantages of prevention focus over promotion focus. ▪ This study is relevant for all four questions of Behavioral Strategy.

In the remainder of this thesis, these four studies will be presented. Following that, we will move onto a general discussion section. In the discussion section, we will first review the main findings, contributions and implications of each of the studies. After that, the thesis will be concluded by pointing towards areas of future research.

Chapter 2: Regulatory Focus as a Psychological Micro-Foundation of Managers' Exploration and Exploitation Activities¹

ABSTRACT

In recent years, there has been strong interest in managers' ambidexterity, especially because of its positive effects on performance. Furthermore, a better understanding of the ambidexterity construct at the individual manager level is considered necessary in order to formulate overarching models of organizational ambidexterity. Most prior research in this area has focused on the organizational antecedents of managers' exploration and exploitation activities, and given less consideration to the psychological precursors. In this paper, drawing upon insights from the behavioral strategy literature, we take a theoretical perspective on managers' exploration–exploitation motivations. In particular, by conceptually linking regulatory focus and exploration–exploitation, we provide a unifying framework to explain these activities from a psychological viewpoint. Moreover, we employ the motivation–ability–opportunity (MAO) schema to delineate the boundaries of this framework. All in all, this study has a number of implications for strategic leadership theory and practice.

Keywords: *Exploitation-Exploration, Regulatory Focus, Motivation-Ability-Opportunity*

INTRODUCTION

The idea of ambidexterity in organizations originated from the analogy of individuals being able to use both hands simultaneously and skillfully (Duncan, 1976). The ambidexterity construct can be used to explain and influence managers' levels of performance (e.g. Mom, Fourné & Jansen, 2014; Schultz, Schreyoegg & von Reitzenstein, 2013). Furthermore, in order to construct a complete and overarching model of organizational ambidexterity, one needs to understand exploration and exploitation at the individual manager level (Raisch & Birkinshaw, 2008). These reasons have recently driven researchers to go back to the micro-foundations of the concept at the level of the individual manager. In this context, 'manager' refers to any individual with a formal leadership responsibility in an organization, ranging from a team leader to the CEO. Ambidexterity is most often characterized in March's (1991) terms of exploration and exploitation (Simsek, Heavey, Veiga &

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Souder, 2009, p. 865). This made the antecedents of managers' exploration and exploitation activities an essential area of focus in this emerging field (e.g. Gibson & Birkinshaw, 2004; Jansen, Vera & Crossan, 2009; Laureiro-Martinez, Brusoni & Zollo, 2010; Mom, van den Bosch & Volberda, 2007, 2009; Rosing, Frese & Bauch, 2011; Schultz et al., 2013).

Numerous calls have been made for more research in this area (e.g. Gupta, Smith & Shalley, 2006, p. 703; Jansen, George, van den Bosch & Volberda, 2008, p. 1002; Lavie, Stettner & Tushman, 2010, p. 143; Raisch & Birkinshaw, 2008, p. 397). For instance, Gupta, Smith and Shalley (2006, p.703) note that "studies that examine exploration and exploitation at a micro level are relatively scarce," and pose a number of interesting questions for future research to address. Likewise, Lavie, Stettner and Tushman (2010, p.143) state that "Also important is the study of exploration and exploitation at the individual and team levels of analysis (Gibson & Birkinshaw, 2004; Jansen, George, Van den Bosch & Volberda, 2008; Lubatkin et al., 2006; Smith & Tushman, 2005)". Following such calls in the literature, a number of papers have been published, especially in the foremost leadership journals, examining the various roles of managers within exploration–exploitation and organizational ambidexterity processes (e.g. Jansen, Vera & Crossan, 2009; Nemanich & Vera, 2009; Rosing, Frese & Bauch, 2011; Yukl, 2009). Of the studies to date that have examined the antecedents of managers' exploration and exploitation, most have concentrated on the organizational antecedents, and have given insufficient attention to the psychological antecedents. Given this current gap in the literature, there is value in constructing a psychological/behavioral framework as a complement to organizational/economic theories (Levinthal, 2011; Powell, Lovallo & Fox, 2011).

First of all, it is important to gain a better understanding of the psychological antecedents so that we can account for the intra-group differences between managers. Indeed, organizational antecedents have been able to explain some of the variance in the temporary, contextual differences in the exploration and exploitation activities of managers (e.g. Mom et al., 2009). However, without using a psychological framework, we can say little about the differences in these individuals' chronic tendencies, i.e. the intrinsic differences in their exploration and exploitation activities that are not derived from the context. Secondly, beyond that, there is also a good degree of variance that is simply beyond the scope of organizational and economic theories (e.g. sub-rational behavior), and thus cannot be clearly explained without drawing on appropriate psychological/behavioral theories (Levinthal, 2011; Powell et al., 2011). This in turn limits our understanding of how to select managers and employees and design contextual elements in such a way that they help to generate particular levels of exploration and exploitation. This is a significant gap in the literature, because achieving a particular type of ambidexterity within an organization requires the right levels of exploration and

exploitation in the right parts of the organization at the right times. For instance, top management teams (TMTs), whose strategy is to increase ambidexterity through a process of structural separation (e.g. Benner & Tushman, 2003; Lavie et al., 2010) may need to orient the managers in some of their business units primarily towards exploration and towards exploitation in others. In contrast, TMTs that are striving for contextual ambidexterity (i.e. Gibson & Birkinshaw, 2004) may need managers who are pretty equally balanced in terms of whether they are inclined towards exploration or exploitation. However, other TMTs that are seeking to increase performance through temporal ambidexterity (Siggelkow & Levinthal, 2003) may need to put carefully designed contextual elements in place so as to stimulate engagement in appropriate levels of exploration or exploitation activities, depending on the period the organization is in. Therefore, to satisfy theoretical and practical needs to implement ambidexterity, one needs to understand the psychological antecedents of exploration and exploitation at the level of the individual manager.

In this paper, we contribute to this area by highlighting regulatory focus as a key driver of managers' exploration and exploitation activities. Regulatory focus theory has been a prominent theory in the psychology literature over the last two decades, and has recently also attracted attention in leading strategic management journals (e.g. Das & Kumar, 2011; McMullen, Shepherd & Patzelt, 2009; Stam, van Knippenberg & Wisse, 2010; Wanberg, Zhu, Kanfer & Zhang, 2012; Weber & Mayer, 2011). Prior studies have shown that regulatory focus explains behaviors such as risk-taking and diverging from the norms (i.e. Crowe & Higgins, 1997; Liberman, Idson, Camacho & Higgins, 1999), but what has not been made plain is that these concepts correspond to the essential dimensions by which exploration and exploitation are defined. Doing so allows us to make a contribution by creating a new link between regulatory focus theory and the organizational literature, the importance of which is repeatedly emphasized in both streams of literature (i.e. Brockner & Higgins, 2001; McMullen et al., 2009; Wallace, Johnson & Frazier, 2009). More importantly, regulatory focus theory offers a psychological framework in which both chronic characteristics and temporary states of an individual can be explained. In contrast to exploration–exploitation at the individual manager level, a field which is growing but still under-explored, regulatory focus has a fully-fledged, mature literature and most of the antecedents and interrelationships are already known. Therefore, showing regulatory focus to be a primary precursor of managers' exploration and exploitation activities increases our understanding of the potential antecedents, and of the interaction effects to anticipate with other variables.

Furthermore, using the motivation–ability–opportunity (MAO) schema which has gained widespread acceptance in the management literature over the last decade (e.g. Adler & Kwon, 2002;

Crotty, 2006), we formulate a model that can delineate the primary boundaries of the relationship between managers' regulatory focus and exploration–exploitation activities. When examining this model, it is crucial to show not only the associations, but also the dissociations, between the constructs being discussed. Hence, using the MAO schema, we included two major moderators in our framework. By bringing moderators into the relationship, we illustrate some of the primary differences between the regulatory focus and the exploration–exploitation activities of the individual. Decision-making authority/decentralization at the individual manager level (Mom et al., 2009; Singh, 1986) was included in the framework as a key variable relating to ability, and ambiguity of the task environment as a key variable relating to opportunity (e.g. Daft & Weick, 1984). One of our primary goals in formulating this model was to better understand how TMTs can select and motivate managers to engage in exploration and/or exploitation activities in order to achieve organizational ambidexterity. Thus, we selected our variables in accordance with this goal. In particular, the three variables in our model all relate conceptually to the strategic leadership literature, particularly to the literature on transactional and transformational leadership. More specifically, the transformational and transactional leadership activities of a TMT can influence the regulatory foci (e.g. Kark & van Dijk, 2007), decision-making authorities (e.g. Bass, 1999; Dvir, Eden, Avolio & Shamir, 2002; Jung, Chow & Wu, 2003) and the ambiguity of task environments (e.g. Porter & Bigley, 2003; Yukl, 1999) of managers lower down in the organization.

THEORY

Conceptualization of Exploration and Exploitation at the Individual Manager Level

The origins of the concepts of exploration and exploitation lie in the decision and computer sciences (DeGroot, 1970; Holland, 1975). Following March's (1991) preeminent article, exploration and exploitation became integral fields of research within the strategic management literature. March defined exploration as the “things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation” whereas for exploitation he used terms such as “refinement, choice, production, efficiency, selection, implementation, execution” (March, 1991, p. 71). Both activities are associated with the performance of the decision-making entity (i.e. organization, business unit, team or individual) and its chances of survival, albeit in different ways. Exploration serves the purpose of increasing the chances of survival of the decision-making entity by allowing it to adapt to the changing conditions of the environment, thus ensuring long-term gains, whereas exploitation does so via fitting the entity perfectly to its existing environment, and maximizing short-term gains (Benner & Tushman, 2003; Tushman & O'Reilly, 1996). Hence, an

under-emphasis on exploration hampers long-term survival through obsolescence and leads to a lack of ability to cope with the restructured environment; insufficient engagement in exploitation, on the other hand, reduces the prospects of competitiveness in the short term (Levinthal & March, 1993; Volberda & Lewin, 2003). Some academics have named this orientation of maintaining both exploration and exploitation ‘ambidexterity’ (i.e. Adler et al., 1999), although others have preferred to reserve this term only for the idea of balancing the two via structural separation (cf. Lavie et al., 2010).

The theoretical concepts of exploration–exploitation are conceptualized in a number of different ways in the field. This is because March (1991), as quoted in the beginning of this section, presented quite a broad definition of exploration and exploitation – and although Levinthal and March (1993) made an attempt to limit the scope of exploration and exploitation specifically to the domain of organizational learning, most researchers kept using March’s definition, which was applicable to a wider range of phenomena (Lavie et al., 2010, p. 110). The most significant of these conceptualizations of exploration and exploitation are as follows.

First, a number of studies (i.e. Jansen, van den Bosch & Volberda, 2006) noted risk to be an essential distinction between exploratory and exploitative activities. According to these studies, high-risk activities are exploratory and low-risk activities are exploitative. Second, the time frame is seen as a distinguishing factor; Tushman and O’Reilly (1996) argued that exploration is associated with long-term goals, and exploitation with short-term goals. Third, in Levinthal and March (1993), we are presented with a distinction based on experience. Repetitive actions are associated with exploitation, whereas novel ones are exploratory. Fourth, Holmqvist (2004) showed that exploration requires one to be a generalist, especially with respect to the knowledge base, and exploitation requires one to be detail-oriented and specific. Fifth, He and Wong (2004) explained that knowledge creation is a form of exploration, whereas knowledge application is a form of exploitation. Finally, Lewin and colleagues (1999) discussed the concepts of stability and change, where an attempt to make a change to better alternatives is defined as exploration and an effort to achieve stability by adapting to the existing situation is associated with exploitation.

Regulatory Focus as a Psychological Micro-foundation of Managers’ Exploration and Exploitation Activities

In the psychology literature, there are two kinds of ends an individual may struggle to attain – avoiding pain and approaching pleasure – and “this principle underlies motivational models across all levels of analysis in psychology, from the biological to the social” (Higgins, 1998). All people try to

achieve both, although to differing extents at different times. In a more prevention-focused state, people try to minimize mistakes by detailed concentration on the threats in the environment and by making themselves fit the situation they are in (ought self). This kind of orientation is evident in statements such as “I must not get fired from this job” or “I should not to appear rude in front of my colleagues.” In contrast, in a more promotion-focused state the individual tries to maximize gains by seizing opportunities in the environment through concentration on the abstract ‘big picture’ and on how he or she aspires to be as an individual (ideal self). They might say, for example, “I want to learn as much as possible from this course” or “I want to be a successful person.” The literature on regulatory focus discusses the various factors surrounding this essential principle, which has dramatic effects on many different behavioral, emotional and decision-making tendencies in the individual (*cf.* Brockner & Higgins, 2001; Cropanzano, Paddock, Rupp, Bagger & Baldwin, 2008; Higgins, 1997).

When we talk of someone being promotion- or prevention-focused, this generally refers to that individual’s chronic regulatory focus, a fairly stable component of an individual’s regulatory focus that is based on upbringing (Higgins, 1998). However, although chronic regulatory focus gives a general tendency for the person to act in one way or other, different situations require that person to act in other ways (Friedman & Förster, 2001). For example, in a scenario that contains threat, the individual has to concentrate on making the fewest mistakes possible or ‘minimal goals’, whereas in situations where opportunities are manifest he or she focuses greater effort on maximizing gains or ‘maximal goals’ (Brendl & Higgins, 1996; Pennington & Roese, 2003). This shift in an individual’s regulatory focus in response to the cues salient in the environment is called ‘situational’ or ‘contextual’ regulatory focus (Neubert, Kacmar, Carlson, Chonko & Roberts, 2008; Stam, et al., 2010).

The concept of regulatory focus has been used in psychology literature to explain a large spectrum of phenomena, such as eating habits (Sengupta & Zhou, 2007), responses to anti-smoking campaigns (Zhao & Pechmann, 2007), and tendencies towards some psychological disorders (i.e. Klenk, Strauman & Higgins, 2011). Of the management sub-fields, marketing has particularly embraced this construct, the vast majority of regulatory focus articles being published in this context (i.e. Herzstein, Posavac & Brakus, 2007; Kees, Burton & Tangari, 2010; Wang & Lee, 2006). This construct has also been applied to the fields of finance and economics, especially because of its relevance to risk-attitude (i.e. Halamish, Liberman, Higgins & Idson, 2008; Zhou & Pham, 2004). In the strategic management literature, the construct is very new, although interest is strong. For example, Das and Kumar (2011) have applied this construct to corporate alliances, McMullen, Shepherd and Patzelt (2009) to managerial attention, and van Dijk & Kluger (2011) to task performance. On the other hand, although the purpose of regulatory focus lies in the individual’s need

for proper adaptation for survival (Friedman & Förster, 2001, p. 1001) – precisely the same purpose as with exploration and exploitation (Levinthal & March, 1993; March, 1991) – this construct has not yet been linked with the emerging organizational ambidexterity literature at the individual manager level. This is one gap we fill by means of this paper.

Below we discuss the core concepts upon which that regulatory focus has an effect. Most other higher-level behaviors, such as the ones mentioned above with respect to marketing and management, are explained through the effects of regulatory focus on the following core concepts.

One of the most commonly discussed attributes of regulatory focus is its relationship with risk-taking. Promotion focus is associated with high risk-taking and maximal goals, whereas prevention focus is associated with low risk-taking and minimal goals (Crowe & Higgins, 1997; Gino & Margolis 2011, Study 3; Hamstra, Bolderdijk & Veldstra, 2010). To test this relationship, Crowe and Higgins (1997, Study 2) conducted an experiment involving a recognition memory task. The conclusion of the experiment was that promotion-focused participants tried to recognize as many items as possible, which resulted in a risky response bias, whereas prevention-focused participants tried to make the fewest number of errors possible, and hence had a conservative response bias. Hamstra et al (2010) extended these results to include everyday risk-taking behaviors as well, and also provided external validity to these claims. By installing GPS devices to the participants' cars, they examined differences in the speeding behavior of promotion- and prevention-focused individuals (Study 1), which showed that chronic promotion focus increased propensity towards everyday risk-taking. The results of this experiment were also confirmed in a simulated environment (Study 2).

Another core concept is time frame, where a number of experiments show that promotion focus is associated with distant future, and prevention focus is associated with near future as well as with retrospective thinking (Pennington & Roese, 2003; Theriault, Aaker & Pennington, 2008). For instance, in an experiment by Pennington and Roese (2003, Study 4), participants were asked to list three future goals with a clear completion date. The request for one group was framed in a promotion-focused manner (“What are some positive things that you expect to be successful at achieving?”), and the other group received the request in a prevention-focused manner (“What are some negative things that you expect to be successful at avoiding?”). The participants were also asked to estimate when the goals would be accomplished. The results showed that the goal completion estimates were significantly more distant in the promotion condition than in the prevention condition.

Herzenstein, Posavac and Brakus (2007) demonstrated that promotion-focused individuals have a significantly stronger tendency to be early adopters of a novel product than prevention-focused individuals, who tend to wait until the product is tried. In their first study, they investigated this

relationship by asking random visitors to a shopping mall about the number of really new products they possessed at home. Furthermore, they also conducted an experiment where they manipulated the regulatory focus of the participants through framing (i.e. Shah, Higgins & Friedman, 1998), and examined how this changed their intention to purchase really new products. The results of this study corroborate the notion that promotion-focused individuals are more strongly inclined towards novelty, whereas prevention-focused individuals prefer to see an idea tried by others before they invest resources in it.

Through an examination of information-processing styles, a study by Förster and Higgins (2005) sheds more light on the relationship between regulatory focus and concentration on the general versus the specific. Concentrating on the details – in other words, a local processing style – fits prevention focus, as in order to restore the individual to a state of security, it is necessary to have an in-depth awareness of the threats in the environment, including subtle cues that may imperil the goals or the existence of the individual. In contrast, a search for opportunities requires an abstract comprehension of the environment, which is gained through a more global processing style.

Knowledge creation is associated with promotion focus, as reaching maximal goals depends on creativity and unorthodox solutions. Flawless and reliable application of existing knowledge is associated with a prevention focus, however, since ensuring the completion of minimal goals means that mistakes must be avoided. Friedman and Förster (2001, Experiment 2) conducted a study where participants were put into a situation which induced a particular type of regulatory focus and were then asked to write down as many creative uses for a brick as possible. They were then graded by a team of twelve scorers with respect to creativity. Results showed that participants with a promotion focus were more likely to produce creative ideas than the participants with a prevention focus. More recently, Rietschel (2011) tested these ideas in an organizational setting, and provided similar results, showing that teams with members in a promotion focus were more likely to generate creative ideas.

Finally, Liberman, Idson, Camacho and Higgins (1999) examined the relationship between regulatory focus and preferences of stability and change. Through five different studies, they investigated participants' proclivity to engage in task and endowment substitution. Individuals with a promotion focus were more likely than individuals with a prevention focus to exchange an object they possess for something else. Likewise, when given the opportunity to change task, individuals with a prevention focus were more likely than individuals with a promotion focus to prefer to continue the same task they had already been assigned, rather than to work on a substitute task instead.

When the relationships above are compared to the conceptualizations of individuals' exploration and exploitation discussed earlier, the strong link between regulatory focus and

individuals' exploration and exploitation becomes clear (See Table 1).

Table 1

A Comparison of Managers' Exploration-Exploitation and Regulatory Focus

Dimensions	Exploration and Exploitation	Regulatory Focus
Risk	March, 1991	Crowe & Higgins, 1997
Time Frame	Tushman & O'Reilly, 1996	Pennington & Roese, 2003
Novel and Tried	Levinthal & March, 1993	Herzenstein et al., 2007
General and Specific	Holmqvist, 2004	Förster & Higgins, 2005
Knowledge Creation and Knowledge Application	He & Wong, 2004	Rietzschel, 2011
Stability and Change	Lewin et al., 1999	Lieberman et al., 1999

Thus, regulatory focus is known to be an antecedent of a number of concepts, and we show that these correspond to the concepts by which exploration and exploitation are defined. In particular, the consequences of the promotion dimension of regulatory focus – namely, high risk-taking, long-term orientation, aspiration for novelty, general information-processing, knowledge creation and willingness to change – conforms closely with the original definition of exploration as “things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation” (March, 1991, p.71). Likewise, the consequences of the prevention dimension of regulatory focus – low risk-taking, short-term orientation, preferring tried over novel, detailed information-processing, knowledge application and a desire for stability – again conforms quite closely to the definition formulated by March, namely “refinement, choice, production, efficiency, selection, implementation, execution” (ibid.). For these reasons, we state that promotion focus is a primary driver of exploration motivation, and that prevention focus is a primary driver of exploitation motivation.

Proposition 1a: Managers' promotion foci are positively related to their exploration activities.

Proposition 1b: Managers' prevention foci are positively related to their exploitation activities.

So far, we have explicated the relationship between regulatory focus and exploration and

exploitation at the individual manager level. However, a second question remains: what is then the difference between these two variables? Or is there a difference?

One factor that negatively moderates the link and presents a difference between individuals' regulatory focus and their exploration–exploitation behaviors is ability. Indeed, this difference between motivation and behavior is essential to models used to try and comprehend human behavior. For instance, in his famous paper on Theory of Planned Behavior, Icek Ajzen notes that “The idea that behavioral achievement depends jointly on motivation (intention) and ability (behavioral control) is by no means new” (Ajzen, 1991, p. 182). Various other researchers have also described motivation and ability as two distinct but complementary antecedents of behavior (i.e. Hull, 1943; Locke, 1965; Moorman & Matulich, 1993; Sprott, Brumbaugh & Miyazaki, 2001). The individual needs sufficient levels of ability to reify motivations into actions. Thus, setting aside the effects of other potential moderators, if we envisage ideal types (although such types would not exist in nature due to extremely low chances of survival), a purely prevention-focused individual would primarily exploit, and a purely promotion-focused individual would primarily explore, *given the ability to do so*.

One good example of this comes from the recent study by Rietzschel (2011). This was a small sample survey conducted at the team level, but provided us with some notable insights. In this survey, it was found that regulatory focus had an effect on idea generation and idea promotion, namely, whether the team was willing to attempt to 'sell' their ideas, which “requires willingness to invest resources in the innovative process, and a strong belief that creative ideas are worth pursuing further” (Rietzschel, 2011, p. 339). On the other hand, as Rietzschel expected, 'idea realization' – or whether the team could actually get the idea deployed in the company – was unaffected by the team's regulatory focus, as “successful realization of innovative ideas is constrained by many factors that are beyond the team members' control” (ibid., p.343). However, for us, what matters is that these teams not only created these new ideas, but they tried to sell these ideas to others and invested resources in them as well. In other words, we know that they would get their idea deployed in the company, *if they had the ability to do so*.

Within the domain of organizational contexts, a manager's ability or 'behavioral control' (Ajzen, 1991) corresponds predominantly to his or her decision-making authority, also known as decentralization at the individual manager level (e.g. Mom et al., 2009; Singh, 1986). Decentralization increases the feelings of self-control and ownership (Hage & Aiken, 1967; Tushman & O'Reilly, 1996), which urges the individuals to make their own decisions, especially with respect to the level of exploration and exploitation (Gibson & Birkinshaw, 2004, p.71; Mom et al., 2009). Hence, the more decision-making authority managers have, the more they will be likely to act based on their own

motivational tendencies, rather than those of their peers or supervisors. In other words, managers will be more likely to act according to their own regulatory focus, to the extent to which they possess the decision-making authority to do so.

Proposition 2a: Managers' decision-making authorities positively moderate the relationship between their promotion foci and exploration activities.

Proposition 2b: Managers' decision-making authorities positively moderate the relationship between their prevention foci and exploitation activities.

As we explained in the introduction section, most research in the last decade has tended to regard behavior not only as jointly contingent upon motivation and ability but also as including another class of variables on opportunity (MAO schema – e.g. Adler & Kwon, 2002; Crotty, 2006). Opportunity refers to the necessity or possibility of engaging in an action. For instance, recent work on strategic human resource management has discussed how simply motivating and equipping individuals to engage in particular types of activity (e.g. radical innovation) is not enough in itself – one also needs the tasks and context that demand that type of activity (see Lepak, Liao, Chung & Harden, 2006, p. 233, for a review).

One variable that determines the extent of exploration and exploitation opportunities is the ambiguity level of the task environment. This is because exploration is an activity individuals engage in when they are searching for a better alternative. However, when the optimal solution to the environmental landscape (e.g. Levinthal, 1997) is very clear, or at least appears to be so, an individual will simply try to exploit the existing opportunity. To make this clearer, let us take a somewhat extreme example. Imagine an average individual, who one day learns that he or she holds the winning ticket for the grand prize in the national lottery. Let us assume that this person is interested in making money and that it takes twenty minutes to get to the lottery office. Provided that person has no limitations in terms of ability, what is the likelihood that he and she would rather spend those twenty minutes searching for a better way of making money than handing in the lottery ticket? The solution is so clear that even a very promotion-focused individual would still simply go and claim the prize. Likewise, exploitation requires an individual to have at least something (i.e. an idea, product or resource) to exploit. If not, even an individual who is very prevention-focused will first have to conduct some exploratory activities. In other words, there is no opportunity to explore once the whole search-space has already been exhaustively explored, and there is no opportunity to exploit when there is simply nothing to exploit. That is, regardless of regulatory focus and internal state (e.g. eager vs. vigilant), when there is absolutely no ambiguity in the environment the individual engages in

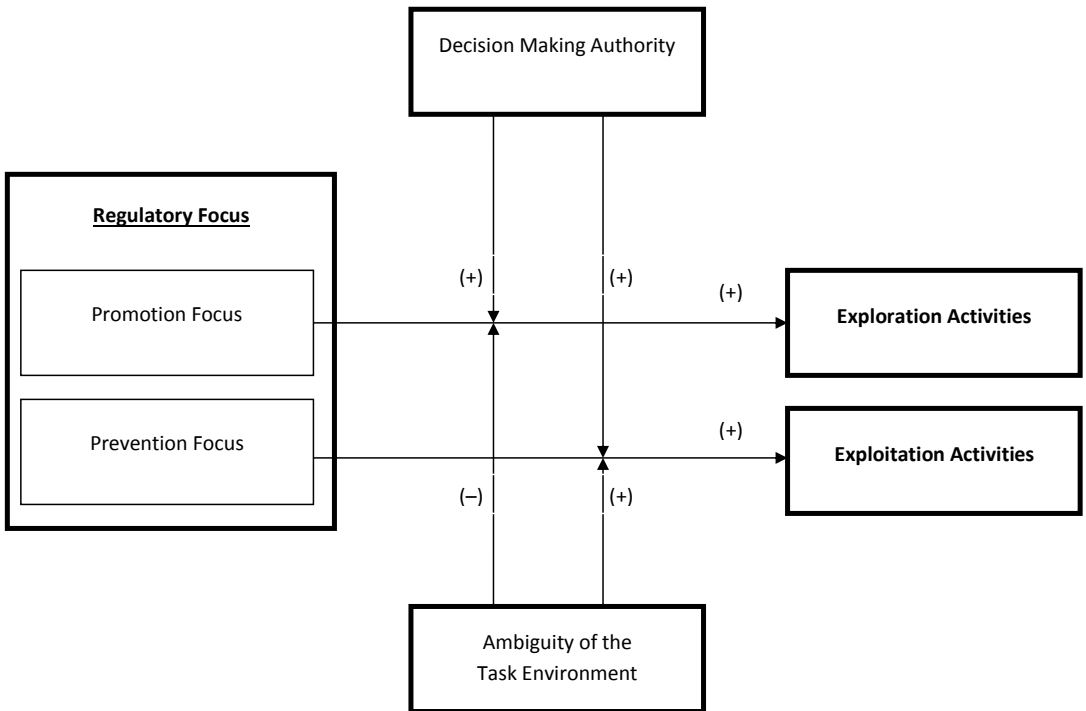
exploitation, and when there is absolutely no clarity in the environment the individual engages in exploration.

Therefore, the difference between prevention and promotion-focused individuals becomes most apparent when the environment is not at the extreme ends of the ambiguity–clarity continuum. In an environment where there are moderate levels of ambiguity, prevention-focused individuals will be quicker to start exploiting once they find a satisfactory solution because they are satisficing in order to reach a minimal goal (Brendl & Higgins, 1996; Pennington & Roese, 2003), and they will be more likely to keep this status quo (Lieberman et al., 1999) as long as the solution is still in line with the minimum criteria. On the other hand, because promotion-focused individuals are trying to maximize their gains (Brendl & Higgins, 1996; Pennington & Roese, 2003), they are likely to keep exploring for a while longer even if they find a solution that fits their minimum criteria. Furthermore, given their greater willingness to switch to better alternatives (Lieberman et al., 1999), even after they have begun to exploit one option, they are likely to spend more resources on continuing to search for others. However, despite these potential differences in the extent to which they explore or exploit, in environments that are less ambiguous both groups will require fewer resources to be spent on exploration activities in order to find a solution that meets their goals (e.g. Levinthal, 1997). In other words, when the environment is more ambiguous, both promotion-focused and prevention-focused individuals will explore more than they would do in a less ambiguous environment. Hence, ambiguity moderates the relationship between regulatory focus and exploration–exploitation such that more ambiguous environments prompt individuals to engage in more exploration activities, while in less ambiguous environments, where most of the search space is visible, less exploration is necessary to find the solution the individual is looking for (i.e. the optimal solution or a solution that fits the minimum criteria).

Proposition 3a: Ambiguity of the task environment positively moderates the relationship between managers' promotion foci and exploration activities

Proposition 3b: Ambiguity of the task environment negatively moderates the relationship between managers' prevention foci and exploitation activities.

Figure 1. Conceptual Framework



DISCUSSION

In this paper, we positioned regulatory focus as a central psychological theory for explaining exploration and exploitation activities at the level of the individual. Furthermore, we showed two concepts, conceptually linked to the strategic leadership literature, that moderate this relationship. Accordingly, this paper has a number of contributions and implications for the strategic leadership literature, especially for the stream of research examining the role of individuals in the emergence of exploration–exploitation, organizational ambidexterity and performance.

Contributions and Implications for Theory, Research and Practice

Above all, this paper contributes to our understanding of how TMTs can select and motivate managers for the purpose of increasing engagement in exploration and/or exploitation activities. Hence, the main implications of this paper are for the ongoing discussion in the foremost leadership journals about the role of managers in the emergence of exploration–exploitation and ambidexterity (i.e. Jansen, Vera & Crossan, 2009; Nemanich & Vera, 2009; Rosing, Frese & Bauch, 2011; Yukl, 2009). As we have previously explained, the literature on exploration and exploitation processes at the individual manager level is only now starting to emerge (i.e. Lavie et al., 2010, p. 143; Raisch & Birkinshaw, 2008, p. 397), whereas regulatory focus is already well established. By positioning regulatory focus as a central theory of managers' exploration and exploitation activities, we are providing a well-developed set of tools for future research in this area. In so doing, this study aims to help accelerate the development of exploration–exploitation and ambidexterity research, particularly at the individual manager level of analysis.

The theories pertaining to chronic regulatory focus are particularly useful in the context of managers' exploration and exploitation activities. As already indicated, chronic regulatory focus suggests that managers' exploration and exploitation also involves a stable component that is hard-wired into individuals. As an extension of exploration and exploitation research at higher levels of analysis, research at the individual manager level has been concentrated primarily on external variables such as organizational and environmental antecedents, and is unable to account for why individuals behave differently under similar circumstances. Chronic regulatory focus provides an opportunity for explaining intra-group differences in the individuals' exploration and exploitation activities. This also suggests that

the managers who score high on both prevention and promotion foci may have a natural inclination towards contextual ambidexterity, which requires a manager to maximize both exploration and exploitation activities (Mom et al., 2009). In fact, this inference strongly parallels and confirms the observations in prior studies that ambidextrous managers host contradictions (i.e. Mom et al., 2009, p. 813; Smith & Tushman, 2005).

Another benefit of this paper for the strategic leadership literature on exploration–exploitation and ambidexterity is that it provides a theoretical framework for constructing psychological explanations. Several prior studies (e.g. Mom et al., 2009), while examining the organizational antecedents of exploration and exploitation at the individual manager level, have also made use of some motivation-related arguments in their theoretical mechanisms. However, these motivational arguments were generally quite idiosyncratic as they were based on a bricolage of different theories. As a result, even if the hypotheses following these arguments were supported, when we attempt to pull together the results from these various studies, we are unable to state how these sub-constructs are interconnected and the extent to which their effects overlap. With this study we bring in regulatory focus theory and the motivation–ability–opportunity (MAO) schema, which provide a unifying framework. This enables future studies to build on and complement each other’s results. Furthermore, by basing our variable selection on variables that are pertinent to transactional and transformational leadership, we not only produce insights on how managers can be selected and motivated to ensure specific levels of exploration and exploitation but we also strengthen the links between our study and the wider leadership literature.

This has meant that the study also has implications for the ongoing discussion in the *Leadership Quarterly* about the link between transformational–transactional leadership and exploration–exploitation (see Jansen, Vera & Crossan, 2009). Jansen and colleagues (2009) had recently shown a relationship between transformational leadership and exploratory innovation, and between transactional leadership and exploitative innovation. They based their theoretical mechanism on former organizational models (e.g. theories of organizational learning). By the addition of this study, the regulatory focus literature is now also able to show the same link, and to do so using a psychological model with a completely different set of assumptions. More specifically, Kark and van Dijk (2007) had previously argued transformational leadership activities of higher management to increase promotion focus and transactional leadership activities to increase prevention focus within the firm. By bringing forward promotion focus as a key driver of exploration activities and prevention focus as a

key driver of exploitation activities, this study extends the results of Kark and van Dijk (2007) to confirm the model of Jansen and colleagues (2009). This not only provides additional corroboration for the results of the Jansen study, but because psychological theories are able to explain a different part of the variance to organizational theories (Levinthal, 2011; Powell et al., 2011), it also reveals new ways in which the earlier model can be developed. For instance, one concept from the regulatory focus theory that can further extend the model of Jansen and colleagues is that of regulatory fit. Regulatory fit suggests that a fit between the individual's regulatory focus and the task increases the value attributed to the task and therefore improves the individual's task performance (Higgins, 2000; Keller & Bless, 2006). This concept would therefore imply that when their leaders (e.g. TMT members) employ a transformational (transactional) leadership style, managers and employees will not only be more likely to engage in exploration (exploitation) tasks but because that leadership style will make them become more promotion-focused (prevention-focused), their performance in those exploration (exploitation) tasks will improve as well. In contrast, discrepancies between the leadership style and the task assigned to the individual will result in a regulatory mismatch, leading a drop in task performance (Higgins, 2000; Keller & Bless, 2006). This, on the other hand, can be used to explain the possible differences in performance that occur, despite similar levels of ambidexterity. Future research directions are discussed more fully in the following section.

This study is also of relevance to the strategic leadership literature on the effects of regulatory focus at the TMT level, in that it refines our understanding of the performance effects that can be seen to stem from the interaction between the CEO's regulatory focus and the dynamism of the environment. More specifically, a recent study observed a positive association between firm performance and the promotion focus of the CEO, particularly in dynamic environments (Wallace, Little, Hill & Ridge, 2010). Furthermore in such environments, the effect of prevention focus was negative. In this study, we confirm and extend these results. Previously Jansen, van den Bosch and Volberda (2006) explained that in highly dynamic environments exploratory innovation has a positive effect on performance. By showing that a promotion focus results in exploration activities – a precursor to exploratory innovation – we affirm and further clarify the results of prior research which argued that promotion-focused managers are better in environments of high dynamism. However, we also extend these results. As a matter of fact, Jansen, van den Bosch and Volberda (2006) also note that in low-munificence environments, i.e. competitive environments, exploitation benefits

performance. Therefore, by showing the link between regulatory focus and exploration–exploitation, we extend and complement the results of the prior research by suggesting that while a higher promotion focus becomes more desirable as the environmental dynamism rises, a higher prevention focus is preferred as the environmental munificence is decreased. Our study further clarifies the advantages of different kinds of managers/CEOs in differing environmental conditions, rather than emphasizing the benefit of only one type of regulatory focus.

Finally, the managerial implications of this study relate to the members of top management teams as well as to HR professionals responsible for selecting individuals in formal leadership positions and designing their work environments. According to this study, chronic regulatory focus could be added into the selection criteria in order to select managers who have the optimal person–job fit. For example, it can be included as a metric in personality tests used for selection. Moreover, to stimulate managers to engage in the kind of tasks that will help them achieve ambidexterity, one must fashion the work environment accordingly. For instance, corporate communication, incentive mechanisms, tasks and other contextual elements can all be designed with a purpose of fostering a particular type of regulatory focus within the organization or organizational unit (e.g. Brockner & Higgins, 2001; Kark & van Dijk, 2007; Weber & Mayer 2011; Shah et al., 1998).

Limitations and Future Research

As with any other conceptual study, the next step should be to test its general propositions through specific empirical studies. This will require these constructs to be looked at under different environmental conditions and with different operationalizations (e.g. chronic vs. contextual regulatory focus). However, given the interdisciplinary nature of this research, one crucial but relatively demanding task will be to select appropriate control variables. For instance, in this study, we presented decision-making authority as a notable example of an ability-related variable that moderates the link between managers' regulatory focus and their exploration–exploitation activities. When conducting research using this particular variable, for example, one potential control variable might be the managers' level of accountability, where accountability “refers to the implicit or explicit expectation that one may be called on to justify one's beliefs, feelings, and actions to others” (Lerner & Tetlock, 1999, p. 255). This is because, in some circumstances, the feeling of power that comes from increased decision-making authority may signal to the individual that he or she is less likely

to be questioned about his or her actions (the opposite may also be true under other circumstances). This lower expectation of potential negative consequences may signal to the individual that the environment is nurturing (as opposed to threatening), and may then lead to a promotion focus in that particular context. That, in turn, may unnecessarily complicate the relationship between the variables, and cause ambiguous results. In other words, because we are conducting research that straddles two literatures, variables that were not common as control variables in previous research may now become relevant. Therefore, when selecting control variables for models based on this framework, future researchers should take into account not only the control variables used in past regulatory focus and exploration–exploitation studies, but the relevant independent and dependent variables in those studies as well. Albeit effortful and somewhat tedious, this certainly is a typical empirical issue whenever a new stream of literature begins to emerge.

In the rest of this section, we are going to mention briefly two more concepts from the regulatory focus literature that present important pathways for future research. First, a recent stream of research suggests that regulatory focus is also a part of collective identity schemas (Faddegon, Scheepers & Ellemers, 2008). In other words, just like individuals, collectives (i.e. groups, teams, organizational units, TMTs or organizations) can have a regulatory focus as well. Therefore, to the extent that an individual's collective identity is salient – in other words, how far the individual defines himself or herself in terms of the group, rather than in terms of the individual self (e.g. Hogg & Terry, 2000) – the individual's promotion and prevention focus will also temporarily change (Faddegon, Scheepers & Ellemers, 2008). More specifically, the individual's regulatory focus will shift towards that of the group, or at least towards what the individual *perceives* the group's regulatory focus to be (Faddegon et al., 2008). This also means that the exploration and exploitation activities of the individual will shift, depending on the salient self of the individual (i.e. the individual self or one of many possible collective selves, ranging from the organizational identity to a group formed through simple gestalt). Therefore, this suggests that, with the help of the social identity and self-categorization theories (e.g. Hogg, 1992; Hogg & Terry, 2000; Tajfel & Turner, 1986), future research can use regulatory focus theory to examine ambidexterity not only at the individual manager level, but also throughout the organization. This implication of linking the individual manager level to the higher collective levels is in line with the goals of a growing stream of literature in the field that is trying to formulate overarching models of organizational ambidexterity (i.e. Simsek, 2009). Furthermore, it may also enrich the generalizability of the

conclusions reached in this paper by showing the relevance of the propositions at higher levels of analysis as well.

Secondly, another stream of research within the regulatory focus literature that may be useful for future research is that relating to 'regulatory fit'. Prior research in this area suggests that 'regulatory fit' increases task engagement, perception of task value and cognitive performance in the task, whereas a 'regulatory mismatch' has the opposite effect (i.e. Higgins, 2000; Keller & Bless, 2006). As we have discussed, managers' promotion focus is associated with exploration activities and prevention focus with exploitation activities. Due to the effect of regulatory fit vs. mismatch, we expect individuals and collectives not only to have a greater tendency to engage in exploration (exploitation) activities when they are in a promotion (prevention) focus, but also show higher levels of performance in the corresponding type of activities. In contrast, if an individual or collective is compelled to engage in these activities without any change in their regulatory focus, we expect the levels of task performance to be affected negatively.

A better understanding of this link would benefit the literature on managers' exploration–exploitation and ambidexterity, as most prior research in this area tries to explain only the level of engagement in exploration and exploitation activities without talking about the task performance in those activities. There is an implicit assumption that engaging in exploration and/or exploitation activities has a direct positive effect on performance. On the other hand, it is more likely the case that engagement in exploration and exploitation will increase the overall performance of the individual insofar as the individual performs well on those tasks of exploration and exploitation. The regulatory fit concept can make a valuable contribution to this area by showing that different individuals will not only engage in different amounts of exploration and exploitation, but may also perform at different levels, depending on their natural tendencies. In other words, regulatory fit can explain why two individuals with similar degrees of ambidexterity may have different levels of performance, which is an important gap in our current literature.

Chapter 3: A Manager's Regulatory Focus as a Mediator of Organizational and Environmental Antecedents of a Manager's Exploration and Exploitation Activities²

ABSTRACT

Current research on exploration and exploitation focuses on the firm and unit level, and on organizational and environmental types of antecedents. This paper answers explicit calls for future research on individual level exploration and exploitation by contributing to new insights into a manager's exploration versus exploitation activities. We do so, first, by proposing a motivational type of antecedent, i.e. a manager's regulatory focus. Second, by developing a model and associated hypotheses which specify the relationships between regulatory focus and organizational and environmental types of antecedents of a manager's exploration and exploitation activities. Third, by testing the hypotheses based on a sample of 224 managers at a 'big four' consultancy and accountancy firm. Hypotheses and results indicate that a manager's regulatory focus partially mediates the effects of the organizational and environmental antecedents on a manager's exploration and exploitation activities indicating motivational effect paths of these antecedents through regulatory focus.

Keywords: *Exploitation and Exploration, Manager Level, Regulatory Focus, Environmental Dynamism, Decentralization*

INTRODUCTION

Research on the exploration of new possibilities and the exploitation of existing certainties in organizations increasingly draws the attention of both management academics and practitioners (Gupta et al., 2006; March, 1991; Simsek, 2009). As this research has usually focused on the corporate or business unit level of analysis, improving understanding of exploration and exploitation at the individual level is still needed. This is 'vitally important', as Raisch and Birkinshaw (2008, p. 397) put it, 'because choices about how to resolve tensions [between exploration and exploitation] at one level of analysis are often resolved at the next level down'. Consequently, several researchers including Gupta et al. (2006, p. 703),

² This paper is being prepared for submission (Co-authors: Mom and van den Bosch)

Lavie et al. (2010, p. 143), Raisch and Birkinshaw (2008, p. 397), Simsek (2009, p. 612), and Smith and Tushman (2005, p. 533) explicitly suggest further investigating exploration and exploitation at the individual level of analysis as a promising direction for future research.

We contribute to this by investigating a manager's exploration and exploitation activities (O'Reilly & Tushman, 2004). That is, we aim at increasing insight into variation of a manager's exploration and exploitation activities by investigating the effects of *different types* of antecedents, as well as the *relationships* between these antecedents. Current literature on exploration and exploitation builds on insights from fields like innovation, strategic management, organizational learning, and organization design, and has focused on *organizational* and *environmental types of antecedents* (see e.g. Gupta et al., 2006; Raisch & Birkinshaw, 2008; and Simsek et al., 2009). This paper contributes to current literature on exploration and exploitation by proposing for individual level exploration and exploitation a new type of antecedent by building upon insights from the field of social psychology. More precisely, by building upon regulatory focus theory (Brockner & Higgins, 2001; Higgins, 1997; 1998; Shah et al., 1998), we propose a manager's regulatory focus as a *motivational type of antecedent*. Recently, regulatory focus theory –which defines the gains versus losses orientation of an individual– increasingly appears in management and organization studies (Wallace et al., 2009) and has been utilized to interpret a wide range of inadequately-understood phenomena, such as the germination of employee commitment in organizations (Johnson et al., 2010), managers' inattention to emerging competitive threats (McMullen et al., 2009), opportunistic behavior of managers in corporate alliances (Das & Kumar, 2011), the use of contracts (Weber & Mayer, 2011), and transformational and transactional leadership behaviors (Kark & Van Dijk, 2007). Regulatory focus theory may offer interesting insights to research on exploration and exploitation as well, particularly at the individual level of analyses, given its versatile applications in related areas like those of individuals' creativity (Friedman & Förster, 2001), performance (Neubert et al., 2008; Keller & Bless, 2006) and behavioral change (Fuglestad et al., 2008; Liberman et al., 1999).

Besides introducing regulatory focus as a new type of antecedent, this study investigates an organizational and environmental type of antecedent of manager's exploration and exploitation as well, to create a more encompassing insight into drivers of variation of manager's exploration and exploitation activities. Regarding organizational antecedents, centralization-decentralization emerges most consistently in studies of the components of the organization structure (Miller & Dröge, 1986; Zmud, 1982), and it plays a prominent role in

studies on firm and unit level exploration and exploitation as well (Benner & Tushman, 2003; Jansen et al., 2006; Tushman & O'Reilly, 1996). We investigate (de)centralization at the individual level of analysis in terms of a manager's decision making authority (cf. Ghoshal et al., 1994; Sheremata, 2000). Regarding environmental antecedents, researchers particularly point to dynamism as a fundamental aspect of the environment (Dess & Beard, 1984), shaping the extent to which organizations, and units focus on and invest in exploration and/or exploitation (Floyd & Lane, 2000; Jansen et al., 2005; Simsek, 2009). In this study we focus on dynamism at the individual level by investigating the dynamism of a manager's direct internal and external surrounding environment (cf. Burgelman, 1991; 2002) as an antecedent of that manager's exploration and exploitation activities.

As pointed out by Simsek (2009), studies to date have typically focused on only one type of antecedent to explain exploration and exploitation in organizations. Related to this, scholars observe as a neglected issue in the field of exploration and exploitation more 'integrative models' (Simsek, 2009, p. 598; see also Gupta et al., 2006; Raisch & Birkinshaw, 2008) which specify 'the interrelations between different antecedents' (Raisch & Birkinshaw, 2008, p. 399).

To contribute to addressing this gap in the literature we investigate the interrelations between the motivational, organizational, and environmental antecedent of manager's exploration and exploitation activities as well. The literature on regulatory focus points out that one of the main drivers of regulatory focus is contextual stimuli (Higgins, 1997). In line with this, studies have indicated that organization members' regulatory focus is affected by organizational and environmental contextual factors (e.g. Kark & Van Dijk, 2007; McMullen et al., 2009; Wallace et al., 2009). Based on these insights, we develop and test a model which specifies the selected organizational and environmental antecedents of exploration and exploitation as antecedents of a manager's regulatory focus as well; i.e. we model a manager's regulatory focus as a partial mediator of the selected organizational and environmental antecedents; see the conceptual framework depicted in Figure I. By doing so, we contribute to existing literature by conceptually explaining and empirically assessing motivational effects of the organizational and environmental antecedents on manager's exploration and exploitation activities through manager's regulatory focus.

Summarizing, this paper aims to deliver three related contributions to the literature on exploration and exploitation in the investigation of exploration and exploitation at the individual level of analysis. First, by proposing a new type of antecedent, i.e. regulatory focus

as a motivational antecedent, alongside investigating an organizational and environmental type of antecedent. Second, by developing a model and associated hypotheses which specify the relationships between organizational, environmental, and motivational types of antecedents. The organizational and environmental antecedents have a direct effect as well as an indirect effect through the mediating construct of regulatory focus. Third, by testing the hypotheses based on a sample of 224 managers. The results indicate important motivational effect paths of the organizational and environmental antecedents through a manager's regulatory focus. The remainder of this paper is structured as follows. In the next section, we will introduce the relevant concepts and develop the conceptual model and hypotheses. Next, in the methods section, specifics of the data and the measures utilized in the study will be elucidated. After that, we will discuss how the analysis was done and the results achieved. Finally, we will conclude by discussing implications for theory and management practice, and by reviewing limitations and interesting pathways for future research. See appendix A for the theoretical framework.

THEORY AND HYPOTHESES

Manager's Exploration and Exploitation Activities

Discussions on exploration and exploitation, in terms of a manager's activities, can be found in various literatures; most notably those on organizational learning, innovation, and strategic management (Gupta et al., 2006; O'Reilly & Tushman, 2004; Raisch & Birkinshaw, 2008). March (1991) proposed exploration and exploitation as two different learning activities of firms and their organization members. Studies of organizational learning indicate that the essence of a manager's exploration activities is about creating variety in experience (Holmqvist, 2004; McGrath, 2001; Mom et al., 2007), associated with renewing and broadening their knowledge base, skills, and expertise (cf. Fang et al., 2010; Levinthal and March, 1993). A manager's exploitation activities are argued to be essentially about increasing reliability in experience (Holmqvist, 2004; Mom et al., 2007), associated with refining, deepening, and applying their existing knowledge base, skills, and expertise (cf. Fang et al., 2010; Levinthal and March, 1993).

Studies on innovation and strategic management characterize a manager's exploration activities as those associated with a long-term future time frame and novelty. Examples include conducting autonomous strategic initiatives which emerge outside the scope of the current strategy (Burgelman, 2002) and which involve creating new firm competencies (Floyd

& Lane, 2000), and pursuing radical innovations to switch from existing products or concepts to new ones, or to meet the needs of new or emergent customers (Danneels, 2002; Smith & Tushman, 2005). Manager's exploitation activities are characterized as activities associated with an immediate or near-future time frame and improving existing certainties. Examples include conducting induced strategic initiatives which take place within the scope of the current strategy (Burgelman, 2002) and which involve leveraging and deploying existing firm competencies, and conducting relatively minor adaptations of existing products and business concepts to better meet existing customers' needs (Danneels, 2002; Smith & Tushman, 2005).

Regulatory Focus Theory

Regulatory focus is a construct of social psychology that defines the goal orientation of an individual (Brockner & Higgins, 2001; Higgins, 1997; Pennington & Roese, 2003). Research suggests two types of regulatory foci; *promotion focus* is enacted when people concentrate on the gains they can make as they act (i.e. "If I work hard, I can buy a new car"). In contrast, *prevention focus* emerges when people are afraid of losses and struggle to prevent them (i.e. "I must work hard not to lose this job"). The individual's perception, set of emotions, attention, and behaviors differ depending on the regulatory focus he or she is relatively more in (Förster & Higgins, 2005; Shah, Higgins & Friedman, 1998; Weber & Mayer, 2011). Regarding managers, for instance, McMullen et al. (2009) argue that prevention focus and promotion focus results in managers showing attention to different issues; more prevention focused managers would be more likely to notice and respond to an emerging threat than more promotion focused managers. Regulatory focus has an important influence on the behavior of an individual, especially with respect to how the individual approaches a situation. A more promotion focused individual uses an eager approach and tries to achieve 'maximal goals', by concentrating on maximizing gains (Higgins, 1997; Pennington & Roese, 2003). On the contrary, a more prevention focused individual prefers a vigilant approach and focuses on 'minimal goals', via putting emphasis on minimizing losses and shortcomings.

Research shows that an individual's regulatory focus is influenced by the situation or context the individual resides in (Keller & Bless, 2006; Shah, Higgins & Freeman, 1998). In an organizational context, organizational and environmental factors are argued to have an effect on the regulatory focus of the organization members (Brockner & Higgins, 2001; Kark & van Dijk, 2007; McMullen et al., 2009). That is, through its effect on a manager's regulatory focus, the context –both internal and external to the firm- has an effect on the

behavior of that manager. For instance, Kark and van Dijk (2007) argue that the organization structure and dynamism and change in the organizational environment elicit a manager's regulatory focus, impacting that manager's leadership behavior.

The literature on regulatory focus indicates that promotion focus and prevention focus are two different regulatory foci (Higgins, 1997). This literature also indicates that their motivational effects are generally reverse and competing (Uskul et al., 2009; Spanjol & Tam, 2010; Zhao & Pechmann, 2007). In line with this, studies have indicated that the two regulatory foci tend to suppress each other; i.e. an increase of a person's promotion focus is associated with a decrease of that person's prevention focus and the other way around (Sengupta & Zhou, 2007; Shah & Higgins, 2001; Zhou & Pham, 2004). We follow this previous research by referring to a manager's regulatory focus as that manager's '*relative regulatory focus*' (Lockwood et al, 2002, p. 861; see also Uskul et al., 2009; Spanjol & Tam, 2010; Zhao & Pechmann, 2007) to denote that an increase of a manager's promotion focus is associated with a decrease of that manager's prevention focus and the other way around.

Manager's Regulatory Focus as a New Type of Motivational Antecedent

The literature indicates that managers whose regulatory focus is closer to promotion than prevention are more prone to engage in exploration activities and less in exploitation activities compared to managers whose regulatory focus is closer to prevention than promotion. Promotion focused individuals are more tolerant of ambiguity, risk, and change than prevention focused individuals (Brockner & Higgins, 2001; Fuglestad et al., 2008; Hamstra et al., 2011; Herzstein et al., 2007; Liberman et al., 1999). Contrary to prevention focused individuals, promotion focused individuals are also more willing to divert from their norms (Fuglestad et al., 2008; Liberman et al., 1999) and engage in entrepreneurial activities (Hmielski & Baron, 2008) and concentrate on the large picture (Förster & Higgins, 2005). In contrast, prevention focused individuals are more inclined to partake in exploitation activities, as they favor reliable outcomes (Brockner & Higgins, 2001; Hamstra et al., 2011; Liberman et al., 1999), aim at keeping the status quo (Fuglestad et al, 2008; Liberman et al., 1999), and concentrate their attention on details (Friedman & Förster, 2005) and on refinement of the task towards perfection (Crowe & Higgins, 1997; Wan et al., 2009).

A recent study by McMullen and colleagues (2009) presents us with another example suggesting a link between regulatory focus and exploration and exploitation activities. Their review of the literature shows that threats are more likely to draw the attention of prevention

focused managers and draw it more intensively, and in contrast, the attention of promotion focused managers are regularly indifferent in the face of an approaching threat, as they are primarily enticed by potential gain opportunities (i.e. Higgins, 1997; Brockner & Higgins, 2001). Consequently, promotion focused managers will have a higher inclination towards exploration activities, which increase the probability of future gains. In contrast, prevention focused managers will have a propensity for allocating more attention towards exploitation activities, whereby eliding the potential hazards to organizational survival in the short term.

Finally, in regulatory focus theory, a tendency for thinking towards distant future is shown to be more associated with promotion focus, whereas near future as well as retrospective thinking are associated with prevention focus (Mogilner et al, 2008; Pennington & Roese, 2003). Time frame orientation, likewise, is an important aspect of exploration and exploitation, where exploration activities are essential to long-term gains and exploitative ones to short-term survival (Levinthal & March, 1993; Tushman & O'Reilly, 1996). This again suggests that a more promotion-focused person, who wants to achieve better results in the long-term is more likely to undertake more exploration activities than a more prevention-focused person, who is more sensitive towards threats, pitfalls and critical feedback (Crowe & Higgins, 1997; Förster et al., 2001; McMullen et al., 2009), and is therefore more likely to engage more in exploitation activities. The above arguments suggest the following hypotheses:

Hypothesis 1a: A manager will conduct *more exploration* activities when that manager's relative regulatory focus is closer to promotion focus than prevention focus.

Hypothesis 1b: A manager will conduct *less exploitation* activities when that manager's relative regulatory focus is closer to promotion focus than prevention focus.

A Manager's Decision Making Authority as an Organizational Type of Antecedent

Current literature on exploration and exploitation has focused on organizational and environmental types of antecedents; see for instance Gupta et al. (2006), Raisch & Birkinshaw (2008), and Simsek (2009). Regarding organizational antecedents, we focus in this study on (de)centralization because it emerges most consistently in studies of the components of the organization structure (cf. Miller and Dröge, 1986). Decentralization also plays a prominent role in exploration and exploitation studies focusing on levels such as the firm (e.g. Tushman

& O'Reilly, 1996), business unit (e.g. Jansen et al., 2006), and team (e.g. McGrath. 2001; Perretti & Negro, 2006). To investigate decentralization at the manager level of analysis, we focus on a manager's decision-making authority (Ghoshal et al. 1994, Sheremata 2000). A manager's decision-making authority refers to the extent to which a manager has decision-making authority over how and which tasks the manager performs and over how to solve problems and to set goals (Atuahene-Gima, 2003, Dewar et al., 1980).

Increasing a manager's decision making authority enable that manager to conduct more exploration activities as the increased self control and the delegated authority to solve problems enable the manager to tap into the needed pool of information and other resources to develop and implement the 'creative' and 'high-quality ideas' (Sheremata, 2000, p. 394) necessary for exploration (Sitkin et al., 2011; Voss, Sirdeshmukh & Voss, 2008). In contrast, decreasing a manager's decision making authority reduces the ability of the manager to make and execute high-risk exploratory decisions (Singh, 1986), as with little authority granted, the decisions can involve only limited risk, which means low exploration (March, 1991; Jansen, van den Bosch & Volberda, 2006), as "a bias against risk is effectively a bias against exploration" (March, 2006, p. 206). Furthermore, regarding exploitation, Hage & Aiken (1967, p. 88) point out that "as freedom to make work decisions diminishes, rule observation increases" due to the expansion of the superiors' control on the activities of the individual (Ghemawat & Ricart I Costa, 1993, p. 64). In other words, as manager's decision making authority decreases, that manager becomes more likely to be forced to follow the existing framework of the organization by engaging in exploitation activities (Singh, 1986).

Not only the ability, but also the motivation to undertake exploration and exploitation decisions and activities are affected by changing levels of decision making authority (Cao et al., 2010, p. 1278; Miller, 1987). When considered through the perspective of regulatory focus theory, changes in motivation due to increased decision making come to the manager with higher intentions to pursue ideals, and therefore, according to Higgins (1997), a promotion focused situation. For instance, the increased authority triggers the individual to engage in more resource-access and -acquisition (Ermer et al., 2008; Murray et al., 2006; Sapolsky, 2005), which induces promotion focus by allowing the person to further satisfy his or her needs to achieve 'maximal goals' (Friedman & Förster, 2001; Higgins, 1997). Moreover, with this augmented pool of resources, the risk of losing one resource becomes relatively less of a threat than it used to be, which diminishes the effect of the jeopardy on the person's prevention focus level (Brockner & Higgins, 2001, p. 48). In other words, we anticipate that,

higher decision making authority makes a manager less prone to feel endangered by a threat that he or she would previously regard as significant, and thus, causes the manager to become less prevention focused. Therefore, the increased decision making authority shifts the manager's relative regulatory focus towards promotion focus rather than prevention focus, increasing the tendency towards exploration activities and decreasing the tendency towards exploitation activities.

Summarizing, we expect that increasing levels of a manager's decision making authority will be positively associated with that manager's exploration activities and negatively associated with that manager's exploitation activities *in two ways*. First, by altering the abilities of the manager and second, by altering the motivation of the manager. Because we expect the motivational mechanism (regulatory focus) to explain a different part in the variance of the manager's exploration and exploitation activities than the structural mechanism, we expect that regulatory focus will mediate part of the relations, but will not mediate the relations fully, see Figure 1. Hence, we claim that part of the effect will be due to the structural consequences of decision making authority (i.e. on the ability or inability to take an exploration or exploitation action), and the other part of the effect will be due to the motivational consequences of it, through the effect on the manager's regulatory focus induced by the decision making authority bestowed upon that person.

Hypothesis 2a: Increasing decision making authority of a manager shifts that manager's relative regulatory focus closer to promotion focus rather than prevention focus.

Hypothesis 2b: The *positive* relationship between a manager's decision making authority and that manager's *exploration* activities is partially mediated by that manager's regulatory focus.

Hypothesis 2c: The *negative* relationship between a manager's decision making authority and that manager's *exploitation* activities is partially mediated by that manager's regulatory focus.

Dynamism of a Manager's Environment as an Environmental Type of Antecedent

Adapting to the dynamics of the surrounding environment is of crucial importance not only for an organization but for a manager as well (Floyd & Lane, 2000). We focus in this study on dynamism, as organization theory on the environment typically concentrates on its dynamism feature (i.e. Andersen, 2004; Harris, 2004; Heavey et al., 2009). Similarly, dynamism is

among the most often included environmental type of antecedent in firm and unit level exploration and exploitation research as well (e.g. Jansen et al., 2005; Levinthal and March, 1993; Sidhu et al., 2004). Environmental dynamism refers to the amount and rate of change and to the unpredictability of change or the degree of instability of the surrounding environment (Dess & Beard, 1984). A manager's surrounding environment refers to the manager's direct environment both internal and external to the firm (Burgelman, 1991). Research points out, that managers of the same firm or unit may face different levels of dynamism in their direct environment as they may have responsibilities regarding different products, services, or processes, and may operate in specific work contexts featured by different levels of, for instance, uncertainty and interdependencies (Burgelman, 1991; Floyd & Lane, 2000; Griffin et al., 2007).

The literature points out that more exploration activities are necessary to stay aligned with a dynamic environment while more exploitative activities are necessary in a stable environment (Jansen et al., 2006; Levinthal & March, 1993). Increasing levels of dynamism in a manager's environment raise the necessity for that manager to increase variety in experience, to broaden his or her knowledge base (He & Wong, 2004), as well as to regularly renew it (Floyd & Lane, 2000; Tushman & O'Reilly, 1996) to deal with the increasing amount, rate, and unpredictability of change associated with dynamic environments (Jansen et al., 2006; Lewin et al., 1999). Thus, when the level of dynamism in their environment increases, managers would conduct more exploration activities in an attempt to adapt to their environment. In contrast, decreasing levels of dynamism in a manager's environment, i.e. more stability, raise the necessity for that manager to increase reliability in experience and to refine, deepen, and more efficiently apply his or her existing knowledge base and skills (Floyd & Lane, 2000; Tushman & O'Reilly, 1996) as in a stable environment the activities that have proven to be effective for the manager do not change (Lewin et al., 1999). Thus, in order to reap the benefits of the proven and well known, managers would adapt to decreasing levels of environmental dynamism by conducting more exploitation activities.

The effect of environmental dynamism on a manager's exploration versus exploitation activities is not limited to the adaptation mechanism explained above. Part of the effect runs through how environmental dynamism alters the goal orientation or motivation of that manager, by situationally inducing a particular regulatory focus on him or her. Research indicates that dynamic environments situationally induce promotion focus through their ambiguous structure (Keller & Bless, 2006; Shah et al., 1998), motivating managers to

deviate from the original plan, while stable environments are associated with inducing prevention focus, motivating managers to stick to the original plan (Hmielski & Baron, 2008). Furthermore, in a dynamic environment, the manager would need to show attention to the state of environmental variables more often as these variables change regularly. Because attention is limited, this would restrain managers from showing a large amount of attention to threat-related, prevention-focused concerns (McMullen et al., 2009), such as exploiting to survive in the short term (Levinthal & March, 1993). Hence, it can be argued that in dynamic environments managers are shifted away from prevention focus towards promotion focus.

Considering that regulatory focus is associated with the goal orientation or motivation to improve the chances of survival through recognizing the cues of the environment (Friedman & Förster, 2001) to act appropriately to the environment, it is plausible that in stable environments the individual is situationally induced (Keller & Bless, 2006; Shah et al., 1998) the prevention focus, which is associated with stability (Liberian et al., 1999), and in dynamic environments the promotion focus, which is associated with change (ibid.). Phrased differently, promotion focus increases a manager's motivation to engage in a more diverse set of activities (exploration) to increase chances of survival within a dynamic environment, whereas prevention focus increases a manager's motivation to engage in more reliable and proven activities (exploitation) to ensure survival within the stable environment.

These motivational mechanisms are expected to affect manager's exploration and exploitation activities in the same direction as the adaptation mechanisms we discussed in the beginning of this section. Nevertheless, the motivational mechanisms have different theoretical explanations than the adaptation mechanisms. Therefore, we expect not only that the manager's exploration and exploitation activities will be directly related to the dynamism of the manager's environment, but we also expect this effect to be partially mediated by that manager's regulatory focus.

Hypothesis 3a: Increasing dynamism of a manager's environment shifts that manager's relative regulatory focus closer to promotion focus rather than prevention focus.

Hypothesis 3b: The *positive* relationship between dynamism of a manager's environment and that manager's *exploration* activities is partially mediated by that manager's regulatory focus.

Hypothesis 3c: The *negative* relationship between dynamism of a manager's environment and

that manager's *exploitation* activities is partially mediated by that manager's regulatory focus.

METHOD

Sample and Data Collection

To test the hypotheses we draw upon a sample of a large variety of managers of one of the "big four" accountancy and professional services firms. Managers active in the accountancy and professional services sector provide an interesting case for researching exploration and exploitation as their firms are confronted with pressures to explore –e.g. due to changes regarding regulation, technologies, competition, and customer demands–, and with pressures to exploit –due to short term competitive pressures in terms of an increased focus on efficiency, cutting costs, and imitation– (Banker et al., 2005; Chang et al., 2009; Semadeni & Anderson, 2010). In line with this, several previous empirical studies investigating issues related to exploration and exploitation take the accountancy and professional services sector purposefully as an empirical setting as well (e.g. Van Den Bosch et al., 2005; Groysberg & Lee, 2009; Swart & Kinnie, 2010). This study's firm consists of three organization units; two divisions and a central internal support unit. The first division provides services on accounting & auditing, taxes, and legal issues. The second division provides consulting and financial advisory services.

The dataset in this study is based on the one collected previously for the Mom, van den Bosch and Volberda (2007, 2009) studies. The survey was sent, in consultation with corporate management, to a sample of 653 managers which vary in terms of demographic characteristics such as age, tenure in the firm, functional tenure, education, and organizational characteristics such as hierarchical level and organization unit. We ensured that the distribution of the sample's managers over the hierarchical levels, organization units, and the demographic characteristics corresponds to the distribution of all managers in the firm (Chi-square tests; $p < .05$; $\alpha = .05$) to decrease the probability that bias due to the sampling procedure may be a problem. To ensure confidentiality, we agreed not to reveal the names of the respondents and to return the completed surveys to us without interference of corporate management. We received 229 completed surveys corresponding to a response rate of 35%. List-wise deletion of cases with missing values resulted in a final sample of 224. We examined differences between respondents and non-respondents to test for non-response bias. Chi-square tests ($p < .05$; $\alpha = .05$) indicate that the distribution of the respondents over the hierarchical levels, organization units, and demographic characteristics corresponds to the

population's distribution. We also compared early and late respondents in terms of model variables (*t*-test; $p < .05$) as late respondents can be expected to be similar to non-respondents (Armstrong & Overton, 1977). No significant differences appeared, indicating that non-response bias is unlikely to be a problem.

Measures and Validation

Dependent Variable. We use Mom's et al. (2007) scales of managers' exploration and of exploitation activities. The seven-item exploration scale ($\alpha = .91$) captures the extent to which a manager engaged in exploration activities last year. In line with our conceptualization, the scale refers to activities relating to such things as creating variety in experience, learning new knowledge and skills, searching new product and market possibilities, adapting for the long-term, renewing products, services, or processes, and experimenting. The seven-item exploitation scale ($\alpha = .87$) captures the extent to which the manager engaged in exploitation activities last year. In line with our conceptualization, the scale refers to activities relating to such things as increasing reliability in experience, using and deepening existing knowledge and skills, serving existing customers with exiting products or services, achieving short-term goals, and fitting into existing firm policies. All items were measured on a seven-point Likert scale (1 = to a very small extent to 7 = to a very large extent). Appendix B shows the items of this study's variables.

To check for convergent and discriminant validity, we performed exploratory and confirmatory factor analyses. Exploratory factor analysis with Varimax rotation with all 14 items, based on the survey data, revealed that two summated scales could be constructed; one exploration scale with the seven exploration items and one exploitation scale with the seven exploitation items. Eigenvalues for each factor were greater than 2.82, all items loaded on their appropriate factors at greater than .61, and no item cross-loading was greater than .25. We conducted confirmatory factor analysis (CFA) of the 14 items to check for discriminant validity of the constructs. Results indicate that the two-factor model fits the data well (NFI = .91, CFI = .95, RMSEA < .07). Moreover, a comparison of a one-factor model with a two-factor model shows a significant improvement in fit ($\Delta\chi^2$ significant at $p < .001$) further providing evidence of discriminant validity (Bagozzi & Phillips, 1982).

Mediating Variable. In order to calculate our measure of *relative regulatory focus*, we followed the procedures used in prior regulatory focus research. That is, we first measure both foci using a scale for promotion focus and a scale for prevention focus, and subsequently

subtract the scores on the prevention subscale from the scores on the promotion subscale (see e.g. Uskul et al., 2009; Spanjol & Tam, 2010; Zhao & Pechmann, 2007). As Lockwood and colleagues (2002, p. 861) explain: ‘we come to a measure of relative regulatory focus by subtracting scores on the prevention goal subscale from scores on the promotion goal subscale’. On this relative scale of regulatory focus, higher values represent more promotion focus and lower values represent more prevention focus.

We measured both foci based on the measures of Wallace & Chen (2006) and Wallace et al. (2009) as these scales have particularly been developed to measure regulatory foci of individuals in ‘organization contexts’ (Wallace et al., 2009, p. 805). As pointed out by Wallace et al. (2009), the three-item promotion focus measure ($\alpha = .84$) captures a manager’s goal orientation and motivation ‘to promote positive outcomes at work’ (Wallace et al., 2009, p. 814) last year. Likewise, the three-item prevention focus measure ($\alpha = .88$) captures a manager’s goal orientation and motivation ‘to prevent negative outcomes at work’ (Wallace et al., 2009, p. 814) last year. All items were measured on a seven-point Likert scale (1 = to a very small extent to 7 = to a very large extent). Validity checks are reported in the ‘validation’ paragraph. Appendix B shows the items of this study’s variables.

Independent Variables. To measure the extent of a manager’s *decision making authority*, we followed others like Jansen et al., (2006) and Richardson et al. (2002) by using a four-item scale originally developed by Aiken and Hage (1968) and further validated by Dewar et al. (1980), assessing the extent to which the manager has decision making authority in choosing how and which tasks to perform, to set goals, to solve problems, and to undertake action without superior’s approval ($\alpha = .91$). Finally, to measure the level of *dynamism of a manager’s environment*, we followed others like Jansen et al. (2006) and Volberda (1998) by using a four-item scale based on Dill (1958), measuring the intensity and rate of change a manager faces in his or her direct both internal and external working environment ($\alpha = .87$).

Control Variables. We controlled for the effects of *age and tenure in the firm*, which are indicators of experience and can effect exploration and exploitation activities of the manager (Tushman & O’Reilly, 1996). Likewise, we controlled for the effect of *tenure in the current function* for its potential effects on exploration and exploitation activities (Birkinshaw & Gibson, 2004), and for possible effects of *education*, as education has an effect on cognitive abilities (Papadakis et al., 1998), which may again effect the choice of exploration and exploitation activities (Adler et al., 1999). To control for educational effects, we included a dummy variable; 1 = managers with master degrees or higher, 0 = managers with bachelor

degrees or lower. We controlled for the effects of the person's *hierarchical level* in the company including two dummy variables based on the firm's system of position classification; one dummy reflecting the most senior managers and another reflecting middle managers, making operational level managers the reference group. Finally, we included two dummy variables to reflect the organization unit the manager resides in; one dummy for the accounting, tax & legal division, and another for the consulting & financial advisory division, making managers of the Central & Support unit the reference group. By doing so we intent to control for contextual factors possibly affecting manager's exploration and exploitation activities (Gibson & Birkinshaw, 2004).

Validation. We conducted convergent and discriminant validity checks on all this study's items. First we conducted an exploratory factor analysis (Principle Components Analysis, Varimax rotation with Kaiser normalization) including all items (i.e. the exploration, exploitation, promotion focus, prevention focus, decision making authority, and dynamism items). KMO measure of sampling adequacy was .847, showing that partial correlations among the variables included in this study were small, and Bartlett's test of sphericity was significant ($\chi^2 = 3992.35$; $p < .001$), meaning that the sample was well fit for exploratory factor analysis. Our model suggested a total of six separate factors (exploration, exploitation, promotion focus, prevention focus, decision making authority, and dynamism). As expected, the exploratory factor analysis yielded a six-factor result, with eigenvalues greater than 1.56, and where each item loaded at least 0.6 on its corresponding concept's dimension and 0.3 or less on other dimensions. Moreover, using confirmatory factor analyses (CFA) to compare a one-factor model with a two-factor for every possible pair of factors shows a significant improvement in fit for each pair ($\Delta\chi^2$ significant at $p < .001$) further providing evidence of discriminant validity (Bagozzi & Phillips, 1982).

ANALYSIS AND RESULTS

Table 1. Means, Standard Deviations, Minimum and Maximum Values, and Correlations

	Mean	St. dev.	Min.	Max.	1	2	3	4	5	6	7	8	9	10	11	12	
1. Manager's Exploration Activities	4.23	1.16	1.00	7.00													
2. Manager's Exploitation Activities	4.91	.85	3.00	7.00	-.35												
3. Manager's Decision Making Authority	3.52	1.65	1.00	7.00	.37	-.23											
4. Dynamism of a Manager's Environment	4.17	1.46	1.00	7.00	.52	-.38	.26										
5. Manager's Relative Regulatory Focus*	1.39	2.02	-4.67	6.00	.35	-.31	.23	.33									
6. Age	37.47	8.67	26.00	61.00	-.03	-.03	.07	.12	-.01								
7. Tenure in firm	7.60	7.38	.00	39.00	-.12	.14	-.03	-.04	-.05	.70							
8. Tenure in current function	4.35	3.38	.50	24.00	-.25	.02	-.10	-.10	-.03	.26	.25						
9. Education: Master or above	.58	.50	.00	1.00	-.02	-.07	-.07	.09	.12	-.02	-.02	.05					
10. Hierarchical level: Top	.17	.37	.00	1.00	.10	.02	.08	.19	.05	.41	.31	.08	-.13				
11. Hierarchical level: Middle	.38	.49	.00	1.00	.17	-.06	.13	-.02	.05	.12	.05	-.05	.07	-.35			
12. Division: Accountancy and legal	.64	.48	.00	1.00	-.18	.25	-.23	-.20	-.05	-.07	.09	-.03	-.12	-.01	.17		
13. Division: Consultancy and finance	.21	.41	.00	1.00	.20	-.30	.21	.21	.14	.04	-.10	.05	.15	.13	-.11	-.69	

Notes: $n = 224$; All correlations above |.12| are significant at $p < .05$; *Higher scores correspond to relatively more promotion focus than prevention focus

The descriptive statistics and correlations for the variables used in this study are exhibited in Table I. The independent and mediating variables and some of the control variables significantly relate to each other. To examine multicollinearity, we calculated variance inflation factors (VIF) for each of the regression equations. The VIFs ranged from 1.08 to 2.47, and thus were well below 10, which is the common cut-off point for multicollinearity (Neter et al., 1996).

Tests of Hypotheses

We used regression analyses and Sobel tests (Sobel & Leinhardt, 1982) to test the hypotheses. Model 2 of Table II shows that the manager's relative regulatory focus variable (of which higher scores correspond to relatively more promotion focus than prevention focus) positively relates to the manager's exploration activities variable ($\beta = .16$; $p < .01$), *supporting Hypothesis 1a*. Model 4 shows that manager's relative regulatory focus negatively relates to manager's exploitation activities ($\beta = -.18$; $p < .01$), *supporting Hypothesis 1b*. Moreover, as expected, a manager's decision making authority positively relates to that manager's relative regulatory focus (Model 5: $\beta = .17$; $p < .05$), *supporting Hypothesis 2a*, and also to that manager's exploration activities, both in Model 1 ($\beta = .17$; $p < .01$) and Model 2 ($\beta = .14$; $p < .05$). The result of Model 2 provides support for the direct structural effect of a manager's decision making authority on that manager's exploration. Sobel test indicates that there is a significant mediation effect as well (Sobel $t = 1.89$; $p < .10$), *supporting Hypothesis 2b*, i.e. the motivational effect. That is, the positive effect of a manager's decision making authority on a manager's exploration activities is partially mediated by that manager's regulatory focus. Model 3 shows that there is no significant relationship between a manager's decision making authority and that manager's exploitation activities; hence *Hypothesis 2c is not supported*. In line with our expectations, dynamism of manager's environment positively relates to that manager's relative regulatory focus (Model 5: $\beta = .28$; $p = .001$), *supporting Hypothesis 3a*, and also to that manager's exploration activities, both in Model 1 ($\beta = .44$; $p < .001$) and Model 2 ($\beta = .39$; $p < .001$). The result of Model 2 provides support for the adaptation effect of dynamism of a manager's environment on that manager's exploration. Sobel test indicates that there is a significant mediation effect as well, i.e. the motivational effect (Sobel $t = 3.59$; $p = .001$), *supporting Hypothesis 3b*. That is, the positive effect of dynamism of a manager's environment on that manager's exploration activities is partially mediated by that manager's regulatory focus. Finally, dynamism of a manager's environment negatively relates to that

manager's exploitation activities, both in Model 3 ($\beta = -.31$; $p < .001$) and Model 4 ($\beta = -.26$; $p < .001$). The result of Model 4 provides support for the adaptation effect. Sobel test indicates that there is a significant mediation effect as well, i.e. the motivational effect (Sobel $t = 3.07$; $p = .01$), *supporting Hypothesis 3c*. That is, the negative effect of dynamism of a manager's environment on that manager's exploitation activities is partially mediated by that manager's regulatory focus.

Table II. Results of Hierarchical Regression Analyses

Dependent variable	Manager's Exploration Activities		Manager's Exploration Activities		Manager's Exploitation Activities		Manager's Exploitation Activities		Manager's Relative Regulatory Focus	
	Model 1		Model 2		Model 3		Model 4		Model 5	
	b (s.e.)	β	b (s.e.)	β	b (s.e.)	β	b (s.e.)	β	b (s.e.)	β
Intercept	1.25 (.43)***		3.37 (.43)***		6.10 (.36)***		6.10 (.36)***		-1.31 (.91)	
Main Effects										
Manager's Decision Making Authority	.12 (.04)	.17**	.10 (.04)	.14*	-.05 (.03)	-.09	-.03 (.03)	-.06	.21 (.08)	.17*
Dynamism of a Manager's Environment	.35 (.05)	.44***	.31 (.05)	.39***	-.18 (.04)	-.31***	-.15 (.04)	-.26***	.39 (.10)	.28***
Manager's Relative Regulatory Focus ^a			.09 (.03)	.16**			-.08 (.03)	-.18**		
Control Variables										
Age	-.02 (.01)	-.15†	-.02 (.01)	-.14†	-.01 (.01)	-.12	-.01 (.01)	-.12	-.01 (.02)	-.06
Tenure in firm	.00 (.01)	-.00	.00 (.01)	-.00	.02 (.01)	.17 †	.02 (.01)	.17 †	-.00 (.03)	-.01
Tenure in current function	-.05 (.02)	-.15**	-.05 (.02)	-.16**	-.01 (.02)	-.03	-.01 (.02)	-.03	.01 (.04)	.02
Education: Master or above	-.13 (.13)	-.06	-.17 (.13)	-.07	.00 (.11)	.00	.04 (.11)	.02	.43 (.27)	.11
Hierarchical level: Top	.47 (.21)	.15*	.46 (.21)	.15*	.20 (.18)	.09	.21 (.17)	.09	.09 (.33)	.02
Hierarchical level: Middle	.59 (.15)	.25***	.58 (.15)	.25***	-.08 (.13)	-.05	-.07 (.12)	-.04	.13 (.31)	.03
Division: Accountancy and legal	-.22 (.18)	-.09	-.27 (.18)	-.11	.04 (.15)	.02	.08 (.15)	.04	.57 (.38)	.14
Division: Consultancy and finance	.12 (.21)	.04	.07 (.21)	.02	-.41 (.18)	-.20*	-.36 (.18)	-.17*	.62 (.44)	.13
R-squared		.42		.44		.23		.26		.16
Adjusted R-squared		.39		.41		.20		.22		.12
F improvement of fit		15.33***		15.17***		6.42***		6.75***		3.98***

Notes: Unstandardized coefficients are reported, with standard errors in parentheses, as well as standardized coefficients: N = 224; † p <= .10; * p <= .05; ** p <= .01; *** p <= .001; ^aHigher scores correspond to relatively more promotion focus than prevention focus

DISCUSSION

As a response to various recent calls for further research on individual level exploration and exploitation (e.g. Gupta et al., 2006; Lavie et al., 2010; Raisch & Birkinshaw, 2008; Simsek, 2009; Smith & Tushman, 2005) as well as on models that specify relations between different types of antecedents of exploration and exploitation (Raisch & Birkinshaw, 2008; Simsek, 2009), this paper aims to contribute to existing literature by increasing insight into variation of manager's exploration and exploitation activities by proposing a new type of antecedent, i.e. regulatory focus as a motivational antecedent, by developing a model and associated hypotheses which specify the relationships between organizational, environmental, and motivational types of antecedents, and by testing the hypotheses based on a sample of managers. The paper's contributions raise several important issues for both theory and practice.

First, current literature on exploration and exploitation has focused primarily on organizational and environmental types of antecedents (see e.g. Raisch & Birkinshaw, 2008 and Simsek et al., 2009 for recent overviews). However, in organizational research, especially at the individual level of analysis, motivational antecedents present another important trajectory of research (i.e. de Clercq et al., 2011; Katz, 1964; March, 2006, p. 205). In this paper we build upon regulatory focus theory (Brockner & Higgins, 2001; Higgins, 1997; 1998; Shah et al., 1998), to contribute to the emerging literature on individual level exploration and exploitation by introducing and elucidating a motivational type of antecedent of the manager's exploration and exploitation activities; i.e. a manager's regulatory focus. In line with our expectations, the results of this study illustrate a relationship between the regulatory focus of the manager and that manager's exploration and exploitation activities. That is, our first hypotheses and associated results indicate that a manager conducts more exploration activities when that manager's relative regulatory focus becomes closer to promotion than prevention focus, and that a manager conducts more exploitation activities when that manager's regulatory focus becomes closer to prevention than promotion focus. By doing so, we contribute to increased conceptual and empirically validated understanding of how individual differences in terms of managers' goal orientation and motivation guide the selection of managers' different kinds of behavior in terms of the extent to which they engage in exploration and exploitation activities (Leana & Barry, 2000).

Second, besides introducing manager's regulatory focus as a motivational antecedent, we investigated an organizational and environmental type of antecedent of manager's

exploration and exploitation as well, to create a more encompassing insight into drivers of variation of manager's exploration and exploitation activities. Furthermore, we took a step in answering various recent calls for models that specify relations between different types of antecedents (e.g. Raisch & Birkinsaw, 2008; Simsek, 2009).

Hypotheses 2a and 3a and associated results indicate that increasing decision making authority of a manager and increasing dynamism of a manager's environment shift the manager's relative regulatory focus closer to promotion rather than prevention. These findings may contribute to calls for more regulatory focus research in organizational contexts (i.e. Brockner & Higgins, 2001, p. 61; McMullen et al., 2009, p. 176; Wallace et al., 2009, p. 828). For instance, Wallace and colleagues (2009, p. 828) have noted that "It would be quite beneficial to examine the effects that organizational and contextual variables (...) have on one's regulatory focus." A benefit of such research would be that "If such relationships are identified it might be possible to (...) instill one type of regulatory focus or the other by creating certain climates, depending on the complexities and requirements of the job or specific tasks" (p. 828). Regarding these issues, an important implication of this study for the literature and management practice is showing that by varying a manager's decision making authority or by varying the dynamism of a manager's environment –for instance, by changing the manager's job description or features of the manager's work context (cf. Griffin et al., 2007)– it is possible to alter the manager's relative regulatory focus, and hence, the manager's motivation towards specific kinds of behavior, i.e. exploration or exploitation activities.

Furthermore, our partially mediating hypotheses and associated results indicate that a manager's decision making authority and dynamism of the manager's environment not only directly relate to that manager's exploration and exploitation activities, but also indirectly through that manager's regulatory focus. Through this richer explanation and empirical assessment, we contribute to a greater clarity and better understanding for exploration and exploitation literature of how different types of antecedents relate to manager's exploration and exploitation activities (Raisch & Birkinsaw, 2008; Simsek, 2009). By introducing regulatory focus and investigating its relationships with the organizational and environmental type of antecedents, we conceptually explained and empirically indicated *motivational effects* of these antecedents on manager's exploration and exploitation activities besides the *direct structural and adaptation effects*. In doing so, we are able to more precisely explain variation in manager's exploration and exploitation activities. That is, separation of the motivational effects permits the refinement of prior apprehension of the organizational and environmental

antecedents. This finding indicates an important implication for managerial practice as well. For example, consider the scenario of a company implementing a new enterprise resource planning (ERP) system for its managers to better coordinate. On one hand, the top management team of the company may want the managers to use this system in an exploratory manner, and find new ways to solve managerial problems. On the other hand, in line with their information security-related concerns, the IT department may want to follow the principle of least privilege (i.e. Saltzer & Schroeder, 1975), stating that users of an IT system should be granted the minimum possible decision making authority on the system. Our model would suggest that, even if the level of decision making authority of a manager is sufficient for the desired level of exploration activities, the manager may be shifted towards a prevention focus because of the restricted level of decision making authority related to IT issues, and, therefore, may be reluctant to use the system in an innovative manner. Once we realize this double effect by understanding the model proposed in this study, we can think of ways to lessen the problem. For example, in this scenario, the IT policy can be framed in a promotion focused manner in order to induce promotion focus on the individual (Weber & Mayer, 2011).

Interestingly, and contrary to our expectations, a manager's decision making authority was not significantly related to that manager's exploitation activities. Although research points to relationships between (de)centralization and exploitation at the firm and unit levels of analyses (e.g. Jansen et al., 2006; Tushman & O'Reilly, 1996), or study indicates from an individual level perspective that changing levels of a manager's decision making authority does not affect the extent to which that manager conducts exploitation activities. As managers typically see their job as 'getting things done', managers with high and managers with low levels of decision making authority are apparently equally able and motivated to engage into exploitation activities. To further clarify the relationship between (de)centralization and exploitation at the individual level of analysis, other dimensions of (de)centralization could be investigated such as the participation of a manager in decision making (Hage & Aiken, 1967).

Third, as pointed out by (Gupta et al., 2006, p. 693) 'a central issue of debate' in the literature on exploration and exploitation pertains to the 'relationship between exploration and exploitation'. March (1991) points to exploration and exploitation competing for scarce resources and being associated with different mind-sets and organizational routines for arguing that, in general, the two are incompatible. This paper may add to this debate particularly regarding the individual level of analysis. Regarding 'conflicting mindsets' (cf.

March, 1991) associated with exploration and exploitation, this paper points to the importance of a manager's regulatory focus to understand conflicting mind-sets at the individual level. That is, the concept of an individual's 'relative' regulatory focus (e.g. Lockwood et al., 2002) indicates that their motivational effects are generally reverse and competing (Uskul et al., 2009; Spanjol & Tam, 2010; Zhao & Pechmann, 2007) and that they tend to suppress each other; i.e. an increase of a person's promotion focus is associated with a decrease of that person's prevention focus and the other way around (Sengupta & Zhou, 2007; Shah & Higgins, 2001; Zhou & Pham, 2004). Gupta et al. (2006) argue that the debate on the relationship between exploration and exploitation may also depend on the level of analysis applied by researchers. They argue, at the lowest level of analysis, exploration and exploitation cannot be pursued synchronously, but must be pursued sequentially. An implication regarding the sequential pursuit of exploration and exploitation and conflicting mind-sets, also for management practice, would be the importance of organizational mechanisms which change a manager's relative regulatory focus over time to both enable and motivate the manager to sequentially conduct exploration and exploitation tasks. In this connection, Adler et al. (1999) suggest the enrichment of jobs to include improvement as well as efficiency goals, and parallel organizational structures in which people move back and forth between a more mechanistic structure for routine tasks and a more organic structure for non-routine tasks.

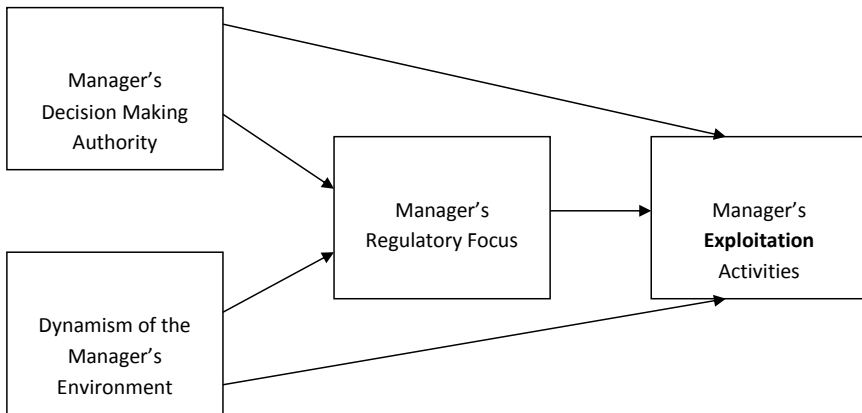
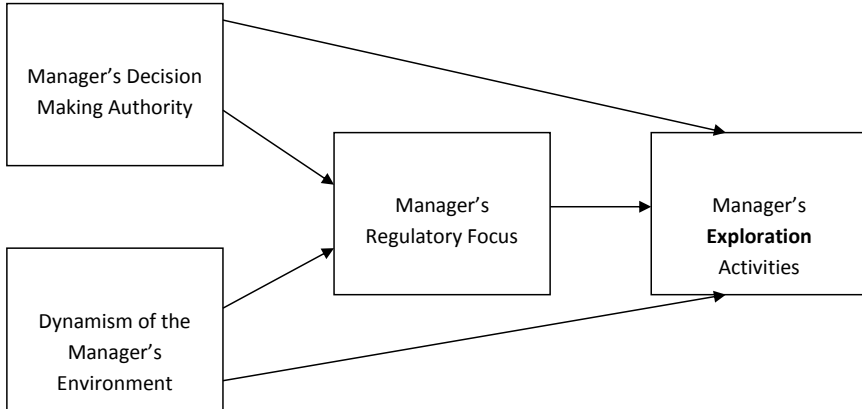
Fourth, as pointed out by (McMullen et al., 2009, p. 176), "little work has investigated Regulatory Focus Theory in an organizational setting" and even less has been done empirically. Moreover, regarding methodology, laboratory experiment is the most common method of testing in the field of regulatory focus (i.e. Micu & Chowdhury 2010; Stam et al., 2010; Zhu & Meyers-Levy, 2007). This study is one of the few studies that tested hypotheses on manager's regulatory focus of managers in the empirical setting of a real company.

Limitations and Future Research

Our study has limitations, suggesting issues for future research. To further comprehend exploration and exploitation activities of a manager within the context of organizations, future studies should consider including other contextual variables in this model, as well as conducting multi-level research. These could be variables that are both contextual and multi-level at the same time. For example, group regulatory focus (Faddegon, Scheepers &

Ellemer, 2008; Rietzschel, 2011) poses interesting opportunities especially in explaining further variation in manager's regulatory focus as a member of the group. Such work would bolster the development of overarching models like Simsek (2009), which is urgently necessary in this field (Raisch & Birkinshaw, 2008). Furthermore, our study involves cross-sectional, single informant data and uses perceptual scales highlighting issues of common method bias and causal reciprocity. Regarding the issue of common method bias, we performed Harman's one-factor test on items included in the regression models. If common method bias were a serious problem in the study, we would expect a single factor to emerge to account for most of the covariance in the dependent and independent variables (Podsakoff and Organ 1986). We did not find such a single factor. The issue of common method bias could be addressed in future studies by measuring exploration and exploitation at the managerial level of analysis using objective measures.

APPENDIX A. CONCEPTUAL FRAMEWORK



APPENDIX B. SURVEY MEASURES AND ITEMS*

A Manager's Exploration Activities (based on Mom et al., 2007). To what extent did you, last year, engage in work related activities that can be characterized as follows:

- Searching for new possibilities with respect to products/services, processes or markets
- Evaluating diverse options with respect to products/services, processes or markets
- Focusing on strong renewal of products/services or processes
- Activities of which the associated yields or costs are currently unclear
- Activities requiring quite some adaptability of you
- Activities requiring you to learn new skills or knowledge
- Activities that are not (yet) clearly existing company policy

A Manager's Exploitation Activities (based on Mom et al., 2007). To what extent did you, last year, engage in work related activities that can be characterized as follows:

- Activities of which a lot of experience has been accumulated by yourself
- Activities which you carry out as if it were routine
- Activities which serve existing (internal) customers with existing services/products
- Activities of which it is clear to you how to conduct them
- Activities primarily focused on achieving short-term goals
- Activities which you can properly conduct by using your present knowledge
- Activities which clearly fit into existing company policy

A Manager's Promotion Focus (based on Wallace & Chen, 2006; Wallace et al., 2009). To what extent did you focus, last year, on:

- Accomplishing achievements which go to a large extent beyond the formal requirements of the job
- Showing the willingness to go beyond what the situation requires
- Exhibiting zeal about the job and a consequent willingness to work hard and energetically

A Manager's Prevention Focus (based on Wallace & Chen, 2006; Wallace et al., 2009). To what extent did you focus, last year, on:

- Following rules at work
- Completing work in the approved manner
- Completing assigned tasks adequately

A Manager's Decision Making Authority (based on Dewar et al. 1980)

- I can undertake little action until my supervisor approves a decision
- If I want to make my own decisions, I will be quickly discouraged
- I have to ask my supervisor before I do almost everything
- Any decision I make has to have my supervisor's approval

Dynamism of A Manager's Environment (based on Dill, 1958; Jansen et al., 2006)

- My (internal or external) clients regularly ask for complete new products and services
- In my business, changes are intense
- Where I work, we are continuously forced to change our product/service offerings
- Where I work, hardly anything will be changed within a year ®

*All items were measured on a seven-point scale (1 = 'to a very small extent' or 'strongly disagree' to 7 = 'to a very large extent' or 'strongly agree').

Chapter 4: Management Team Regulatory Focus and Exploratory Innovation: The Mediating Role of Organizational Coordination Mechanisms³

Abstract

We further current understanding about the role of management teams in driving exploratory innovation by proposing that the regulatory focus of an organizational unit's management team is a key antecedent of the unit's level of exploratory innovation, and by clarifying the organizational coordination mechanisms through which this antecedent generates the unit's exploratory innovation. Our results, based on a survey of 748 managers from 69 organizational units of a large multinational semiconductor company, indicate that the promotion focus of a unit's management team relates positively to the unit's exploratory innovation while the prevention focus relates negatively. These effects are mediated by the management team's use of decentralization and connectedness. Our research advances theory development regarding the micro-foundations of organizational innovation and increases our understanding of how the views of a unit's management team are reflected in the unit's level of exploratory innovation and therefore impact the unit's chances of survival.

Keywords: *Exploratory innovation, management team, organizational coordination, regulatory focus*

INTRODUCTION

In the literature on management and innovation, exploratory innovation is discussed as an essential means to performance and survival within the organizational life in changing environments (e.g. Alexiev, Jansen, van den Bosch and Volberda, 2010; Govindarajan, Kopalle and Danneels, 2011; McGrath, 2001; Nerkar, 2003; Phelps, 2010; Sidhu, Volberda and Commandeur, 2004; Verganti, 2008). Exploratory innovation builds on new knowledge

³ This paper has an R&R from an international academic journal (Co-authors: Boon, Mom, Van Den Bosch and Volberda)

and requires a departure from existing skills and capabilities (Belderbos, Faems, Leten and van Looy, 2010; Benner and Tushman, 2003). An under-emphasis on exploratory innovation leads organizational units to obsolescence by impeding their ability to cope with changes in the environment (Levinthal and March, 1993; Tushman and O'Reilly, 1996). While studies have shown that increasing market or technological discontinuities require the management team of an organizational unit to decide to increase exploratory innovation (Dowell and Swaminathan, 2006; Sidhu et al. 2004) and to enact the appropriate organizational mechanisms to bring about such innovations (i.e. Benner and Tushman, 2003; Smith and Tushman, 2005), others have indicated that some management teams do not do so and consequently they put the unit's chances of survival at risk (Jansen, Vera and Crossan, 2009; Kaplan, Murray and Henderson, 2003). Ergo, the impact of the management team on the pursuit of exploratory innovation has emerged as an important research theme (Alexiev et al., 2010; O'Reilly and Tushman, 2011).

Current studies in the upper-echelon literature (Hambrick, 2007; Hambrick and Mason, 1984) that seek to explain the impact of senior management on innovation have typically focused on the demographic attributes of individual executives or management teams (e.g. Papadakis and Barwise, 2002; Talke, Salomo and Kock, 2011) or have simply tried to explain differences across management teams by referring to 'gut feeling' in managerial decision making (Sadler-Smith and Shefy, 2004). Although demographic differences have been shown to influence team decisions, some recent studies indicate that underlying psychological characteristics may be more adequate predictors of such decisions over time (Bell, 2007; Miron-Spektor, Erez and Naveh, 2011). In this paper, we contribute by advancing theory development about how the management team of an organizational unit impacts the level of exploratory innovation of the unit. We do so by going beyond current studies to bring into the management and innovation literature regulatory focus theory from the field of psychology (Higgins, 1997, 1998).

Regulatory focus is a motivational theory of goal pursuit, rapidly becoming prominent in the management and organization literatures (*cf.* Das and Kumar, 2011; Kark and van Dijk, 2007; McMullen, Shepherd and Patzelt, 2009; Spanjol, Tam, Qualls and Bohlmann, 2011; Weber, Mayer and Macher, 2011). Regulatory focus shapes people's decision making and how

they then act; it is, for instance, a powerful antecedent of strategic inclinations (Crowe and Higgins, 1997), preferences (Wang and Lee, 2006), and behavioral change (i.e. Zhao and Pechmann, 2007). Prior research suggests that engagement in exploratory behaviors is determined by the forces of attraction to novelty and fear of threat (Bergman and Kitchen, 2009; Berlyne, 1966; Brown and Nemes, 2008). According to regulatory focus theory, receptiveness to novelty, risk-taking and change are regulated by the promotion focus, the mechanism for maximizing gains and seeking pleasure (Crowe and Higgins, 1997; Herzstein, Posavac and Brakus, 2007; Liberman, Idson, Camacho and Higgins, 1999; McMullen et al., 2009). In contrast, prevention focus, the mechanism for minimizing losses and avoiding pain, emphasizes risk-avoidance and stability and favors what has been previously tried over novelty (ibid.).

Research shows that many of the exploratory innovations intended by a unit's management team will fail to come about (McDermott & O'Connor, 2002; Jansen et al., 2009). With respect to this, the literature highlights the importance of formal structural mechanisms (Damanpour, 1991), most notably centralization and formalization (Miller and Dröge, 1986; Zmud, 1982), by which a management team can coordinate the development of different levels and types of innovation. More recently, when looking at how to foster innovation, others have pointed to the use of more informal and voluntary modes of coordination: personal relationships between people which cut through hierarchical levels and functions (Jansen, van den Bosch and Volberda, 2006; Sheremata, 2000; Tsai, 2002). However, it is unclear whether and how a management team can exert an influence on such informal and voluntary personal connections (Adler, Know and Heckscher, 2008; Mom, van den Bosch and Volberda, 2009), and empirically validated insights into how the different types of coordination mechanisms, i.e. formal and informal, foster exploratory innovation are scarce (Lawson, Petersen, Cousins and Handfield, 2009; Jansen et al., 2006).

Hence, to advance current insights into why and how the management team impacts exploratory innovation we contribute not only by introducing in this paper the regulatory focus of the unit's management team as a new antecedent of the unit's exploratory innovation, but also by clarifying the organizational coordination mechanisms through which this antecedent generates the unit's exploratory innovation. We do so by presenting both

conceptual arguments and empirical evidence to show how the regulatory focus of the unit's management team relates to the exploratory innovation of the organizational unit both through formal coordination mechanisms, i.e. centralization and formalization, and through connectedness, i.e. the informal personal lateral relationships among the unit's people.

This enables us also to make a contribution to the regulatory focus literature as we explain how regulatory focus may influence the organizational context, i.e. the organizational coordination mechanisms. In the regulatory focus literature, there have been numerous studies showing the effect of organizational context on the individual or group (i.e. Brockner and Higgins, 2001; Rietzschel, 2011). In contrast, we extend the recent dialogue by suggesting that, when the group possesses sufficient power or authority, such as a management team has in its organizational unit, it can shape the organizational context and in particular the coordination mechanisms of the unit in line with its regulatory foci. This finding is particularly useful for the emerging stream of literature aimed at better understanding the diffusion of a particular regulatory focus throughout the organization (e.g. McMullen et al., 2009).

The remainder of this paper is structured as follows. First, we introduce the regulatory focus theory and explain how the promotion and prevention foci of an organizational unit's management team influence the unit's exploratory innovation. Next, we explain how the goal orientation of the management team is reflected in the unit's exploratory innovation through the coordination mechanisms. After that, we outline data collection and scales and present the results from a survey of 748 managers from 69 organizational units of a large multinational semiconductor company. Finally, we discuss the implications of our study, and point towards areas of future research.

THEORETICAL FRAMEWORK

Regulatory Focus Theory and Exploratory Innovation

In the psychology literature, there are two kinds of ends an individual may struggle to attain; avoiding pain and seeking pleasure, and “this principle underlies motivational models across all levels of analysis in psychology, from the biological to the social” (Higgins 1998: 1). On the other hand, the regulatory focus theory differs from its predecessors by suggesting

that avoiding pain and seeking pleasure are not the two extremes of a continuum, but are two separate mechanisms. Therefore, all individuals try to both avoid pain and seek pleasure, although to differing extents. When individuals are focused more on prevention, they try to minimize mistakes by concentrating in detail on the threats in the environment, and becoming 'appropriate' within the norms (Friedman and Förster, 2001; Förster and Higgins, 2005; Pennington and Roese, 2003; Semin, Higgins, Gil, Estourget and Valencia, 2005). In contrast, when they are focused more on promotion, they try to maximize gains by seizing opportunities in the environment (ibid.). Regulatory focus literature discusses the various factors surrounding this essential principle, which has crucial effects on behavioral, emotional and decision-making tendencies (*cf.* Brockner and Higgins, 2001; Crowe and Higgins, 1997; Wang and Lee, 2006; Zhao and Pechmann, 2007).

A few years ago, using insights from the social identity and social categorization theories (i.e. Hogg and Terry, 2000), Faddegon, Ellemers and Scheepers (2008) have extended the regulatory focus theory to account for more than individual level phenomena. In particular, they used the idea of multiple selves (i.e. the individual self and the collective self) in order to show that not only individuals, but collective bodies such as teams, can have a regulatory focus as well. Indeed, by a series of experiments, they were able to show that individuals are quite cognizant of the regulatory focus of their group, and act accordingly. More recently, a number of papers have examined the impacts of regulatory focus at different levels of analyses, such as the team or organization (e.g. Das and Kumar, 2011; Rietzschel, 2011; Spanjol et al. 2011). In this paper, we are interested in the regulatory focus of the management team of an organizational unit, and the associations with the unit's exploratory innovation level.

Exploratory innovation is a high-risk activity that builds on new knowledge and can produce radical change, maximizing gains in the long-term (Alexiev et al., 2010; Benner and Tushman, 2003; Nerkar, 2003; Tushman and O'Reilly, 1996). Engagement in exploratory activities is governed by the attraction to novelty and the fear of threat (i.e. Bergman and Kitchen, 2009; Berlyne, 1966; Brown and Nemes, 2008). The promotion focus – the novelty and eagerness components of regulatory focus – of a unit's management team may increase the unit's tendency towards exploratory innovation as it can be expected to increase the

management team's willingness to take risk (Crowe and Higgins, 1997; Hamstra, Bolderdijk and Veldstra, 2011), enlarge its preference for novelty (Herzenstein et al., 2007), change (Lieberman et al., 1999), and new knowledge creation (Friedman and Förster, 2001; Rietzschel, 2011) and foster a forward-looking orientation (Pennington and Roese, 2003). On the other hand, the prevention focus – the fear and vigilance components of regulatory focus – of a unit's management team may inhibit exploratory innovation by the unit as it tries to protect the group from potential threats by keeping the risks down (Crowe and Higgins, 1997; Hamstra et al., 2011), and as it can be expected to increase the management team's willingness to maintain the status quo and to keep stability (Lieberman et al., 1999) and also its preference for reliable and known outcomes (Hamstra et al. 2011). Based on this, we propose the following hypothesis:

Hypothesis 1: (a) The promotion focus of the unit's management team is positively related to the unit's exploratory innovation, and (b) the prevention focus of the unit's management team is negatively related to the unit's exploratory innovation.

Management Team Regulatory Focus and Organizational Antecedents of Exploratory Innovation

Decentralization refers to the management teams' actions to delegate decision making authority to other individuals in the organizational unit, i.e. to employees and managers lower down the hierarchy. Decentralization gives management teams the opportunity to focus their limited attention on broader issues (i.e. Ocasio, 1997), by handing other issues over to expert and specialized employees (i.e. Colombo and Delmastro, 2004). On the other hand, as in any agency problem, decentralization comes with the risk that, intentionally or unintentionally, the agent may not act in the preferred manner. For instance, unethical pro-self behavior in mixed-motive situations (i.e. De Cremer and van Knippenberg, 2002), ranging from basic cases of free-riding (i.e. Kerr, 1983) to organized corruption (i.e. Celentani and Ganuza, 2002), is known to have detrimental effects on organizational performance. We expect the regulatory focus of the management team to influence the extent to which the management team is willing to take the risk of delegating a task, in exchange for potential benefits. Crowe and Higgins explain that “the promotion focus inclination is to insure hits and insure against errors

of omission, whereas the prevention focus inclination is to insure correct rejections and insure against errors of commission” (1997, p. 117).

Therefore, because they concentrate more on the gains side of the equation, we anticipate promotion-focused management teams⁴ to have a higher likelihood of delegating tasks and authority to other individuals. In contrast, in an effort to minimize mistakes and unexpected behavior, prevention-focused management teams are more likely to keep the decision making authority central to themselves. Exploratory innovation requires non-routine problem solving and deviation from existing knowledge (Benner and Tushman, 2003; Jansen et al., 2006). In centralized decision making, by contrast, the number and quality of solutions to problems faced by the organization are reduced (Sheremata, 2000), and so too is the likelihood that unit members will seek new knowledge and come up with new ideas (Damanpour, 1991). An increase in levels of centralization is therefore negatively associated with exploratory innovation.

Hypothesis 2: (a) The promotion focus of the unit’s management team is negatively related to the level of centralization in the organizational unit, and (b) the prevention focus of the unit’s management team is positively related to the level of centralization in the organizational unit, where (c) the level of centralization is negatively related to the level of exploratory innovation.

Formalization can be defined as the extent to which the organizational unit has written and concrete descriptions of rules and procedures for a variety of circumstances. Through these rules and procedures formalization decreases deviant behavior by employees, and in doing so, provides reliability to the unit (i.e. Weick, Sutcliffe and Obstfeld, 1999). Prevention focus is the safety and security component of regulatory focus (Higgins, 1997; Shah, Higgins and Friedman, 1998), and accordingly a primary strategy of prevention-focused individuals is to prevent losses by maintaining a particular state (Herzenstein et al., 2007; Higgins et al., 2001; Liberman et al., 1999). When management teams are in a prevention focus, they are likely to have a stronger preference for the solid reliability provided by high levels of

⁴ Within the context of this text, the phrases 'promotion-focused management teams' and 'prevention-focused management teams' will be used interchangeably with the phrases 'management teams in a promotion focus' and 'management teams in a prevention focus'.

formalization. On the other hand, promotion focus is associated with advancement and gains, and promotion-focused individuals and teams use eager strategies to maximize their gains (ibid.). Therefore, being less concerned with safety and with maintaining the status quo, promotion-focused management teams are likely to perceive high levels of formalization as restrictive, and may opt for the potential gains that a less structured and more flexible organization may bring. Moreover, prevention focus is associated with detailed and concrete goals, whereas promotion focus is associated with an abstract and global processing style (Förster and Higgins, 2005; Semin et al., 2005). Therefore when management teams are in a prevention focus they may be more likely to employ higher levels of formalization, due to the detailed, concrete rule descriptions for a variety of specific situations, whereas in a promotion focus, management teams may create fewer, and more general rules.

In summary, we expect the prevention focus of the management team to have a positive relationship with the level of formalization in the organizational unit, and the promotion focus to have a negative relationship. Having more rules and procedures decreases deviant behavior, experimentation, and ad hoc problem-solving and as such a unit's variation-seeking behavior and deviation from existing knowledge – vital components of exploratory activities – (Ettlie, Bridges and O'Keefe, 1984; Hlavacek and Thompson, 1973; Jansen et al., 2006), thereby hampering exploratory innovation. Therefore, we also expect the positive effect of prevention focus – or negative effect in the case of promotion focus – of the management team on the level of formalization of the organization to be reflected either negatively or positively respectively on a unit's exploratory innovation.

Hypothesis 3: (a) The promotion focus of the unit's management team is negatively related to the level of formalization in the organizational unit, and (b) the prevention focus of the unit's management team is positively related to the level of formalization in the organizational unit, where (c) the level of formalization is negatively related to the level of exploratory innovation.

Connectedness is the extent to which members of the organizational unit, regardless of their hierarchical level or function, are accessible to and interlinked with each other through direct personal contacts. Connectedness has a positive association with the exploratory innovation of the organizational unit, especially because it helps the members of the unit to

combine knowledge and to develop new knowledge underlying exploratory innovation (Björk and Magnusson, 2009; Jansen et al., 2006; Obstfeld, 2005). Prevention-focused individuals are detail-oriented and concentrate mainly on minimizing losses (Crowe and Higgins, 1997; Förster and Higgins, 2005). Furthermore, they tend to be task-oriented in their supervisions of others (Kark and van Dijk, 2007).

Therefore, prevention-focused management teams are more likely to assign to members of the organizational unit specific tasks, the boundaries of which are clear. In contrast, promotion-focused management teams, in line with their processing styles (i.e. Förster and Higgins, 2005; Semin et al., 2005), are more likely to assign abstract, general tasks with unclear boundaries, which require employees to work together and consult each other informally. Moreover, because they value concrete goals (ibid.) and focus on short-term performance (i.e. Pennington and Roesse, 2003), prevention-focused management teams may perceive the essential elements of connectedness, such as informal hall talk, as time-wasting, and may take precautions against it. Therefore, we expect management team promotion focus to have a positive association with levels of connectedness in the organizational unit, and prevention focus to have a negative association with it.

Hypothesis 4: (a) The promotion focus of the unit's management team is positively related to the level of connectedness in the organizational unit, and (b) the prevention focus of the unit's management team is negatively related to the level of connectedness in the organizational unit, where (c) the level of connectedness is positively related to the level of exploratory innovation.

According to the upper-echelons theory, the management team reflects its strategic inclinations, intentions, and preferences upon the organization and its outcomes through organizational design decisions (Hambrick, 2007; Hambrick and Mason, 1984). Hence, we expect the regulatory focus of the organizational unit's management team to be reflected in the exploratory innovation of the organizational unit through the organizational coordination mechanisms. Furthermore, considering that in upper-echelons theory organizational design is a key activity of the management team, we expect the three coordination mechanisms to capture most of the effect of the management team's regulatory focus on the organizational

unit's exploratory innovation (Jansen et al., 2006).

Hypothesis 5: Formalization, centralization and connectedness of the unit mediate the relationship between the regulatory focus of the organizational unit's management team and the unit's exploratory innovation.

METHODOLOGY

Data Collection and Validation

Exploratory innovation is particularly important for organizational units that are based in fast-changing, dynamic environments, such as high-tech industries. In line with this, we decided to collect our data at a large, multi-unit, multinational semiconductor company. The company employs approximately 25,000 people and is headquartered in Europe. The company has 43 business units, some of which have up to three organizational units in different geographical locations. The survey was sent (by Ad Boon, the HR vice-president of the company at that time) to all 2,275 managers – i.e. to those who belonged to the unit management teams as well as to all those in the levels below the team – of all organizational units. Of the responses we received from all 43 units, and taking into account their organizational units in different geographical locations, we had a total of 95 organizational units. Next, we removed the responses with missing variables and, for reliability purposes, the 24 organizational units which had only one respondent. This brought us to our net sample size of 748 managers from 69 organizational units. In line with the assumptions of regulatory focus research (Higgins, 1997, 1998), and also to reduce potential issues pertaining to common method bias, we used responses from the top managers of the unit (the management team) to rate the team's promotion and prevention foci. Only when data from these top managers was not available, we used middle-managers' responses. We used all managers' responses in rating the three coordination mechanisms and exploratory innovation.

We conducted convergent and discriminant validity checks as well as reliability checks on all the items and scales within the study. The items of each scale showed high levels of reliability (reported below), which allowed us to aggregate the items to form the variables. We also checked the inter-class coefficients to see whether the managers from the same team and/or organizational unit were in agreement on the levels of the variables. The inter-class

coefficients were higher than 0.5 for each scale, showing a sufficient level of agreement between the raters (LeBreton and Senter, 2008: 836), so we aggregated the data for the individual managers to the corresponding 69 organizational units. Following that we conducted an exploratory factor analysis (Principle Components Analysis, Varimax rotation with Kaiser Normalization) in which we included all items of this study's constructs, i.e. those measuring exploratory innovation, promotion focus, prevention focus, decentralization, formalization, and connectedness. Bartlett's test of sphericity was significant ($\chi^2 = 1120.07$; $p < .001$), showing that the sample was appropriate for exploratory factor analysis. Results of the factor analysis indicate that the measures were appropriately constructed: six distinct factors emerged with eigenvalues greater than 1, all items loaded at least 0.6 on their appropriate factor, and no item cross-loading was above 0.4. The items of the scales and the rotated component matrix of the exploratory factor analysis with the model variables are presented in Table 1.

Table 1. Items and Factor Analysis of the Dependent Variable^{a, b}

	1	2	3	4	5	6
Exploratory Innovation ($\alpha = .91$)						
In our unit, we invent products and services for new markets	-.09	.85	.15	-.05	.20	-.03
In our unit, we experiment with new products and services in our markets.	-.20	.86	.12	.22	.10	-.18
In our unit, we experiment with products and services that are completely new to our unit.	-.20	.86	.05	.16	-.08	.00
In our unit, we frequently utilize opportunities in new markets.	-.12	.79	.25	.12	.24	-.11
Promotion Focus of the Management Team ($\alpha = .84$)						
Talk enthusiastically about what needs to be accomplished	-.10	.19	.10	.69	.08	.26
Articulate a compelling vision of the future	-.06	.23	.10	.83	.06	.09
Suggest new ways of looking at how to complete assignments	-.14	.09	.14	.79	.17	.25
Seek differing perspectives when solving problems	-.15	-.07	.22	.79	-.08	-.04
Prevention Focus of the Management Team ($\alpha = .74$)						
Concentrate their attention on dealing with mistakes, complaints and failures	.08	-.09	-.02	.17	.02	.84
Focus attention on irregularities, mistakes, exceptions, and deviations from standards	.11	-.21	-.13	.29	.07	.74
Do not hesitate to interfere until problems become serious	-.10	.22	-.07	.22	.18	.69
Show a firm belief in "if it ain't broke, don't fix it."	.17	-.23	.14	-.15	-.16	.63
Centralization ($\alpha = .95$)						
A person in our unit who wants to make his own decisions would be quickly discouraged.	.85	-.25	-.13	-.15	-.05	.04
Even small matters in our unit have to be referred to someone higher up for a final decision.	.90	-.13	-.15	-.08	.01	.08
Unit members need to ask their manager before they do almost anything.	.92	-.09	-.07	-.10	.02	.15
Most decisions people make here have to have their manager's approval.	.92	-.11	-.10	-.10	.02	-.02
Formalization ($\alpha = .74$)						
Whatever situation arises, procedures are available for dealing with it.	.07	.10	-.01	.25	.74	-.06
Rules and procedures occupy a central place in our unit.	.02	.12	-.24	-.14	.83	.11
Records are kept of everyone's performance.	-.20	-.00	.08	-.02	.66	.17
Job descriptions are formulated for positions at all levels in our unit.	.15	.17	.25	.10	.73	-.12
Connectedness ($\alpha = .86$)						
In our unit, there is ample opportunity for informal "hall talk" among employees.	-.02	.02	.85	.08	.09	-.08
In our unit, employees from different departments feel comfortable calling each other when the need arises.	-.05	.21	.86	.07	.08	-.09
People in our unit are quite accessible to each other.	-.18	.14	.82	.24	-.10	.10
In our unit, it is easy to talk with virtually anyone you need to, regardless of rank or position.	-.32	.19	.75	.20	-.04	.04

Notes: ^a Principle Components Analysis with Varimax Rotation. ^b All items were measured using a seven-point scale: 1=strongly agree; 7=strongly disagree.

Scales and Measurement

Dependent Variable. For the dependent variable, exploratory innovation, we used the scale devised and used by Jansen et al. (2006), which has also been applied by others such as Alexiev et al., (2010). The scale ($\alpha = .91$) captures the extent to which the organizational unit departs from existing knowledge and pursues innovations for new customers or markets.

Independent Variable. Scales for assessing the promotion and prevention foci of management teams are not yet available in the literature. Based on studies which integrate theories on leadership behavior with regulatory focus theory, we constructed an initial management team regulatory focus scale based on items relating to the leadership behaviors of the management team that indicated promotion and prevention focus (cf. Bass, 1997; Bass, Avolio, Jung & Berson, 2003; Ho, Fie, Ching, and Boon, 2009; Kark and Van Dijk, 2007; Neubert, Kacmar, Carison, Chonko and Roberts, 2008; Phillips and Hayashi, 2005). During subsequent interviews, management team members from various organizational units of the semiconductor company were invited to evaluate the survey items and suggest improvements. To allow further enhancement of the reliability, unidimensionality, and convergent and discriminant validity of the promotion and prevention scales, we tested the scales quantitatively, drawing on data we obtained from a test version of the survey with 34 unit management team members from the semiconductor company. Following reliability and validity analyses, ambiguous items were identified and excluded, a process that resulted in the final version of the scales.

In line with regulatory focus theory, the four-item promotion scale captures the behavioral manifestations of the unit's management teams in terms of their receptiveness to change and novelty, as well as their orientation towards the future and to achieving gains (e.g. Friedman and Förster, 2001; Higgins, 2001; Kark and van Dijk, 2007; Liberman et al., 1999). In particular, the item "Suggest new ways of looking at how to complete assignments" is an indicator of promotion focus, as it shows willingness towards change (Liberman et al., 1999), creativity (Friedman and Förster, 2001) and novelty (Herzenstein et al., 2007). Likewise, "Seek differing perspectives when solving problems" is an indicator of promotion focus as

well, for the very same reasons. The item “Talk enthusiastically about what needs to be accomplished” indicates promotion focus, as cheerfulness, enthusiasm and eagerness feelings are associated with making gains and promotion focus (Brockner and Higgins, 2001; Higgins, 2001). “Articulate a compelling vision of the future” measures the future orientation of the management team, which is again a characteristic of promotion focus (Mogilner, Aaker and Pennington, 2008; Pennington and Roesse, 2003).

In line with regulatory focus theory, the four-item prevention scale captures the behavioral manifestations of the unit management teams, showing any orientation towards suppressing change and deviations as well as towards preserving the status quo and minimizing mistakes and losses (e.g. Friedman and Förster, 2001; Higgins, 2001; Kark and van Dijk, 2007; Liberman et al., 1999). The items “Concentrate their attention on dealing with mistakes, complaints and failures” and “Focus attention on irregularities, mistakes, exceptions, and deviations from standards” are typical prevention focus items, as the core characteristic of prevention focus is minimizing losses (Higgins, 1997; Crowe and Higgins, 1997) and preserving the status quo through suppressing deviations from the standards (Liberman et al., 1999). “Do not hesitate to interfere until problems become serious” is a prevention focused item, as one marking feature of prevention focus is quickly realizing impending threats in the environment, and taking preventative action (Friedman and Förster, 2001; Higgins, 1997). For instance, individuals in a prevention focus are found to use brakes much faster when driving (Werth and Förster, 2007). Finally, “Show a firm belief in ‘if it ain’t broke, don’t fix it’” is a prevention focused item, as individuals in a prevention focus concentrate on minimizing losses (Crowe and Higgins, 1997), and thus, if an issue or object is not particularly causing problems, prevention focused individuals will not be easily motivated to make changes to it. On the other hand, the prospects of making gains from deviations from standard motivate individuals in a promotion focus, as their primary strategic inclination is maximizing gains. For instance, Liberman and colleagues (1999) found that prevention focused individuals are much less likely than promotion focused individuals to substitute objects they possess for another object. Likewise, during the experiment, when they were asked to choose between continuing on the same task they had already been working on or switch to an alternative task, prevention focused individuals were more likely to prefer

working on the same activity.

We conducted exploratory factor analysis with Varimax rotation with all eight items, based on the survey data at the management-team-level of analysis, i.e. with a sample size of 69. The analysis revealed that two summated scales could be constructed: one promotion-focus scale with the four promotion items and one prevention-focus scale with the four prevention items. Eigenvalues for each factor were greater than 1.0, all items loaded on their appropriate factors at greater than 0.6, and no item cross-loading was greater than 0.4. The results of the integrated exploratory factor analysis, i.e. with all the items included in this study's model variables, can be found in Table 1. Both the promotion and prevention focus scales are reliable: promotion $\alpha = .84$; prevention $\alpha = .74$.

Following survey-based research on regulatory focus in which individuals typically complete their own assessment of their regulatory focus (e.g. Lockwood, Jordan and Kunda, 2002; Neubert et al., 2008), we asked the management team members to rate each of the items (1 = strongly agree; 7 = strongly disagree), as shown in Table 1 on the management team's regulatory focus.

Mediating Variables. Centralization items are based on the Hage and Aiken (1967) and Dewar, Whetten and Boje (1980) studies. The centralization scale examines the extent to which the members of an organizational unit can act autonomously from their managers, particularly when those managers are higher up in the hierarchy ($\alpha = .95$). The items of the formalization scale are based on the study by Deshpande and Zaltman (1982), and measure the prevalence of rules and procedures in an organizational unit ($\alpha = .74$). The connectedness scale is based on the Jaworski and Kohli (1993) study, and is used to analyze the extent to which members of an organizational unit are accessible regardless of their hierarchical level or position, and the extent to which informal communication is used in the organizational unit ($\alpha = .86$).

Control Variables. We have three control variables; one externally focused and two were internally focused. We decided to control for environmental competitiveness as it is known to be an external factor of central importance in terms of the level of exploratory innovation within the organizational unit (Zahra, 1996). The four environmental competitiveness items are based on studies by Birkinshaw, Hood and Jonsson (1998) and

Jaworski and Kohli (1993), and measure the level of competition the organizational unit faces externally ($\alpha = .93$). The two internal factors we controlled for were the median tenure in firm and the median level of education of the management team. We used the median average rather than the mean because the measurements were taken at the ordinal level of measurement (Stevens, 1951). Level of education tends to have a positive relationship with higher levels of cognitive abilities (Papadakis, Lioukas and Chambers, 1998), which may have an effect on the tendency towards exploratory innovation. Likewise, we controlled for tenure in firm for its potential effects on exploratory innovation through increased experience and familiarity with the context (cf. Tushman and O'Reilly, 1996).

ANALYSIS AND RESULTS

Table 2. Correlation Matrix

	Mean	Std. Dev.	1	2	3	4	5	6	7	8
1 Exploratory Innovation	4.61	.76	(.91)							
2 Centralization	3.43	.92	-.35**	(.95)						
3 Formalization	4.35	.55	.26*	-.01	(.74)					
4 Connectedness	5.38	.55	.33***	-.30*	.08	(.86)				
5 Promotion Focus	4.84	.77	.28*	-.27*	.15	.34***	(.84)			
6 Prevention Focus	4.21	.74	-.16	.14	.06	-.05	.29*	(.74)		
7 Environmental Competitiveness	5.93	.62	-.07	-.05	-.20	.17	.01	-.03	(.93)	
8 Tenure in Firm	4.20	.94	-.10	-.17	.20†	.19	.10	.32**	-.13	
9 Level of Education	3.66	.55	.25*	-.02	.18	-.02	.06	.06	-.27*	-.09

Notes: N = 69; † p < .10, * p < .05; ** p < .01; *** p < .001; Cronbach's Alphas are given in parentheses.

The correlation matrix is presented above. The data was for the most part in line with our expectations. Unexpectedly, formalization had a positive correlation with exploratory innovation ($r = .26$; $p < .05$). Like the survey-based studies on individuals' regulatory focus (Higgins, Friedman, Harlow, Idson, Ayduk and Taylor, 2001; Lockwood et al., 2002) as well as those which applied the constructs in the context of organizations (Neubert et al., 2008; Wallace, Johnson and Frazier, 2009), we found a modest positive correlation between promotion and prevention focus ($r = .29$; $p < .05$).

Table 3. Hierarchical OLS Regression Models on Exploratory Innovation

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
Intercept	3.71**	3.06*	2.48	2.35
Independent Variables				
Promotion Focus		.35**		.15
Prevention Focus		-.27*		-.12
Mediating Variables				
Centralization			-.31**	-.26*
Formalization			.24*	.22†
Connectedness			.28*	.23†
Control Variables				
Environmental Competitiveness	-.01	-.01	-.07	-.06
Median Tenure in Firm	-.07	-.02	-.24*	-.19
Median Level of Education	.24†	.24*	.17	.18
R-squared	.07	.21	.33	.35
Adjusted R-squared	.03	.15	.27	.27
ANOVA F	1.60	3.33*	5.19***	4.10***

Notes: N = 69; † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table III above shows the hierarchical OLS regression analyses we conducted on the exploratory innovation variable. We first checked the variance inflation factors (VIF) against possible multicollinearity issues. The highest VIF value in our regression models was 1.29, which is well below the suggested cut-off point of 10 (Neter, Wasserman and Kutner, 1990),

indicating that multicollinearity was not a problem in our analyses. Next, we went on to test the hypotheses. Model 2 of Table III demonstrates the positive effect of promotion focus ($\beta = .35$; $p < .01$) and the negative effect of prevention focus ($\beta = -.27$; $p < .05$) of the management team on exploratory innovation of the organizational unit, *supporting Hypothesis 1*. In Table IV below, the models conducted on the mediating variables are presented.

Table 4. OLS Regression Models on Centralization, Formalization and Connectedness

	<i>Model 5 Centralization</i>	<i>Model 6 Formalization</i>	<i>Model 7 Connectedness</i>
Intercept	6.00***	3.65**	2.86**
Independent Variables			
Promotion Focus	-.33**	-.14	.38**
Prevention Focus	-.32*	-.06	-.24†
Control Variables			
Environmental Competitiveness	-.09	-.13	.21†
Median Tenure in Firm	-.37*	.20	.26*
Median Level of Education	-.07	.16	.05
R-squared	.19	.11	.23
Adjusted R-squared	.12	.04	.17
ANOVA F	2.86*	1.60	3.70**

Notes: N = 69; † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

As expected, Model 5 shows that promotion focus has a negative relationship with centralization ($\beta = -.33$; $p < .01$), whereas prevention focus has a positive relationship with it ($\beta = .32$; $p < .05$). Moreover, Model 3 shows that, in line with our predictions, centralization has a negative relationship to exploratory innovation of the organizational unit ($\beta = -.31$; $p < .01$). Therefore, *Hypothesis 2 is supported*.

Model 6 shows that neither the effect of promotion focus ($\beta = -.14$; $p = .27$), nor prevention focus ($\beta = -.06$; $p = .66$), were significantly related to formalization, thus *not supporting Hypothesis 3*. One explanation for this result may be that level of formalization is administered at a higher level in the hierarchy, rather than within the organizational unit itself. Alternatively, the extensive use of process management methods (i.e. Benner and Tushman, 2003) may have meant that the goal orientation of the unit management team played no role in the procedure-making process, at least in this particular large multinational. In Model 3, the

effect of formalization on exploratory innovation of the organizational unit was significant, but – in contrast to our expectations – it was positive rather than negative ($\beta = .24$; $p < .05$). This may be explained by the fact that in high-tech firms with many educated employees, 'enabling' formalization may be more prevalent than 'coercive' formalization (i.e. Adler and Borys, 1996). In other words, although there may be many rules and procedures, they may not necessarily be preventing the organizational unit from engaging in exploratory innovation.

Regarding Hypothesis 4, Model 7 shows that promotion focus of the management team had a positive effect on connectedness within the department ($\beta = .38$; $p < .01$) and that prevention focus had a negative effect ($\beta = -.24$; $p < .06$), verifying our predictions. Furthermore, in line with our expectations, Model 3 showed that the effect of connectedness on exploratory innovation was positive and significant ($\beta = .28$; $p < .05$), *supporting Hypothesis 4*.

In order to test hypothesis 5, we first conducted Sobel tests on the mediating variables to see that they were indeed partial mediators. Centralization was a significant partial mediator of both promotion focus (*Sobel t* = 1.98; $p < .05$) and prevention focus (*Sobel t* = -1.91; $p < .06$). Through connectedness, the effect of promotion focus was partially mediated (*Sobel t* = 2.00; $p < .05$). The partial mediation of prevention focus through connectedness was marginally significant (*Sobel t* = -1.56; $p = .12$). We did not conduct partial mediation tests through the formalization variable as the main effect was not significant.

However, Sobel test generally used is known to have its limitations. In such cases, the recommendation is to test the mediation also with the bootstrapping method (Shrout and Bolger, 2002), which is a powerful technique for testing mediation models (i.e. Hayes, 2009; MacKinnon, Lockwood, Hoffman, West and Sheets, 2002; MacKinnon, Lockwood and Williams, 2004). Recently, mediation with bootstrapping technique has also been used in top management journals (e.g. Hmieleski, Cole and Baron, 2012; Luchs, Brower and Chitturi, 2012; Walker, Bauer, Cole, Bernerth, Field and Short, 2012). In line with this recommendation, we employed the tool recently developed by Hayes (2009), which makes use of the bootstrapping technique. The mediation test with bootstrap analysis (1,000 samples; 95% confidence interval) generated similar results to the earlier tests we conducted. Again, the indirect effect of promotion focus on exploratory innovation through connectedness ($Z =$

1.78; $p < .10$) and centralization ($Z = 1.68$; $p < .10$) was significant. The indirect effect of prevention focus was significant through centralization ($Z = -1.62$; $p = .10$), but not through connectedness ($Z = -1.40$; $p = .16$).

Table 5. Indirect Effects with Bootstrapping

	<i>Effect</i>	<i>Boot SE</i>	<i>Boot LLCI</i>	<i>Boot ULCI</i>	<i>Z</i>	<i>p-value</i>
Promotion focus through centralization	.09	.06	.01	.23	1.68	.09
Prevention focus through centralization	-.09	.06	-.26	-.01	-1.62	.10
Promotion focus through connectedness	.10	.06	.02	.29	1.78	.08
Prevention focus through connectedness	-.07	.05	-.20	.00	-1.40	.16

N = 69. Based on 1000 bootstrap samples.

After showing that centralization and connectedness were both partial mediators of the relationship between regulatory focus of the management team and exploratory innovation, we tested whether centralization and connectedness together would result in full mediation. Following Baron and Kenny (1986), we examined the direct effects of centralization ($\beta = -.31$; $p < .01$) and connectedness ($\beta = .28$; $p < .05$) on exploratory innovation (Model 3). We then tested the direct effect of promotion focus ($\beta = .35$; $p < .01$) and prevention focus ($\beta = -.27$; $p < .05$) on exploratory innovation (Model 2). Both effects disappeared when centralization and connectedness were added into the equation (respectively $\beta = .15$; $p = .23$ and $\beta = -.12$; $p = .33$, Model 4), indicating that centralization and connectedness together result in full mediation. In sum, *Hypothesis 5 is supported for centralization and connectedness.*

DISCUSSION AND CONCLUSION

The impact of the management team on the pursuit of exploratory innovation has emerged as an important research theme in the exploratory innovation and upper-echelon literatures (e.g.

Alexiev et al., 2010; O'Reilly and Tushman, 2011; Papadakis and Barwise, 2002; Talke et al., 2011). Particularly pressing are the questions as to why and how some management teams in the same firm increase the level of exploratory innovation, while others do not (Jansen et al., 2009; McDermott & O'Connor, 2002; Sadler-Smith and Shefy, 2004). In this paper, our contribution has been to examine these questions in new and important ways; using regulatory focus theory from the field of psychology (Higgins, 1997, 1998) has enabled us both to further conceptual understanding and to present empirically validated findings.

More precisely, firstly we have contributed to the literature by explaining and demonstrating the relationship between management team regulatory focus and exploratory innovation of the team's organizational unit. Our results indicate that the promotion focus of a unit's management team positively relates to the unit's exploratory innovation while the prevention focus has a negative relationship to it. Secondly, we have explained and demonstrated how the regulatory focus of the management team of an organizational unit is reflected in the level of exploratory innovation within that unit, through the use of associated organizational coordination mechanisms. More specifically, centralization and connectedness, considered to be two of the most important coordination mechanisms within an organization (i.e. Tsai, 2002), are found to fully mediate the effect of the management team regulatory focus on the exploratory innovation of the organizational unit.

These two related contributions have a number of implications for theory and practice. First, while current innovation and upper-echelon studies have focused on demographic differences across management teams (e.g. Papadakis and Barwise, 2002; Talke et al., 2011) or have referred to concepts such as 'gut feeling' in managerial decision making (Sadler-Smith and Shefy, 2004) to explain differences across management teams, we have introduced a concept from the field of psychology which appears to offer a powerful explanation of why management teams from the same firm may differ in the extent to which they pursue exploratory innovations and in how they use organizational coordination mechanisms to bring about such innovations. In that sense, our study underlines for the upper-echelon and innovation literatures the importance of underlying psychological characteristics for understanding differences across management teams and associated outcomes (Bell, 2007; Miron-Spektor et al., 2011). In doing so, we also contribute to a recent study by Spanjol and

colleagues (2011) in the *Journal of Product Innovation Management*, which examines different types of product decisions in two-person teams. We might complement their study both theoretically and empirically. Theoretically, rather than touching upon various different types of product decisions, we focus on a specific aspect of product decisions – the level of exploratory innovation, and do so at the organizational unit level of analysis. Doing so allows us to examine not only the antecedent role of the management team’s regulatory focus, but also the factors mediating this relationship within the context of a large organization. Empirically, the study conducted by Spanjol et al (2011) was a business simulation with 124 undergraduate seniors. Although it was well-executed, the authors argue that using undergraduate students in place of real managers may give rise to limitations. In that sense, our study may be complementary as we conducted the study using 748 managers of a multinational company. Moreover, this research was not conducted with dyadic teams formed with the purpose of a business study, but with larger management teams that have already been operational for a long time. All in all, one implication of this study is confirming, extending and providing external validity to the results of the study by Spanjol and colleagues (2011).

Second, our findings also have implications for top or corporate management in terms of how they can influence the level of exploratory innovation in the organization’s units. During times of change and uncertainty, attempts by top management to exercise power in order to directly influence or change the strategic outcomes of units – such as their level of exploratory innovation – may be prone to failure because of resistance at the unit level, for example, or a lack of adequate internal and external contextual understanding at the top (Alexiev et al. 2010; Damanpour, 1991). In this sense, our study may provide insights into how the top management can influence such strategic outcomes in a more indirect way, thereby avoiding the potentially negative effects of direct top-down interventions. That is, by shifting the regulatory focus of an organizational unit’s management team the actual locus of strategic decision making, as well as the execution of such decisions, remains with the units’ management teams. The top management may shift a unit’s management team’s regulatory focus by deliberately changing the composition of the team, by framing their communication (i.e. written documents, vision, etc.) with the team in a particular regulatory focus (i.e. Weber

and Mayer, 2011; Weber et al., 2011) or by implementing carefully selected incentive mechanisms (Brockner and Higgins, 2001; Shah et al., 1998). When the regulatory focus of an organizational unit's management team is changed, the team can then be expected to change its level of exploratory innovation accordingly, and the associated organizational coordination mechanisms.

Third, while some research indicates that many of the exploratory innovations intended by a unit's management team will fail to come about (McDermott & O'Connor, 2002; Jansen et al., 2009), our research shows that one main reason for this may be because the management team does not take into account the organizational coordination required. In this sense, our study underlines that both the formal hierarchical structure, most notably the level of centralization of decision making, and the more informal development of densely connected social relationships within the units matter for changing the levels of exploratory innovation (Lawson et al., 2009; Jansen et al., 2006). Moreover, our results suggest another explanation for the managerial problem of trying to generate exploratory innovation but being unable to do so. That is, where the top management tries to increase a unit's exploratory innovation whilst imposing a prevention focus on the management team of the unit, they are unlikely to achieve higher levels of exploratory innovations. Based on the results of this study, we suggest the top management teams need to be consistent with their cues and messages. For instance, if a top management team is asking the management team of an organizational unit to engage in more exploratory innovation, they should preferably frame this in a promotion-focused manner, stressing the potential gains and opportunities involved, rather than in a prevention-focused manner that stresses the potential failures and threats of not doing so (e.g. Weber and Mayer, 2011).

Finally, our study provides an answer to the earlier calls in both the management and regulatory focus literatures for more research, particularly empirically validated, which uses the concept of regulatory focus within the domain of organizational behavior (i.e. Brockner and Higgins, 2001; Das and Teng, 2010; Kark and Van Dijk, 2007; McMullen et al., 2009). In this sense, we have taken a step forward in advancing understanding of the interrelationships between the construct of regulatory focus and the organizational context. While there have been numerous studies in the regulatory focus literature that show the effect of organizational

context on the individual or group (i.e. Brockner and Higgins, 2001; Rietzschel, 2011), our research has shown that the regulatory focus of a unit's management team has an important influence on the unit's organizational context, i.e. the extent to which the decision making structure is centralized and the extent to which the unit members are connected to each other by direct personal contacts. This finding is particularly useful for the emerging stream of literature that is aimed at better understanding the diffusion of a particular regulatory focus throughout the organization (e.g. McMullen et al., 2009). Moreover, by incorporating regulatory focus theory into the literatures on exploratory innovation, we bring in a variable that can act as a bridge between different kinds of literatures. That is, because regulatory focus is a core psychological variable with many other psychological antecedents (i.e., Higgins, 1997), this study may provide an important step in creating greater understanding of how various aspects of human psychology affect organizational behavior and outcomes, namely those related to innovation and, consequently, to organizational performance.

Limitations and Future Research

The findings of our study should be considered in the light of the following limitations, which are also indicators of potential areas for future research. First of all, our data was collected at one company. Considering that the level of analysis in this study was that of the organizational unit, this does not undermine the results of our study, but those results would be more generalizable if the study had been conducted at multiple companies.

A second limitation of our study was the lack of causality. This is because without using longitudinal data, it is only possible to talk about associations and relations, like we did in this paper, but not about causal effects. On the other hand, understanding the causal effects is necessary in order to formulate more complex, recursive models. One long-standing puzzle within the strategic management literature is the interplay between the organizational unit and the environment (i.e. Chandler, 1962); for instance, how should management teams of organizational units adjust their units to the environmental conditions so as to increase performance. Future researchers should consider collecting longitudinal data to examine the interplay between changes in the environment and the regulatory focus of the management team which affects the organizational coordination mechanisms. Such research could clarify

the extent to which regulatory focus helps a management team adapt its organizational unit or organization to the surrounding environment, and the conditions under which it may start becoming detrimental to performance.

Finally, to measure management team regulatory focus we constructed a new scale. In so doing, we took several steps to assess the scale's validity and reliability. Future empirical research may improve the scale and further test its validity.

To recap, in this study we examined how the regulatory focus of an organizational unit's management team affected the unit's exploratory innovation. Furthermore, we demonstrated the importance of decentralization and connectedness – two primary coordination mechanisms of the organizational unit – in mediating this relationship. By so doing, we took a further step to illuminate the micro-foundations of exploratory innovation from the perspectives of upper-echelons and regulatory focus theories.

Chapter 5: Selecting Managers for Strategic Fit: General Managers' Prevention Focus as an Antecedent of Management Team Accountability and Intra-Organizational Trust⁵

ABSTRACT

Recently, two meta-analysis studies examined the workplace outcomes of regulatory focus. Their results show that, although the wider regulatory focus literature suggests both dimensions of regulatory focus to offer distinct advantages of survival, little is known about the relative advantages of prevention focus to promotion focus in work contexts. This bias is problematic for strategic HRM's sub-literature on selecting managers for strategic fit, as the uneven research emphasis on the positive effects of promotion focus falsely presents it to be 'better' than prevention focus in work contexts. Using survey data from 145 Dutch companies, we examined the positive significant effects of general managers' prevention focus on two strategically important organizational concepts that promotion focus did not positively influence; management team accountability and intra-organizational trust. In doing so, we aim to shift the emphasis in the literature by highlighting that the advantageousness of a particular regulatory focus is contingent upon the strategic goals of the organization.

Keywords: *Management Selection, Strategic Fit, Intra-Organizational Trust, Management Team Accountability, Regulatory Focus Theory*

INTRODUCTION

In the last few years, regulatory focus theory has started to attract a good deal of interest from the scholars in management research (e.g. Das & Kumar, 2011; Kark & van Dijk, 2007; Stam, Knippenberg & Wisse, 2010; Weber, Mayer & Matcher, 2011). As a primordial survival mechanism of the human being (Higgins, 1998), regulatory focus has an influence on a wide range of behaviours and inclinations. To give a few examples, individuals' driving behaviours (Werth & Förster, 2007), everyday risk-taking tendencies (Hamstra,

⁵ This paper is under review by an international academic journal (Co-Authors: van den Bosch and Volberda)

Bolderdijk & Veldstra, 2011) and responses to environmental stimuli (Zhao & Pechmann, 2007) are known to be affected by their regulatory focus. In particular the effects of regulatory focus on individuals' decision-making tendencies (Zhou & Pham, 2004), preferences (Wang & Lee, 2006) and strategic inclinations (Crowe & Higgins, 1997) make this an interesting construct for the field of strategic HRM, especially for designing personnel selection processes that are aligned to the strategic goals of the organization.

Two recent meta-analysis studies have examined the work-related outcomes of regulatory focus (Gorman et al., 2012; Lanaj, Chang & Johnson, 2012). They looked at effects of the two dimensions of regulatory focus – namely promotion and prevention focus – on a large range of variables pertaining to job performance. The list of variables included those relating to innovative performance, task performance, organizational citizenship behaviours, counterproductive work behaviours, safety performance, affective commitment, continuance commitment and leader-member exchange (LMX). As expected, on most of these variables, the influence of promotion focus was favourable. That is, promotion focus almost always increased the levels of the variables that were positively related to job performance and decreased the ones which were negatively related to job performance. On the other hand, relatively little work has been done at a conceptual level to examine the beneficial influences of prevention focus, and in even fewer cases was there any empirical support. For example, of all the variables in the meta-analyses, safety performance and continuance commitment were the only ones where prevention focus was found to have a more beneficial effect than promotion focus. In other words, according to these two recent meta-analysis studies, the only advantages that prevention focus offered over predominantly promotion focus were that a prevention focus made individuals more likely to follow safety procedures and less likely to look for a new job.

Nevertheless, promotion and prevention dimensions of regulatory focus are distinct from each other (e.g. Higgins, 1997, 1998), and hence, both of them can be simultaneously high or low. Therefore, although the advantages of prevention focus are modest, managers with a high level of prevention focus could still be favourable, as long as they have a high promotion focus as well. However, there is a second problem; the two foci have conflicting effects on a number of important variables, such as job satisfaction, organizational citizenship

behaviours and affective commitment, where the influence of promotion focus is in the desired direction. In other words, prevention focus does not only appear to be much less beneficial than promotion focus, but also appears to have some considerable negative effects. This essentially suggests that we should not only design our HR selection systems with an aim of choosing the most promotion-focused managers, but should also ensure that these managers are low on the prevention focus dimension.

However, according to the wider literature on regulatory focus, both dimensions of regulatory focus offer distinct benefits for survival, and depending on the circumstances either focus could be advantageous (e.g. Friedman & Förster, 2001; Higgins, 1998). This raises the question of whether studies of work-related outcomes of regulatory focus have somewhat overlooked the potentially positive effects of prevention focus. There has been little research on this area: the literature has focused primarily on the other dimension of regulatory focus, namely promotion focus, and emphasized its advantages over prevention focus. This results in a certain ambiguity in the literature about how person-job and person-organization fit (e.g. Bolander & Sandberg, 2013; Boon, den Hartog, Boselie & Paauwe, 2011) can be achieved.

The contributions and implications of this paper are targeted to benefit the strategic HRM literature, particularly the sub-literature on selecting managers for strategic fit. In line with the gap deliberated above, the main contribution of this study concerns shifting the emphasis in the field (as indicated by the last two meta-analyses) from the workplace advantages of a promotion focus to the possible advantages of a prevention focus. Following upper echelons theory (Hambrick & Mason, 1984), we looked at the effect of general managers' prevention focus on two core areas, one relating to management teams (accountability) and the other to the organization more broadly (trust). We chose accountability at the management team level for two reasons. First, accountability is a behavioural variable pertaining to individual-level threats (e.g. higher accountability suggests a higher expectancy of negative consequences when a mistake is made, i.e. Lerner & Tetlock, 1999, p. 255), which links it conceptually to prevention focus. Second, accountability has a range of effects on decision-making tendencies and social information processing (e.g. Doney & Armstrong, 1996; Hagafors & Brehmer, 1983; Lerner, Goldberg & Tetlock, 1998), suggesting that changes in the accountability level of the management team (thus, of the upper

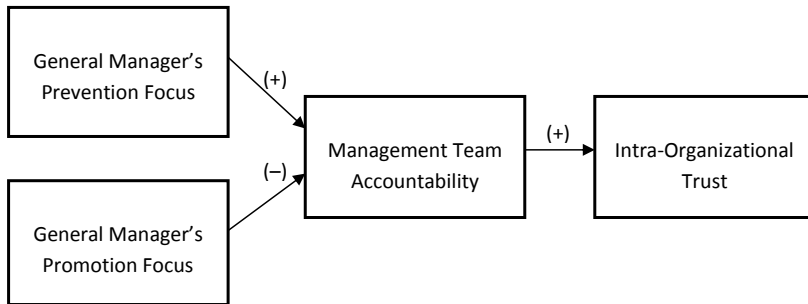
echelons) is likely to have organization-wide consequences. We expected one of these consequences to be a higher level of intra-organizational trust, defined as the level of trust among the individuals within the organization (we did not use the more generic term ‘organizational trust’ as that term can refer to a number of different phenomena, making it somewhat ambiguous in this case). Accountability and trust have been considered as core constructs within the management literature, especially due to their beneficial effects on numerous other constructs (e.g. Lerner & Tetlock, 1999; Janowicz-Panjaitan & Noorderhaven, 2009; Schoorman, Mayer & Davis, 2007). As a result, showing the positive effects of general managers’ prevention focus on management team accountability and intra-organizational trust makes prevention focus an important selection metric to be considered for the purpose of management selection.

When the goal is to choose a general manager, who will increase or restore accountability of the management team and the trust within the organization, there are advantages of using prevention focus as a metric. First of all, it is worth noting that research on the upper-echelon-level antecedents of management team accountability and intra-organizational trust is relatively scarce. Especially in the accountability literature, most of the research to date has focused primarily on examining the outcomes of accountability for the individual himself or herself. Therefore, our knowledge of the other upper-echelons-level antecedents of management team accountability and intra-organizational trust is limited. However, when compared to a number of other potential antecedents, especially the ones from the prior upper-echelons literature, prevention focus has distinct advantages. For instance, in a related but different stream of literature which examines the antecedents of the tendency to trust someone, one antecedent of trust is argued to be the individual’s emotional state (Dunn & Schweitzer, 2005). By contrast with predispositions, however, psychological states are prone to change. As a result, such variables are less useful for selecting managers. Likewise, a number of demographic and socio-economic characteristics can be considered as potential antecedents. Indeed, these variables are stable. However, then, most of these demographic and socio-economic characteristics do not have a strong conceptual link with the management team accountability and intra-organizational trust. For these reasons, we bring forward regulatory focus as an antecedent that ought to be considered in the process of

selecting managers, especially when the purpose is to choose an individual who will increase management team accountability and intra-organizational trust.

This paper has also an empirical contribution for the emerging regulatory focus literature within the area of human resource management. In particular, there is limited research in this literature that was conducted with data collected from general managers. Further implications of this paper are extensively considered within the discussion section.

Figure 1. Theoretical Model



THEORY AND HYPOTHESES

According to the regulatory focus theory, avoiding pain and approaching pleasure are two fundamentally distinct ways of goal attainment, with different antecedents and outcomes (Higgins, 1997, 1998). Certainly, all individuals try both to avoid pain and approach pleasure, but different individuals concentrate on these two elements to different extents. The regulatory focus of an individual stems from his or her upbringing and is relatively stable (Wallace, Johnson & Frazier, 2009), although contextual elements can also shift an individual's regulatory focus temporarily (Shah, Higgins & Friedman, 1998; Wallace et al., 2009). The chronic nature of the regulatory focus determines the individual's default strategy for coping with the environment, whereas its ability to shift temporarily in accordance with contextual elements allows the individual to adapt to daily changes in the environment.

Prevention focus is the 'avoiding pain' component of regulatory focus, and is

“concerned with security, responsibilities and safety” (Shah, Higgins & Friedman, 1998, p. 287). Accordingly, when individuals are pursuing a goal in a prevention-focused manner, they concentrate on avoiding an undesired state and satisficing, also known as ‘avoidance strategic means’ (Higgins, Friedman, Harlow, Idson, Ayduk and Taylor, 2001). On the other hand, promotion focus is the ‘approaching pleasure’ component of regulatory focus, and is concerned with “advancement, growth, aspirations and accomplishment” (Shah et al., 1998, p. 287). Therefore, when individuals are pursuing a goal in a promotion-focused manner, they concentrate on attaining a desired state and maximizing gains, also known as ‘approach strategic means’ (Higgins et al., 2001). In other words, in a promotion focus, the individual tries to ‘win’ or ‘attain maximal goals’, whereas in a prevention focus he or she tries ‘not to lose’ but to ‘maintain minimal goals’ (Pennington & Roese, 2003, p. 564). These two mechanisms have different cognitive, emotional and behavioural influences (i.e. Brockner & Higgins, 2001; Novak & Hoffman, 2009; Herzstein, Posavac & Brakus, 2007). Prevention and promotion focus have various effects on an individual’s decision-making tendencies (Zhou & Pham, 2004), preferences (Wang & Lee, 2006) and strategic inclinations (Crowe & Higgins, 1997), and both types of focus bring value to the workplace.

The general manager (GM) (also known as the chief executive officer/CEO, especially in large firms) is the topmost member of the organizational hierarchy, and one of the GM's roles is to chair the management team (MT), which in the case of large firms, may also be called the top management team (TMT). We therefore expect the goal attainment strategies of the GM to have an effect on the inclinations of MT members. More specifically, we expect a GM’s prevention focus to have a positive effect on MT accountability, and conversely a GM’s promotion focus to have a negative effect. Here accountability refers to “the implicit or explicit expectation that one may be called on to justify one's beliefs, feelings, and actions to others” (Lerner & Tetlock, 1999, p. 255).

As we noted before, the primary concerns of prevention focus are responsibility, security and safety (Shah et al., 1998), and thus, those with this kind of focus will be intent on minimizing mistakes and threats in the environment (Crowe & Higgins, 1998; Higgins, 1998) and maintaining the status quo (Lieberman, Idson, Camacho & Higgins, 1999). Prevention-focused individuals try to detect subtle threats at an early stage and prevent them, which

requires them to focus on the environmental details (Förster & Higgins, 2005). In order to keep abreast of the subtle changes in the environment that have the potential to cause problems, prevention-focused general managers regularly check and closely monitor everything within their own context, particularly the actions of MT members. This is because the members of the MT wield tremendous amounts of power (e.g. Floyd & Lane, 2000, p. 166), and their mistakes or other misbehaviours can greatly harm the organization. The primary concern of promotion-focused general managers, on the other hand, is advancement and growth (Shah et al., 1998). They follow a more transformational leadership style (Kark & van Dijk, 2007), are more tolerant of deviations from the norm (Lieberman et al., 1999), and process information in a more abstract and global manner (Förster & Higgins, 2005; Semin, Higgins, de Montes, Estourget & Valencia, 2005). Hence, promotion-focused general managers are less likely to regularly question the members of the MT about details. Furthermore, because prevention-focused individuals are vigilant by definition (e.g. Higgins, 1997; Higgins, 1998), they may also be more likely to be suspicious of others' intentions and to be looking out for hidden agenda (e.g. Darke & Ritchie, 2007). This may further compel prevention-focused general managers to regularly monitor and question members of their management teams. In short, because they are already being regularly monitored and questioned about their actions, we expect MT members who are led by a prevention-focused general manager to be more likely to expect questioning to occur.

Moreover, we expect that the general manager's actions will set an example to the group. As we discussed before, promotion-focused individuals are more concerned about advancement and growth rather than responsibilities, norms and safety (Shah et al., 1998). As a result, they are more likely to take bigger risks (Crowe & Higgins, 1997) and to diverge from the norms (Lieberman et al., 1999). Hence, compared with their prevention-focused counterparts, promotion-focused individuals are more likely to transgress existing rules and norms. For example, recent research suggests that they are more likely to engage in everyday risk-taking (Hamstra et al., 2011) and unethical behaviour (Gino & Margolis 2011) than prevention-focused individuals. Because the workplace regulatory focus of an individual is relatively stable (Wallace et al., 2009), any rule violations by a highly promotion-focused GM are likely to be witnessed eventually by the GM's closest followers – namely, the management

team. This may have a negative impact on the extent to which the management team feels accountable in that it changes the group norms regarding the violability of the rules. In other words, if the general manager himself/herself regularly breaches the rules for the sake of more advancement-related goals (e.g. “This is against company policy, but will win us an important customer” or “This is not exactly legal, but will do the job”), members of the management team may become less likely to expect their own behaviours to be questioned. In contrast, when there is a highly prevention-focused general manager who always emphasizes rules and norms, and behaves according to these principles on a ritual basis – even when these rules appear meaningless at times – it is more likely that members of the management team will expect to be challenged about their actions when they overstep these boundaries.

Hypothesis 1: (a) Prevention focus of the general manager is likely to have a positive effect on management team accountability and (b) promotion focus of the general manager is likely to have a negative effect on management team accountability.

On three grounds, we expect management team accountability to positively affect the trust between employees. First of all, management teams with a strong sense of accountability are more likely to be clearer and more consistent in the cues and messages they send to employees via the information and orders they give (i.e. Hagafors & Brehmer, 1983; Johnson & Kaplan, 1991). We expect this clarity in the cues and messages not only to make the management team more predictable to the employees, but also to make the employees who are acting upon those cues and messages more predictable to one another. We expect this predictability to be reflected positively in the level of intra-organizational trust (e.g. Bhattacharya, Devinney & Pillutla, 1998; Huemer, 2004). Secondly, managerial accountability is associated with a stricter understanding of justice (i.e. Adelberg & Batson, 1978). In a just environment where unethical behaviours are not tolerated but are challenged, it is easier to take the risk of placing one’s trust in someone. Third, accountability increases the monitoring of cognitive processes (Johnson & Kaplan, 1991; Siegel-Jacobs & Yates, 1996) and the use of systematic decision making (i.e. Ashton, 1992; Doney & Armstrong, 1996; Mero & Tomowidlo, 1995). It also decreases the effect of unrelated feelings and emotions on the decision making process (i.e. Lerner, Goldberg & Tetlock, 1998). Thus, a

management team which is more accountable may reflect that accountability on the organization in the form of higher levels of structure and formalization – in other words, in more specific job descriptions, rules and procedures. In an unstructured environment, mixed-motive situations are encountered more frequently, as it is generally unclear who should be taking credit (or being blamed) for particular achievements (or failures). In contrast, in a more structured environment it is easier for employees to trust one another as the boundaries of their tasks are better defined. In simple terms, within structured environments created by accountable management teams, it is less likely that employees will 'step on each other's toes'.

Hypothesis 2: Management team accountability is likely to have a positive effect on intra-organizational trust.

Upper echelons theory views the organization as a reflection of its top managers, such that influence flows from higher hierarchical levels down to lower ones (Hambrick, 2007; Hambrick & Mason, 1984). In line with this theory, we explained that the general manager is the administrative head of the management team (Bourgeois & Eisenhardt, 1988; Hambrick, 1995), and we hypothesized that the general manager's goal orientation would be reflected upon the decision processes and corresponding behaviours of the management team. In particular, the prevention focus of the general manager is anticipated as being likely to influence the management team accountability positively, and the prevention focus of the general manager to influence it negatively. Likewise, in our second hypothesis, we explained that we expect management team's decision processes and behaviours to have effects on the wider organization (Hambrick, 2007; Hambrick & Mason, 1984). That is, we expect a more accountable management team to increase intra-organizational trust. In short, the general manager has an effect on the management team, which plays the main role in shaping the organization. Alternatively, we could perhaps attempt to argue that there is a direct link between GM's regulatory focus and intra-organizational trust. However, such a link would simply be too distant, as the management team – the step between the general manager and the wider organization (e.g. Hambrick, 1995) – would be skipped. Considering that one of the main roles of the general manager is managing the decision processes of the management team, but not necessarily dictating the actual decisions (Bourgeois & Eisenhardt, 1988;

Mintzberg, 1987), skipping the management team step would be to omit a major part of the process. Hence, in line with the assumptions of upper echelons theory, we anticipate the regulatory focus of the general manager to affect the wider organization indirectly through its effect on the management team. In particular, we expect that the positive effect of the general manager's prevention focus on the management team accountability and conversely the negative effect of the promotion focus will be reflected in differing levels of intra-organizational trust.

Hypothesis 3: Due to their influence on the accountability of the management team, (a) prevention focus of the general manager is likely to have a positive indirect effect on intra-organizational trust, whereas (b) promotion focus of the manager is likely to have a negative indirect effect on intra-organizational trust.

METHOD

Data and Sample

The survey data was collected in the Netherlands, which has a small population but a large economic output. In this particular context, a company of 10 or more full-time employees is considered to be medium-sized and a company of 100 or above to be large (Bangma, Gibcus & van der Sluijs, 2005; Gibcus, de Jong & Kemp, 2006). In line with this, the average company size in our sample was 159 full-time employees. On the other hand, these companies are old enough to have a mature organizational culture and a developed customer base (i.e. the average company age in our sample was 47), very much in line with their counterparts from larger countries.

We collected this data by including our scales in the Erasmus Competition and Innovation Monitor, which is an annual survey conducted by the joint effort of a large team including but not limited to the authors of this study. In particular, we posted letters to 4250 companies, asking them to take part in our electronic survey. We received responses 526 of these companies. 228 of the responses had been completed by the general managers themselves, in line with the requirements of our model. We then removed the companies that were very small (i.e. five full-time employees or less), as in very small companies there may be little distinction between the general manager and an employee. Three more companies

were removed because they were extremely large outliers (they were approximately one order of magnitude larger than the remaining largest and they were more than four standard deviations larger than the mean of the rest). Finally, list-wise deletion of missing values brought us to a net sample size of 145 general managers. In short, the response rate of our survey was 12% and the effective response rate was 28%. These numbers are comparable to those in other studies that have collected data from general managers or other corporate elites (e.g. Hmieleski & Baron 2008; Heyden, van Doorn, Reimer, van den Bosch & Volberda, 2013; Wallace, Little, Hill & Ridge, 2010). To understand the extent of the potential non-response bias, we compared the characteristics of the organizations that responded early and late (e.g. Mom, van den Bosch & Volberda, 2009). Of the five organizational variables included in this study –organizational size, organizational age, decentralization, MT accountability and intra-organizational trust – only organizational age showed some level of difference with respect to early and late respondents (t-test; $p < .05$), meaning that older firms were relatively less likely to respond. For this reason, we consider the extent of non-response bias to be limited in this study.

Scales and Measurement

Dependent and Mediating Variables. The dependent variable of our model is intra-organizational trust, and the mediating variable is management team accountability. As previously explained, intra-organizational trust is defined as the extent to which the individuals within the organization trust each other (e.g. Leana & Pil, 2006; van de Bunt, Wittek and de Klepper, 2005). Likewise, MT accountability is defined as the extent to which the members of the organization's management team to expect to be questioned about their actions (e.g. Lerner & Tetlock, 1999, p. 255; Tetlock, 1983). Trust is known to be a multifaceted construct (e.g. Schoorman et al., 2007). For instance, trusting an individual's intentions is different than trusting the ability of that individual to help. We therefore used a five-item scale based on Tempelaar (2010), who combined items from prior studies (e.g. Leana and Pil, 2006; van de Bunt et al., 2005) in order to deal with this complexity in the trust construct. On the other hand, based on previous literature (Lerner & Tetlock, 1999; Tetlock, 1983), we developed a four-item scale to measure the management team accountability, as to

our knowledge there were no existing scales designed to measure management team accountability. To check for the content validity of this scale, we asked a panel of ten experts to fill the content validity index (CVI) for the scale, and also conducted brief interviews. Only the item “When things unexpectedly go bad, one can talk with the MT” was received negatively and was removed. The rest of the scale showed a very high level of content validity (.93). While doing so for the management team accountability scale, we also double-checked the content validity of the intra-organizational trust scale, which showed a high level of validity as well (.82). Finally, in the survey with general managers, both scales showed very high levels of reliability (respectively, $\alpha = .93$ and $\alpha = .86$). Other checks of validity (e.g. factor analysis) will be discussed later within the section on validity and reliability.

Independent Variables. The independent variables of our model were the prevention and promotion foci, the two sub-dimensions of the regulatory focus construct. As described above, prevention focus is the vigilance component of regulatory focus and is associated with security, responsibilities and safety (Shah et al., 1998, p. 287). In contrast, promotion focus is the eagerness component of regulatory focus, and is associated with advancement, growth, aspirations and accomplishment (ibid.). In order to examine the regulatory focus of the general manager, we used ten items (five for each dimension) from the 'Regulatory Focus at Work' scale, developed by Wallace, Johnson and Frasier (2009). In line with prior research, they emerged as two distinct dimensions in the factor analysis, and showed high levels of reliability ($\alpha = .81$ for prevention focus and $\alpha = .83$ for promotion focus).

Control Variables. We used five different control variables so as to eliminate as far as possible any alternative explanations. Three of these control variables were at the level of the organization. Because the companies in our sample were diverse, in line with previous research (i.e. Jansen, Tempelaar, van den Bosch & Volberda, 2009; He & Wong, 2004) we included organizational size and age into our model. Furthermore, we also used a scale based on Breaugh (1985) as a measure of decentralization. Like age and size, decentralization is a powerful and comprehensive variable (Tsai, 2002), and can be used to control for various kinds of differences between organizations. To control for differences between general

managers, one variable we included was age (e.g. Heyden et al., 2013). This is because age is associated with a number of relevant variables, such as experience and social generation. Secondly, we controlled for the effects of having a higher level of education (i.e. bachelor degree or above), because higher education tends to correlate with higher cognitive capabilities (Papadakis, Lioukas & Chambers, 1998), which may influence the general manager's behaviour within the organization.

Validity and Reliability. We conducted various validity and reliability checks on the scales used in this study. First of all, as already indicated, the Cronbach's α scores of our scales were all higher than .70. Secondly, Bartlett's test of sphericity was significant ($\chi^2 = 1473.62$; $p < .001$), showing that the partial correlations among the variables were low. Likewise, the Keizer-Meyer-Olkin measure of sampling adequacy was above .5 (KMO = .82), affirming that the sample was well fit for further analysis. Thus, we conducted a principle components analysis (Varimax rotation with Kaiser Normalization). Four distinct dimensions emerged with an eigenvalue of 1 and above (GM Prevention Focus, GM Promotion Focus, MT Accountability and Intra-Organizational Trust), where each item loaded at least .6 on the dimension corresponding to its scale, and no more than .4 on the other dimensions, suggesting that the factors in our data are distinct from each other (See Table 1 below).

Table 1. Items and Principal Components Analysis of the Dependent Variable^a

	1	2	3	4
Intra-Organizational Trust ($\alpha = .93$)				
The employees in our organization are very trustworthy	.837	.171	-.023	.090
The employees in our organization can help each other if it is necessary	.873	.167	.066	.018
If an employee in our organization got into difficulties a workmate would help out	.884	.133	.045	.084
The employees in our organization have confidence that the knowledge of a co-worker is reliable	.902	.034	.003	.064
Our organization is depicted by firm and personal relations between co-workers	.845	.142	-.013	.011
Management Team Accountability ($\alpha = .86$)				
Our management team (MT) feels itself accountable for the obtained results	.198	.883	.067	.167
The MT-members feel themselves accountable for the manner in which business is conducted	.232	.860	-.026	.135
The MT is accountable for the functioning of the organization	.098	.798	.159	.120
General Manager's Promotion Focus ($\alpha = .83$)				
I focus on:				
Accomplishing a lot of work	.045	.006	.842	-.035
Work activities that allow me to get ahead at work	.021	.094	.774	.203
My work accomplishments	.314	.007	.688	.127
Getting a lot of work finished in a short amount of time	-.045	.078	.690	.081
How many job tasks I can complete	-.156	-.014	.800	.088
General Manager's Prevention Focus ($\alpha = .81$)				
I focus on:				
Completing work tasks correctly	.015	.119	.286	.734
Doing my duty at work	.126	.285	-.040	.847
On the details of my work	-.005	-.028	.276	.644
Fulfilling my work obligations	.037	.035	.093	.839
My work responsibilities	.166	.407	-.206	.603

Notes: ^aPCA with Varimax Rotation and Kaiser Normalization.

Following that, we also conducted a number of confirmatory factor analyses

comparing four-factor, three-factor, two-factor and one-factor models (e.g. Liu, Hui, Lee and Chen, 2013, table 1 and Wu, Kwan, Wei and Liu, 2013, table 1). As expected, the four-factor model showed the greatest fit to the data ($\chi^2 = 240.00$; d.f. = 129; $\chi^2 / \text{d.f.} = 1.86$; TLI = .92; CFI = .91; RMSEA = .078; AIC = 6971.37; BIC = 7095.52; SABIC = 6962.63), again suggesting that factors are distinct from each other (See Table 2 below).

Table 2. Confirmatory Factor Analysis Results

	χ^2	d.f.	$\chi^2 / \text{d.f.}$	TLI ^a	CFI ^b	RMSEA ^c	AIC ^d	BIC ^e	SABIC ^f
<i>Recommended values:</i>									
			≤ 3	$\geq .90$	$\geq .90$	$\leq .08$	<i>The model with the lowest AIC / BIC / SABIC value has the best fit</i>		
1. Four-factor model	240.00	129	1.86	.92	.91	.078	6971.37	7095.52	6962.63
2. Three-factor model (GM's Prevention and Promotion foci were combined together)	457.66	132	3.47	.77	.73	.13	7183.03	7298.31	7174.91
3. Three-factor model (MT Accountability and Intra-Organizational Trust were combined together)	468.67	132	3.55	.76	.72	.13	7194.04	7309.32	7185.92
4. Two-factor model (Accountability and Trust were combined, and Prevention and Promotion foci were combined)	682.31	134	5.09	0.61	0.56	.17	7403.68	7513.04	7395.97
5. Two-factor model (MT Accountability, Intra-Organizational Trust and GM's Prevention Focus were combined)	698.53	134	5.21	.60	.54	.17	7419.90	7529.27	7412.20
6. One-factor model (Everything was combined)	929.30	135	6.88	.44	.36	.20	7648.67	7755.08	7641.18

Note. ^a TLI = Tucker-Lewis Index, ^b CFI = Comparative Fit Index, ^c RMSEA = Root Mean Square Error of Approximation

^d AIC = Akaike, ^e BIC = Bayesian, ^f SABIC = Sample-Adjusted Bayesian

Furthermore, in order to provide further nomological validity to the management team accountability scale, we examined whether it had a positive correlation with the level of formalization in the organization and whether it had a positive effect on that variable, as our theory would suggest. In line with our expectations, management team accountability was positively correlated with the level of formalization in the organization ($r = .23$; $p < .01$) and its effect on formalization was positive and significant ($\beta = .36$; $p < .01$), suggesting that the accountability scale was behaving in line with our conceptual expectations.

Moreover, we took further preventative measures against possible common method bias that can result due to having a single-respondent, namely the general manager. More precisely, we used three of the methods proposed by Chang, van Witteloostuijn and Eden (2010). First, the survey also included some other scales, and we scrambled the order of the scales related and unrelated to the model. The logical order of our constructs was also scrambled. Scrambling the order of the constructs and mixing them with others helps to stop participants anticipating the model helps to stop participants anticipating the model, and therefore helps to prevent common method bias (Chang et al., 2010). Second, we asked participants to also get a colleague to fill in the scales for the organizational variables (MT accountability, intra-organizational trust and decentralization) and we received 16 usable peer responses. The $AD_{M(j)}$ averages of the first and second respondents were lower than the suggested cut-off point of 1.2 for seven-point scales, suggesting a high tendency of agreement on these variables between different respondents (Brown & Hauenstein, 2005; Burke & Dunlap, 2002). Finally, post-hoc, we conducted a Harman single-factor test (e.g. Podsakoff, MacKenzie, Lee & Podsakoff, 2003). According to the Harman's test, if there were common method bias, one factor would emerge and would explain most of the variance. Our exploratory factor analysis suggested that, there were multiple factors and the largest factor constituted less than half of the variance (29%). Furthermore, the confirmatory factor analysis model with one-factor showed a very bad fit to the data ($\chi^2 = 929.30$; d.f. = 135; $\chi^2 / \text{d.f.} = 6.88$; TLI = .44; CFI = .36; RMSEA = .20; AIC = 7648.67; BIC = 7755.08; SABIC = 7641.18 – See table 1), suggesting that common method bias was not a major issue in our study.

RESULTS AND ANALYSIS

Table 3. Means, Standard Deviations (SD) and Correlations for the Study Variables

	Mean	Std. Dev.	1	2	3	4	5	6	7	8
1. Intra-Organizational Trust	5.78	.96								
2. MT Accountability	6.13	.82	.35 ****							
3. GM Prevention Focus	5.27	.93	.17 *	.36 ****						
4. GM Promotion Focus	4.50	1.14	.06	.12	.27 **					
5. Decentralization	3.65	1.23	.33 ****	-.11	-.08	.01				
6. Organizational Size (in tens)	15.89	39.63	-.04	.10	-.05	-.04	-.09			
7. Organizational Age	46.52	40.00	-.07	-.11	-.02	-.14	-.20 *	.29 ****		
8. GM Age	50.49	7.95	-.07	.05	-.08	-.23 **	-.20 *	.15	.18	
9. Education: Bachelor or above	3.65	.35	-.02	.12	-.16	-.14	.08	.09	-.03	-.07

Note: N = 145; * p < .05; ** p < .01; *** p < .001

The correlation matrix preliminarily showed most of the relationships in our dataset to be in line with our expectations. For instance, there was a positive correlation between GM prevention focus and MT accountability ($r = .36$; $p < .001$), between MT accountability and intra-organizational trust ($r = .38$; $p < .001$), and between GM prevention focus and intra-organizational trust ($r = .17$; $p < .05$). The correlations between GM promotion focus and MT accountability and between GM promotion focus and intra-organizational trust were not significant (respectively, $r = .12$; $p = .16$ and $r = .06$; $p = .46$). The relationships among the control variables were also in line with the prior literature. For example, there was a negative correlation between the age of the GM and decentralization ($r = -.20$; $p < .05$). Likewise, there was a positive relationship between firm age and size ($r = .29$; $p < .001$). Finally, in line with a number of prior studies conducted within organizational and academic contexts (e.g. Higgins et al., 2001; Lockwood et al., 2002; Wallace et al., 2009), the correlation we found between promotion and prevention focus of the individual was small, but positive and significant ($r = .27$; $p < .01$). All in all, the behaviour of the dataset resembled that of the datasets in prior studies.

Next, we moved on to test our hypotheses. We also examined the variance inflation factors (VIFs) of our models, in order to ensure against potential multicollinearity. The highest VIF value we encountered was 1.29, much lower than the cut-off point of 10 (Neter, Wasserman & Kutner, 1990). Hypothesis 1a suggested a positive effect of GM prevention focus on MT accountability. Indeed, the effect of GM prevention focus on MT accountability was positive and significant (Model 2: $\beta = .38$; $p < .001$), *supporting hypothesis 1a*. Hypothesis 1b suggested a negative effect of GM prevention focus on MT accountability. In contrast, the effect of GM promotion focus on MT accountability was not significant (Model 2: $\beta = .05$; $p = .59$), hence, *hypothesis 1b is not supported*.

Hypothesis 2 suggested a positive effect of MT accountability on intra-organizational trust. In line with our expectations, it was positive and significant (Model 5: $\beta = .40$; $p < .001$). As we have already explained, there were some responses to our survey that had not been filled in by the general managers themselves but by other high-ranked managers. These responses did not have the GM promotion focus and GM prevention focus, but they did have the MT accountability and intra-organizational trust variables. Therefore, as a robustness

check, we tested hypothesis 2 again, using the larger dataset which included these responses from the other managers. The positive effect of MT accountability on intra-organizational trust was again positive and significant ($\beta = .41$; $p < .001$), *supporting hypothesis 2*.

Hypotheses 3a and 3b brought together all the other hypotheses, and suggested that MT accountability mediated the effect of (a) GM prevention focus and (b) GM promotion focus on intra-organizational trust. At this point, *hypothesis 3b is not supported*, due to hypothesis 1b being non-significant (Model 2: $\beta = .05$; $p = .59$). In order to test hypothesis 3a, we first used the four-step mediation test proposed by Baron and Kenny (1986). In hypotheses 1a and 2 we had already observed the positive effect of GM prevention focus on MT accountability (Model 2: $\beta = .38$; $p < .001$) and of MT accountability on intra-organizational trust (Model 5: $\beta = .40$; $p < .001$). GM prevention focus also had a positive significant effect on intra-organizational trust (Model 4: $\beta = .19$; $p < .05$). When MT accountability was added into the model, the positive effect of GM prevention focus disappeared (Model 5: $\beta = .04$; $p = .66$). In other words, the Baron and Kenny (1986) test suggested management team accountability to mediate the positive effect of GM prevention focus on intra-organizational trust, *supporting hypothesis 3a*. Next, we used the Sobel test to further examine this mediation effect, which confirmed that the indirect effect of GM prevention focus on intra-organizational trust was positive and significant (Sobel $t = 3.42$, $p < .001$). However, the simple Sobel test is known to have various limitations. Hence, as a robustness check we also conducted mediation analysis with bootstrapping, which is a stronger contemporary technique (i.e. Hayes, 2009; MacKinnon, Lockwood, Hoffman, West & Sheets, 2002). For this purpose, we employed the tool recently developed by Hayes (2012). The result of the bootstrapped mediation analysis (Effect = .04; $Z = 3.38$; $p < .001$; 95% Confidence Interval; Lower Limit = .07, Upper Limit = .26) was in line with our expectation that, through MT accountability, GM prevention focus has a positive indirect effect on intra-organizational trust. In short, *hypothesis 3a was supported*.

Table 4. Hierarchical OLS Regression Analyses on MT Accountability and Intra-Organizational Trust

	Model 1	Model 2	Model 3	Model 4	Model 5
Dependent Variable:	<i>Accountability</i>	<i>Accountability</i>	<i>Trust</i>	<i>Trust</i>	<i>Trust</i>
Intercept constant	6.16 ***	3.69 ***	4.92 ***	3.53 ***	1.77
Primary Variables					
MT Accountability					.40 ***
GM Prevention Focus		.38 ***		.19 *	.04
GM Promotion Focus		.05		.01	-.01
Control Variables					
Decentralization	-.14	-.10	.34 ***	.35 ***	.39 ***
Organizational Size (in tens)	.13	.14	-.01	-.00	-.06
Organizational Age	-.18 *	-.17 *	.00	.00	.07
GM Age	.04	.09	.00	.02	-.01
Education: Bachelor or above	.11	.18 *	-.04	-.01	-.08
R ²	.06	.21	.11	.15	.28
ANOVA F	1.88	5.21 ***	3.51 **	3.39 **	4.60 ***

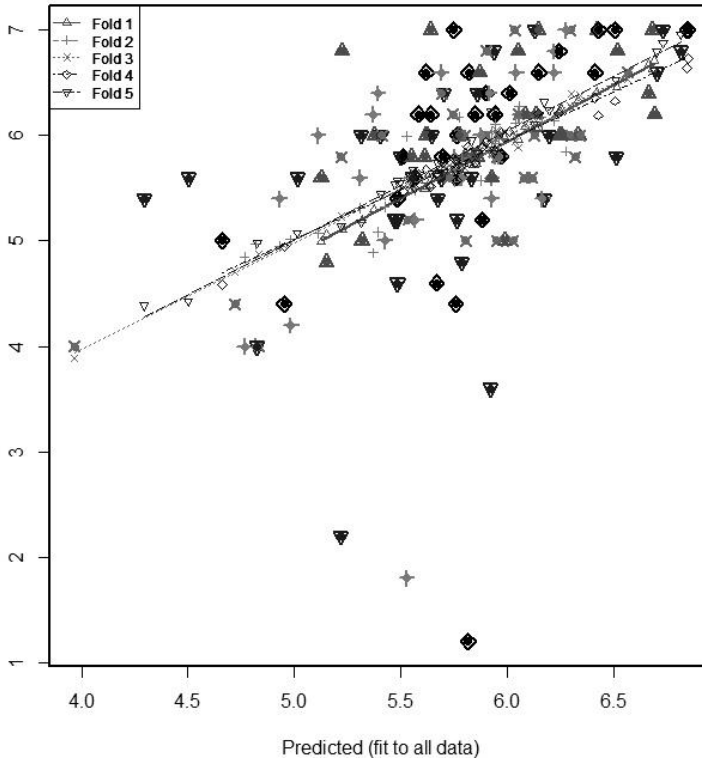
Note: Standardized coefficients reported. N = 145; * p < .05; ** p < .01; *** p < .001

Further Robustness Checks

Cross-validation for predictive validity. Next, we used k-fold cross-validation to examine the predictive validity of our model. The procedure was first to divide the sample up randomly into smaller sub-samples of equal sizes. We then removed one sub-sample from the group, and using the rest of the sub-samples, estimated the values in the removed sub-sample. This sequence was then repeated k times, until each sample was estimated using the rest of the samples. As a basis for choosing the value k, we used divisibility into equal sub-groups. Our sample consisted of 145 observations, hence we ran cross-validation twice (with k = 5 and k = 29). In other words, in the first analysis the sample was divided into five groups of 29 cases, whereas in the second it was divided into 29 groups of five cases. The model's accuracy in predicting the levels of intra-organizational trust using the rest of the variables was quite high,

both when k was equal to five (.76) and when it was equal to 29 (.77). In sum, the results of the cross-validation analyses suggest that the model has high predictive validity (See Figure 2 below).

Figure 2. Cross-Validation Predictions for Intra-Organizational Trust



Multiple imputation against the biases of list-wise deletion. In the method section, we indicated that list-wise deletion had decreased our sample size to 145. Actually, 179 of the managers had filled in a number of the scales and items, which allowed for multiple imputation of the missing data. In such cases, the list-wise deletion we used in the previous section is known to have two primary drawbacks (e.g. Little & Rubin, 1987). First, it causes the whole observation to be lost, even if the majority of the data is intact. For instance, in our case 4% of missing values caused 19% of the dataset to be removed. Secondly, list-wise deletion is known to cause biases in the data, as a group of cases are almost systematically removed. Particularly due to this second limitation relating to biases, after we had conducted

our analyses using list-wise deletion, we decided we would also double-check our results, especially the mediation effect, using the multiple imputation technique.

Using the distribution of the data, multiple imputation technique is used to extrapolate the missing values in various different ways. In other words, multiple imputation produces multiple versions of the dataset, where the missing values are filled in multiple different ways. Thus, in contrast to the single imputation technique, which is criticized as 'making up data', multiple imputation is very similar to the scenario planning tool (e.g. Schoemaker, 1995) in that it provides a range of possible outcomes (Shafer, 1999). The rule of thumb for multiple imputation is to use between two and ten imputations (Rubin, 1987). Thus, in our case, we used ten imputations, meaning that, as an output, we received ten different datasets where the missing values were imputed differently. This allowed us to be able to use all the data provided to us by the 179 general managers.

We ran the hierarchical OLS regressions on all ten datasets separately and also pooled the results. Each of the ten different scenarios as well as the pooled results were in line with the results of our prior analyses. Again, on MT accountability, GM prevention focus had a positive effect ($b = .33$; $p < .001$) and GM promotion focus had no effect ($b = .02$; $p = .67$). MT accountability had a positive effect on intra-organizational trust ($b = .46$; $p < .001$) and the effect of GM prevention focus on intra-organizational trust ($b = .19$; $p < .05$) disappeared when MT accountability was added into the equation ($b = .04$; $p = .63$).

DISCUSSION AND CONCLUSION

In this study, we have examined the effects of the general manager's regulatory focus on intra-organizational trust. In particular, the results of the study suggest that the prevention focus of the general manager has an indirect positive effect on intra-organizational trust, by means of its effects on the management team's accountability. In contrast, the effect of the general manager's promotion focus was significant neither in terms of the management team's accountability nor intra-organizational trust. These findings have a number of theoretical and managerial implications.

Implications for Theory and Research

First of all, as we have emphasized strongly throughout this study, the results of the two most recent meta-analyses (Gorman et al., 2012; Lanaj et al., 2012) demonstrate that the literature on the work-related outcomes of regulatory focus has not adequately explored the beneficial effects of prevention focus. As a result, when we look at the research to date, it appears almost as if leaders should be selected on the basis of a strong disposition towards promotion focus. In this study, we addressed this gap by demonstrating two key variables (one relating to management teams and one to the wider organization) which are positively affected by the general manager's prevention focus and not by promotion focus. For the ongoing regulatory focus research within the literature on human resource management, this implies that, as one of the two primary mechanisms of adaptation, prevention focus may also have positive effects in organizational settings.

The finding that levels of management team accountability and intra-organizational trust depend on the prevention focus of the manager has implications for the theory and practice of HR selection processes. More precisely, this finding suggests that, depending on the requirements of the job, the better candidate might be either an individual who is predominantly prevention-focused or one who is promotion-focused. For the job of the general manager this point is even more delicate, because the organization as a whole requires the advantages of both promotion and prevention foci. As a result, when appointing a general manager, it may be important to choose someone who has reasonably equal levels of promotion and prevention focus. Another alternative may be to bring the promotion and prevention focus of the general manager into balance by using contextual elements, i.e. by means of a carefully designed incentive structure (Shah et al., 1998). In both cases, these conclusions resemble the ones reached within the emerging streams of ambidexterity research conducted at the individual manager level of analysis (i.e. Mom et al., 2009). Ambidexterity is known to increase performance and chances of survival, as it facilitates adaptation to the environment both in the short-term and the long-term (Tushman & O'Reilly, 1996; Raisch & Birkinshaw, 2008). To be ambidextrous, managers must have the ability to 'host contradictions' (Mom et al., 2009; Smith & Tushman, 2005). Therefore, the ability to balance the focus between prevention and promotion may prove to be key in becoming an

ambidextrous manager.

The findings of this study also extend the literature on accountability, by showing that a leader's accountability can have an effect on intra-organizational trust. Most of the previous studies in the area of accountability have examined the effects of accountability on the individual. Those that combine the concepts of accountability and trust also tend to follow this tradition. For instance, in their conceptual paper, Hall and colleagues (2004) suggest that the accountability of the leader may have an effect on the extent to which the leader is trusted. There also are other studies which examine the interactions between these two variables (e.g. de Cremer, Snyder & DeWitte, 2001). However, to our knowledge, there is little or no research on the effect of management team accountability on intra-organizational trust. In other words, using insights from upper echelons theory (Hambrick, 2007; Hambrick & Mason, 1984), we have shown one important way in which management team accountability impacts upon the wider organization.

One implication of this study for the literature on trust is the finding of a relatively stable managerial characteristic that can spur intra-organizational trust. As we noted before, research on the managerial antecedents of intra-organizational trust is quite scarce. Moreover, prior work on trust has primarily emphasized cognitive antecedents, and non-cognitive antecedents such as emotions have only relatively recently been given attention through the stream of literature started by Williams (2001) (Schoorman et al., 2007, p. 348). We contribute to this area by showing that prevention focused-managers have a natural inclination towards increasing the level of trust within the organization.

Finally, our study also has an impact on the discussions which one finds in the two meta-analyses (Gorman et al., 2012; Lanaj et al., 2012). For example, one result from the meta-analyses (Lanaj et al., 2012) suggested that promotion focus has a stronger positive impact on innovative performance than prevention focus. The findings from our study bring a different viewpoint to the discussion, suggesting that although an individual's innovative performance may decrease as a result of a prevention focus (the conclusion reached by the meta-analyses), with some types of innovation a leader's prevention focus may actually *increase* the innovative performance of the organization. In the innovation literature, there are two distinct types of innovation: exploratory and exploitative. Exploratory innovations are

radical, risky and oriented towards the long term, whereas exploitative innovations are incremental, definite and oriented towards the short term (Benner & Tushman, 2003; Gupta, Smith & Shalley, 2006; March, 1991). Some studies suggest that intra-organizational trust plays a role in the innovation process, especially for exploitative innovation (i.e. Jansen, van den Bosch & Volberda, 2006; Un, 2010). In other words, depending on the type of innovation required, it is possible for a prevention-focused general manager to be more beneficial to an organization's innovative performance than a promotion-focused manager.

Likewise, in the meta-analyses, prevention focus was found to have either no effect or a negative effect on various important variables pertaining to job performance, such as job satisfaction, organizational citizenship behaviours and affective commitment. However, at a different level this may again not be the same. As we explained, prevention focus of the general manager increases intra-organizational trust. There is research to suggest that an environment marked by trust may increase job satisfaction (Driscoll, 1978), organizational citizenship behaviours (Wong, Ngo & Wong, 2006) and affective commitment (Lashinger, Finegan, Shamian & Casier, 2000) of the employees. Therefore, although having a prevention focus may negatively affect the levels of these variables for the manager himself or herself, its effect throughout the organization is likely to be positive.

Managerial Implications

The managerial implications of this paper are twofold. First, we suggest that managers should take regulatory focus into account when choosing an employee or manager. For instance, some items on regulatory focus can be added to the questionnaires that are regularly used in selection processes. Likewise, samples of the candidate's writing can easily be examined for the traces of a particular regulatory focus (i.e. Semin et al., 2005), which can then be used to cross-check the candidate's responses to the questionnaire items. Secondly, we suggest that, if one is looking to appoint a new manager in order to increase accountability in the management team and restore trust within the organization, a candidate's score on prevention focus may be particularly important.

Limitations and Future Research

This study has a number of limitations that also present potential areas for future research. First and foremost, it is important to note that, this was only an initial step in showing the positive effects of prevention focus within organizational settings. There are probably many other variables through which prevention focus creates value for individuals and organizations. In order for the regulatory focus literature to inform the literatures on management selection and managerial context design in a useful way, one must first understand the benefits to the workplace of both dimensions of regulatory focus. Secondly, to our knowledge, there were no pre-developed other scales for measuring the accountability of a management team. Hence, we used a self-developed scale in this study. Again, this should be considered only as an initial step towards developing a scale for management team accountability. It is necessary for other studies to propose ways in which this scale can be developed further. Finally, there are certain limits to a cross-sectional study. In order to better examine the causal links, future studies should incorporate in-depth comparative case studies with a small number of organizations (e.g. four or five organizations), but with multi-level data from each organization.

Chapter 6: Conclusion

6.1 Introduction

In this thesis, we have taken a step in illuminating the micro-foundations of exploration and exploitation, exploratory innovation and intra-organizational trust by introducing the regulatory focus theory (Higgins, 1997, 1998) into the emerging field of behavioral strategy (Powell et al., 2011). More specifically, we examined:

- (1) Regulatory focus as an antecedent of exploration and exploitation at the individual manager level (Study 1 and 2),
- (2) The factors moderating the link between a manager's regulatory focus and exploration-exploitation (Study 1),
- (3) Organizational and contextual antecedents of a manager's regulatory focus (Study 2),
- (4) Collective regulatory focus of a management team (the upper-echelons) as an antecedent of exploratory innovation at the organizational unit level (Study 3),
- (5) Organizational coordination mechanisms mediating the link between collective regulatory focus of a management team and the exploratory innovation of the organizational unit associated with that management team (Study 3), and
- (6) The general manager's regulatory focus as an antecedent of management team accountability and intra-organizational trust (Study 4).

The remainder of this chapter will consist of two subsequent parts. In the following section, using tables summarizing the main facts about the studies, we will briefly review each of the four studies (Please see the table 1 below, explaining the structure of the upcoming tables). Next, we will conclude this thesis by pointing out some areas of future research.

Table 1. Format of the Upcoming Tables Summarizing the Studies

The main function of this study for the thesis

(Apart from the contributions and the implications of the studies for the literature, they also serve specific functions for the thesis. This section of the table will mention how that particular study ties with the rest of the studies, making the thesis coherent)

Hypotheses

- *Hypothesis/Proposition:* (The hypotheses/propositions will be listed here)

Results

Supported, Received
Partial Support or Not
Supported (This part is
not applicable to the
conceptual study)

Key contributions and implications

1- (Key contributions and implications will be listed here)

6.2 Summary of the Main Findings, Contributions and Implications

In the first study entitled “Regulatory Focus as a Psychological Micro-Foundation of Managers’ Exploration and Exploitation Activities”, we elucidate the relationship between managers’ regulatory focus and exploration and exploitation activities. We achieve this purpose through showing the similarity between the various conceptualizations of exploration and exploitation, and how promotion and prevention foci relate to these conceptualizations. Furthermore, we use the motivation-ability-opportunity (MAO) schema to show the boundaries of this relationship. In particular, we show that variables affecting the managers’ ability and the variables affecting the managers’ opportunity to engage in exploration and exploitation activities moderate the relationship between the managers’ regulatory focus and exploration and exploitation activities. Table 2 below presents an overview of the first study.

Table 2. Overview of Study 1

The main function of this study for the thesis

is to introduce and provide a theoretical grounding for the link between managers' regulatory focus and exploration and exploitation.

Propositions

- *Proposition 1a: Managers' promotion foci are positively related to their exploration activities.*
 - *Proposition 1b: Managers' prevention foci are positively related to their exploitation activities.*
 - *Proposition 2a: Managers' decision-making authorities positively moderate the relationship between their promotion foci and exploration activities.*
 - *Proposition 2b: Managers' decision-making authorities positively moderate the relationship between their prevention foci and exploitation activities.*
 - *Proposition 3a: Ambiguity of the task environment positively moderates the relationship between managers' promotion foci and exploration activities*
 - *Proposition 3b: Ambiguity of the task environment negatively moderates the relationship between managers' prevention foci and exploitation activities.*
-

Key contributions and implications

- 1- Introducing regulatory focus as a primary antecedent of exploration and exploitation, and in doing so, contributing to the understanding of how TMTs can select and motivate managers for the purpose of increasing engagement in exploration/exploitation.
 - 2- Delineating the differences between managers' regulatory focus and exploration and exploitation, and providing a theoretical framework for constructing psychological explanations (using the motivation-ability-opportunity schema)
 - 3- Extending the results of Kark & van Dijk (2007) about the relationship between regulatory focus and transformational/transactional leadership to confirm and enhance the model of Jansen, Vera & Crossan (2009), discussing the relationship between transformational/transactional leadership and exploratory/exploitative innovation.
 - 4- Refining the understanding of the results in the Wallace, Little, Hill & Ridge (2010) study by suggesting that the observed effect may partially be due to the changing levels of exploratory innovation. Moreover, we extend this study by suggesting that while a promotion focus is advantageous in environments of high dynamism, a prevention focus is advantageous in environments of low munificence.
 - 5- The contributions and implications of this study are relevant for the second, third and fourth goals of Behavioral Strategy.
-

In the second study entitled “Regulatory Focus as a Psychological Micro-Foundation of Managers’ Exploration and Exploitation Activities”, we empirically examine the relationship proposed in the first study between managers’ regulatory focus and exploration and exploitation activities. Moreover, we elucidate two new antecedents of managers’ exploration and exploitation activities, and show that their effect is partially mediated through the managers’ regulatory focus. More specifically, we examine an organizational (managers’ decision-making ability) and a contextual (dynamism of the managers’ environment) variable which have an effect on managers’ exploration-exploitation activities indirectly via managers’ regulatory focus. Table 3 below presents an overview of the second study.

Table 3. Overview of Study 2

<u>The main function of this study for the thesis</u>	
is to test the claims made in study 1 and also examine the organizational antecedents of managers' regulatory focus.	
<u>Hypotheses</u>	<u>Results</u>
- <i>Hypothesis 1a: A manager will conduct more exploration activities when that manager's relative regulatory focus is closer to promotion focus than prevention focus.</i>	Supported
- <i>Hypothesis 1b: A manager will conduct less exploitation activities when that manager's relative regulatory focus is closer to promotion focus than prevention focus.</i>	Supported
- <i>Hypothesis 2a: Increasing decision making authority of a manager shifts that manager's relative regulatory focus closer to promotion focus rather than prevention focus.</i>	Supported
- <i>Hypothesis 2b: The positive relationship between a manager's decision making authority and that manager's exploration activities is partially mediated by that manager's regulatory focus.</i>	Supported
- <i>Hypothesis 2c: The negative relationship between a manager's decision making authority and that manager's exploitation activities is partially mediated by that manager's regulatory focus.</i>	Not Supported
- <i>Hypothesis 3a: Increasing dynamism of a manager's environment shifts that manager's relative regulatory focus closer to promotion focus rather than prevention focus.</i>	Supported

<p>- Hypothesis 3b: <i>The positive relationship between dynamism of a manager's environment and that manager's exploration activities is partially mediated by that manager's regulatory focus.</i></p>	Supported
<p>- Hypothesis 3c: <i>The negative relationship between dynamism of a manager's environment and that manager's exploitation activities is partially mediated by that manager's regulatory focus.</i></p>	Supported

Key contributions and implications

- 1- Empirically examining the relationship between managers' regulatory focus and exploration and exploitation activities.
- 2- Elucidating an organizational (manager's decision making authority) and contextual (dynamism of the manager's environment) antecedent of a manager's exploration and exploitation activities.
- 3- Our partially mediating hypotheses and associated results indicate that a manager's decision making authority and dynamism of the manager's environment not only directly relate to that manager's exploration and exploitation activities, but also indirectly through that manager's regulatory focus. Through this richer explanation and empirical assessment, we contribute to a greater clarity and better understanding for exploration and exploitation literature of how different types of antecedents relate to manager's exploration and exploitation activities (e.g. Raisch & Birkinsaw, 2008; Simsek, 2009).
- 4- Regulatory focus theory originates from the psychology literature, and the vast majority of the prior research on this construct is experimental. While experiments offer the highest level of internal validity, they offer limited external/ecological validity. This study has an empirical contribution to this area via examining this construct through a survey study.
- 5- The contributions and implications of this study are relevant for the second, third and fourth goals of Behavioral Strategy.

The third study concentrates on a specific type of exploration activity (exploratory innovation) as the dependent variable, and examines the effect of regulatory focus at a larger unit of analysis. In particular, it examines how the collective regulatory focus of a management team has an effect on the organizational unit associated with that management team. Moreover, we examine three of the most important organizational coordination mechanisms – namely centralization, formalization and connectedness – as mediating factors of this relationship. Table 4 below presents an overview of the third study.

Table 4. Overview of Study 3

The main function of this study for the thesis

is to test the link between regulatory focus and exploratory innovation with a different unit of analysis. In particular, we examined how the regulatory focus of the management teams influenced their organizational units' exploratory innovation levels. Moreover, we examined the factors mediating this relationship.

Hypotheses**Results**

<i>- Hypothesis 1: (a) The promotion focus of the unit's management team is positively related to the unit's exploratory innovation, and (b) the prevention focus of the unit's management team is negatively related to the unit's exploratory innovation.</i>	Supported
<i>- Hypothesis 2: (a) The promotion focus of the unit's management team is negatively related to the level of centralization in the organizational unit, and (b) the prevention focus of the unit's management team is positively related to the level of centralization in the organizational unit, where (c) the level of centralization is negatively related to the level of exploratory innovation.</i>	Supported
<i>- Hypothesis 3: (a) The promotion focus of the unit's management team is negatively related to the level of formalization in the organizational unit, and (b) the prevention focus of the unit's management team is positively related to the level of formalization in the organizational unit, where (c) the level of formalization is negatively related to the level of exploratory innovation.</i>	Not Supported / Opposite Effect
<i>- Hypothesis 4: (a) The promotion focus of the unit's management team is positively related to the level of connectedness in the organizational unit, and (b) the prevention focus of the unit's management team is negatively related to the level of connectedness in the organizational unit, where (c) the level of connectedness is positively related to the level of exploratory innovation.</i>	Supported
<i>- Hypothesis 5: Formalization, centralization and connectedness of the unit mediate the relationship between the regulatory focus of the organizational unit's management team and the unit's exploratory innovation.</i>	Supported

Key contributions and implications

1- Offering a psychological explanation of why management teams from the same firm may differ in the extent to which they pursue exploratory innovations and in how they use organizational coordination mechanisms to bring about such innovations.

2- Providing insights into how the top management can influence such exploratory innovation in a more indirect way, thereby avoiding the potentially negative effects of direct top-down interventions.

3- Showing that one main reason for the failure of exploratory innovations intended by the management teams may be due to not taking into account the organizational coordination required.

4- While there have been numerous studies in the regulatory focus literature that show the effect of organizational context on the individual or group, our research has shown that the regulatory focus of a unit's management team has an important influence on the unit's organizational context.

5- The contributions and implications of this study are relevant for the second, third and fourth goals of Behavioral Strategy.

The fourth study goes beyond organizational learning and innovation processes, and examines regulatory focus of the general manager as an upper-echelon-level antecedent of management team accountability and intra-organizational trust. More specifically, using the upper-echelons theory, we examine the effect of the prevention and promotion foci of the general manager on management team accountability, where prevention focus has a significant positive effect and promotion focus does not. Next, we show that the effect of the general manager's prevention focus is indirectly reflected upon the level of intra-organizational trust within the company via its effect on the management team accountability. Table 5 below presents an overview of the fourth study.

Table 5. Overview of Study 4

The main function of this study for the thesis

is to take a step in employing the regulatory focus theory in behavioral strategy models beyond exploration-exploitation/innovation.

Hypotheses

- *Hypothesis 1: (a) Prevention focus of the general manager is likely to have a positive effect on management team accountability and (b) promotion focus of the general manager is likely to have a negative effect on management team accountability.*

Results

(a) Supported,
(b) Not
Supported/Not
Significant

- Hypothesis 2: Management team accountability is likely to have a positive effect on intra-organizational trust.	Supported
- Hypothesis 3: Due to their influence on the accountability of the management team, (a) prevention focus of the general manager is likely to have a positive indirect effect on intra-organizational trust, whereas (b) promotion focus of the manager is likely to have a negative indirect effect on intra-organizational trust.	(a) Supported, (b) Not Supported/Not Significant

Key contributions and implications

- 1- The main contribution of this study concerns shifting the emphasis in the field (as indicated by the last two meta-analyses) from the workplace advantages of a promotion focus to the possible advantages of a prevention focus.
- 2- The finding that levels of management team accountability and intra-organizational trust depend on the prevention focus of the manager suggests that, depending on the requirements of the job, the better candidate might be either an individual who is predominantly prevention-focused or one who is promotion-focused.
- 3- The findings of this study also extend the literature on accountability, by showing that a leader's accountability can have an effect on intra-organizational trust.
- 4- Research on the managerial antecedents of intra-organizational trust is quite scarce. One implication of this study for the literature on trust is the finding of a relatively stable managerial characteristic that can spur intra-organizational trust.
- 5- Our study also has an impact on the discussions which one finds in the two recent meta-analyses (Gorman et al., 2012; Lanaj et al., 2012), by suggesting that although having a prevention focus may negatively affect the levels of some performance-related variables for the manager himself or herself, its effect throughout the organization is likely to be positive.
- 6- This paper has also an empirical contribution for the emerging regulatory focus literature within the area of human resource management. In particular, there is limited research in this literature that was conducted with data collected from general managers.
- 7- The contributions and implications of this study are relevant for all four goals of Behavioral Strategy.

Summarizing, through a behavioral strategy perspective (Lovallo & Sibony, 2010; Powell, Lovallo & Fox, 2011) these four studies all examine constructs related to the emergence of

innovation in corporate settings. More specifically, the first study introduces regulatory focus as an antecedent of managers' exploration and exploitation and discusses two moderating factors of this relationship; the second study empirically establishes this link and examines an organizational and a contextual antecedent of regulatory focus (decentralization and dynamism of the environment); the third study focuses primarily on exploratory innovation and examines the link at a higher unit of analysis (organizational unit level) while also discussing the mediating role of three prominent organizational coordination mechanisms (centralization, formalization and connectedness); finally, the fourth study examines the effect of a general manager's individual regulatory focus on the management team (management team accountability) as well as on the whole organization (intra-organizational trust).

As previously discussed, the Behavioral Strategy field has four main goals, which are "(1) scaling individual cognition to collective behavior; (2) defining the psychological underpinnings of strategy theory; (3) understanding complex judgment in organizations; and (4) improving the psychological architecture of the firm" (2011, p. 1380). In this thesis we primarily focused on the second, third and fourth goals. That is, by means of the regulatory focus theory, we attempted to better understand the micro-foundations of exploration and exploitation, exploratory innovation and organizational trust (goal 2), and more importantly, the construct we brought in was psychological in nature, which helped bring realistic assumptions into the decision-making behavior of the individual within the firm (goals 3 and 4). Finally, using behavioral strategy perspective in combination with the upper-echelons theory (Hambrick, 2007; Hambrick & Mason, 1984), the last study took a step in showing the organization-wide consequences of one individual's psychological tendencies in decision-making (goal 1).

6.3 Future Research Directions

In this study, we have employed the regulatory focus theory in the innovation literature through the perspective of behavioral strategy (e.g. Lovullo & Sibony, 2010; Powell et al., 2011). In particular, we focused the largest amount of our effort on understanding how

regulatory focus affects the individual managers as well as management teams in terms of the innovation-related decisions they make. Undoubtedly, our studies are subject to a number of limitations, present interesting pathways for future research. Indeed, future research opportunities in the emerging field of behavioral strategy are numerous. For this reason, in this section, we will predominantly focus on some of the immediate research questions posed by the regulatory focus theory (See table 6 below).

Table 7. Future Research

<u>Issue</u>	<u>Future Research Opportunity</u>
- <i>Collective regulatory focus</i>	Research on collective regulatory focus is growing, but still scarce. There is even less research that is conducted at organizational settings. Future research should try to better understand how collective regulatory focus emerges, when it gains predominance over individuals' own regulatory foci and whether it has a chronic component as well.
- <i>Chronic regulatory focus compositions in management teams</i>	Although the identities of the individuals within the group partially dissolves, it is not fully so. Therefore, understanding the collective regulatory focus of a management team is a necessary but insufficient step to understand their regulatory focus-related decisions. It is necessary to also understand the effects of different compositions of chronic regulatory focus in the team.
- <i>Regulatory focus and physical design of the work environment</i>	Physical environment is an obvious antecedent of regulatory focus, but regulatory focus theory is not yet applied to understand how the physical environment can affect the decisions of the managers.
- <i>Diffusion of regulatory focus</i>	We have shown that regulatory focus can both affect and be affected by the elements of the organizational environment. This suggests that the diffusion of regulatory focus within the organizational environment can be investigated or modeled.
- <i>Perspectives and Research Strategy</i>	Our studies were conducted through the perspectives of the reductionist and pluralist schools of behavioral strategy, which was reflected upon our research strategy (survey-based). This new stream of literature could benefit from the perspective of the contextualist school as well as from the rich data provided by qualitative research.

First of all, the literature on collective regulatory focus (e.g. Das & Kumar, 2010; Faddegon et al., 2008; Rietzschel, 2011), especially within the context of organizations, is yet at a germinal stage. Until now, only a couple of studies have examined this construct, and generally did so through experimental research on student samples. As a result, we have a very limited understanding of the effects of collective regulatory focus in organizational

settings. In this thesis, we made contribution to this area by examining the management teams' collective regulatory foci on their use of organizational coordination mechanisms. However, this can only be considered as an initial step. Future research should try to better understand how collective regulatory focus emerges, when it gains predominance over individuals' own regulatory foci and whether it has a chronic component as well.

Second, again relevant to our last point, it is necessary for future research to consider the chronic regulatory focus compositions of management teams. After all, a team having a collective regulatory focus does not necessarily mean that the chronic regulatory foci of the individual members cease to exist. In other words, the process of 'depersonalization' commonly discussed in the context of the self-categorization and social identity theories is subject to certain limitations. Furthermore, it is likely that chronic regulatory foci of the individual members play an antecedent role in the emergence of collective regulatory focus, such that an individual may have a higher tendency to interfuse with the group if there is a match between the regulatory focus of the individual and that of the group (e.g. Faddegon et al., 2008). In short, a better comprehension of the collective regulatory focus construct is a necessary but insufficient step to take in understanding the effects of regulatory focus on managers and management teams' decision-making tendencies. The other necessary step is to further examine the consequences of having different kinds of chronic regulatory focus compositions in the management team.

Third, although the physical environment is a definite antecedent of regulatory focus (e.g. Friedman & Förster, 2001, p. 1001), research examining the use of the regulatory focus theory for the purpose of designing the psychical environment of an organization (e.g. Elsbach & Pratt, 2007 in *Academy of Management Annals*) is scarce. One straightforward use of the physical design of the workplace would be contextually inducing a particular regulatory focus on the individual. Especially considering the strong positive effects of regulatory fit and the negative effects of a regulatory mismatch on task valuation and performance (e.g. Higgins, 2000; Keller & Bless, 2006), this issue needs further attention. Moreover, workplace design may not only have important implications for the behavioral strategy and organizational behavior literatures, but may be useful for the area of marketing as well. For

instance, if individuals of specific chronic regulatory foci have discernibly different workplace design preferences (e.g. prevention-focused individuals emphasizing elements pertinent to tradition and dominant culture), this information may be useful for the salespeople in adapting their persuasion attempts with an intention of creating regulatory fit. Likewise, the office of a salesperson can be designed so that the regulatory focus induced on the customer by the environment and that of the product being sold are in a regulatory fit as well (e.g. a prevention-focused office design with traditional elements when selling life insurance).

Fourth, future research may examine the interplay between the environment, the top management and the managers lower down the organization in terms of regulatory focus. For instance, in the second study we have observed that the dynamism of their environments can influence the regulatory foci of the managers. Prior research suggests that a regulatory fit between the manager and the employee has a positive effect on their relationship and also that the individuals are more likely to show attention to stimuli fitting their regulatory focus (e.g. Kark & van Dijk, 2007; McMullen et al., 2008). Therefore, the individuals fitting the regulatory focus of the management team may be more likely to move up in the organization. In other words, the promotion focus induced by a more dynamic environment, for example, may not only make higher-managers more promotion-focused, but may result in the organization becoming more promotion-focused as a whole. Moreover, although to a lesser extent, we know that managers are influenced by the regulatory focus of their peers and subordinates as well (*ibid.*). Therefore, the diffusion of regulatory focus does not have to be top-down, but can be bottom-up and horizontal as well. In sum, as a result of changes in the external environment, organizations are subject to an ongoing process of regulatory focus diffusion.

A better understanding of this diffusion process and the interplay of regulatory within different hierarchical levels of the organization can provide us a number of interesting insights. First of all, this may help to explain why organizations over time tend to move towards extreme levels of exploration and/or exploitation (e.g. Levinthal & March, 1993). Secondly, this may explain the circumstances under which a person is most likely to have a

successful career. For instance, a chronically promotion-focused individual may have the highest chances of survival in a company always residing in an environment of high dynamism. A chronically prevention-focused individual may have higher chances in an industry marked with stability. On the other hand, if the level of stability in an industry is changing over time, a prevention-focused individual who was considered to be a star employee may suddenly lose his or her position. An ambidextrous individual, who has high levels of both regulatory foci may possibly be very successful but may also be considered as very mediocre by their supervisors. This is because an ambidextrous individual, in contrast to a predominantly promotion or prevention-focused one, hosts contradictions (Mom, van den Bosch & Volberda, 2009; Smith & Tushman, 2005), and combines knowledge of both types.

For instance, in an industry marked with stability, the manager may be a very prevention-focused individual, and may simply disregard the promotion-focused ideas of the ambidextrous subordinate as being irrelevant or unrealistic. Instead, a prevention-focused employee might be considered by the manager as the star employee, as that the majority of the ideas presented by that employee will fit the regulatory focus of the manager. This is the case, of course, until the environment changes the regulatory state of the manager towards promotion, when suddenly the prevention-focused individual loses his or her position to a promotion-focused one (the ambidextrous individual is possibly still seen as a mediocre individual, as now a promotion-focused individual is the star employee). Our expectation is that the difference between the ambidextrous individual who is always considered as mediocre and always considered as star is the level of self-monitoring (Snyder, 1974). This is because an ambidextrous individual with high levels of self-monitoring may always present the fitting type of knowledge to the manager regardless of the regulatory state the manager is in. Likewise, extending the last point, we can suggest that the fit between the regulatory focus of the management team and that of the recruiters in the human resource management department may be essential to the success of the newcomer within the company. All in all, another new and interesting area of future research may be the diffusion of regulatory focus and its interplay among different hierarchical levels within the organization.

Finally, we focused primarily on the reductionist (Studies 1, 2 and 4) and partially on the pluralist (Study 3) schools of Behavioral Strategy (e.g. Table 1 of the introduction section). Therefore, future studies taking the perspective of the contextualist schools would complement our research. Our choice of perspectives is also reflected upon our research strategy. In particular, the conceptual arguments we produced were main based on prior experimental studies on regulatory focus (as the construct originated from experimental psychology literature), and all of the studies we conducted were based on surveys. In other words, the stream of literature produced by this thesis is based on quantitative data. On the other hand, as would any new literature stream, this one would also benefit from the rich data produced by qualitative studies. Furthermore, there may be (in fact, there probably are) factors or categories of factors that are overlooked by the small but growing regulatory focus literature in organizational settings. A number of exploratory qualitative studies would help identifying these factors and also could help build more sophisticated theoretical models.

All in all, by means of this thesis we hope to contribute to the four core questions of behavioral strategy (Powell, Lovallo & Fox, 2011, p. 1380) as well as to the literature stream that examines regulatory focus in organizational settings (e.g. Das & Kumar, 2010; Kark & van Dijk, 2007; Stam, Knippenberg & Wisse, 2010). In doing so, we hope to have played our part of the role as a catalyst in helping these emerging streams evolve into fully-fledged literatures of research.

SUMMARY

This dissertation makes use of the behavioral strategy perspective in order to examine a number of constructs pertaining to innovation in corporate settings. In particular, the dissertation consists of four studies; one conceptual and three empirical. The conceptual paper introduces the regulatory focus theory and forms a linkage between an individual's regulatory focus and motivation towards exploration and exploitation. Furthermore, by means of the Motivation-Ability-Opportunity (MAO) schema, this study also provides insight into the concepts moderating this relationship. The first empirical paper tests the relationship between an individual's (i.e. manager's) regulatory focus and activities of exploration and exploitation. Moreover, it takes an initial step in understanding the organizational and contextual antecedents of regulatory focus, and thus, of exploration and exploitation at the individual level. The second empirical study, examines the collective regulatory focus of a management team, and its effects on the exploratory innovation level of the organization unit. Moreover, it investigates three primary organizational coordination mechanisms (i.e. centralization, formalization and connectedness) as a mediator of this relationship. Finally, the last study addresses the gap regarding the lack of knowledge about the positive effects of prevention focus in organizational settings. It shows that prevention focus (and not the promotion focus) of the general manager has a positive effect on management team accountability, and therefore, on intra-organizational trust, which is not only important in itself, but is also an important antecedent of innovation and performance. All in all, the contributions and findings of this study have a number of implications for behavioral strategy theory and practice, and presents areas of future research.

SAMENVATTING

Deze dissertatie concentreert zich op het Behavioral Strategy perspectief teneinde een aantal wetenschappelijke constructen te onderzoeken die van belang zijn voor innovatie binnen ondernemingen. De dissertatie is opgebouwd uit een viertal studies: één conceptueel van aard en een drietal empirische studies. In de conceptuele studie wordt de “Regulatory Focus” theorie geïntroduceerd en de relatie tussen enerzijds de “Regulatory Focus” van een individu en anderzijds de motivatie voor “exploration” en “exploitation” onderzocht. “Exploration” is geassocieerd met onzekerheid en risico’s in het innovatieproces, terwijl “exploitation” is gericht op het verder verbeteren van het bestaande. Door middel van het “Motivation-Ability-Opportunity” (MAO) Framework belicht deze studie ook de modererende concepten van deze relatie. De eerste empirische studie test de relatie tussen de “Regulatory Focus” van een individu (c.q. manager) en de “exploration” en “exploitation” activiteiten van dat individu. Die studie draagt ook bij aan inzicht in de organisationele en contextuele antecedenten van de “Regulatory Focus” en daarmee van de “exploration” en “exploitation” activiteiten op het niveau van analyse van het individu. De tweede empirische studie onderzoekt de collectieve “Regulatory Focus” van een management team en de impact daarvan op “exploratory innovation” van een organisatie-eenheid. Deze studie onderzoekt ook een drietal belangrijke organisationele coördinatiemechanismen (centralisatie, formalisatie en “connectedness”) als “mediators” van deze relatie. De laatste studie draagt bij aan de nog beperkte kennis omtrent de positieve effecten van “prevention focus” in organisaties. De studie laat zien dat de “prevention focus” (en niet de “promotion focus”) van de “general manager” een positief effect heeft op de “management team accountability” en daarmee op intra-organisationeel vertrouwen. Dit laatste is niet alleen op zichzelf belangrijk, maar is ook een belangrijk antecedent van innovatie en “performance”. Samenvattend kan gesteld worden dat de bijdragen en bevindingen van de vier studies een aantal implicaties hebben voor theorie en praktijk inzake “Behavioral Strategy” alsmede voor toekomstig onderzoek.

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DECISION MAKING AND BEHAVIORAL STRATEGY**THE ROLE OF REGULATORY FOCUS IN CORPORATE INNOVATION PROCESSES**

This dissertation makes use of the behavioral strategy perspective in order to examine a number of constructs pertaining to innovation in corporate settings. In particular, the dissertation consists of four studies; one conceptual and three empirical. The conceptual paper introduces the regulatory focus theory and forms a linkage between an individual's regulatory focus and motivation towards exploration and exploitation. Furthermore, by means of the Motivation-Ability-Opportunity (MAO) schema, this study also provides insight into the concepts moderating this relationship. The first empirical paper tests the relationship between an individual's (i.e. manager's) regulatory focus and activities of exploration and exploitation. Moreover, it takes an initial step in understanding the organizational and contextual antecedents of regulatory focus, and thus, of exploration and exploitation at the individual level. The second empirical study, examines the collective regulatory focus of a management team, and its effects on the exploratory innovation level of the organization unit. Moreover, it investigates three primary organizational coordination mechanisms (i.e. centralization, formalization and connectedness) as a mediator of this relationship. Finally, the last study addresses the gap regarding the lack of knowledge about the positive effects of prevention focus in organizational settings. All in all, the contributions and findings of this study have a number of implications for behavioral strategy theory and practice, and presents areas of future research.

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