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Employees in entrepreneurial project management: Issues in team aspects, failure activities and transitions

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ABBREVIATIONS

AVE	Average variance extracted
B	Briefing
cf.	Confer (compare)
CFA	Confirmatory factor analysis
CFI	Comparative fit index
CI	Confidence interval
CMV	Common method variance
d.f.	Degrees of freedom
DV	Dependent variable
EM	Efficiency management
HRM	Human resource management
IEL	Individual experiential learning
MGCFA	Multigroup confirmatory factor analysis
OLS	Ordinary least squares
PANAS	Positive affect negative affect schedule
PFF	Project failure frequency
PGO	Performance goal orientation
R&D	Research and development
RMSEA	Root mean square error of approximation
s.d.	Standard deviation
SDT	Self determination theory
SEM	Structural equation modeling
SRMR	Standardized root mean square residual
TC	Team competence
TD	Team diversity
TEL	Team experiential learning
TLI	Trucker Lewis index
TR	Team relatedness
TS	Team satisfaction
TUM	Technical University Munich
UWES	Utrecht work engagement scale
VIF	Variance inflation factor
vs.	versus
WE	Work engagement

ABSTRACT

This thesis helps established organizations understand how entrepreneurial project employees can be of greatest use to the organization. First, it investigates facilitators of employees' work engagement in entrepreneurial projects and finds a U-shaped relationship between team aspects and work engagement. The nature of this U-shaped relationship is contingent on the frequency of project failure within organizations. Second, it examines employees transitioning from one entrepreneurial project to the next and develops a scale to assess the transition performance. Taken together, this thesis contributes most importantly to the corporate entrepreneurship literature.

Keywords: corporate entrepreneurship; employee; entrepreneurial project; work engagement; project failure; transition; motivation; experiential learning; scale development.

ZUSAMMENFASSUNG

Diese Dissertation hilft etablierten Unternehmen zu verstehen, wie sie Mitarbeiter in ihren unternehmerischen Projekten effektiver einsetzen können. Zum einen werden Einflussfaktoren auf das Mitarbeiterengagement in solchen Projekten untersucht und ein U-förmiger Zusammenhang zwischen Teamaspekten und Engagement gefunden, der von der Häufigkeit gescheiterter Projekte beeinflusst wird. Zum anderen wird die Transition von Mitarbeitern von einem unternehmerischen Projekt zum nächsten beleuchtet und eine Bewertungsskala für deren Erfolg entwickelt. Insgesamt trägt diese Arbeit vor allem zur Literatur über unternehmerisch tätige, etablierte Unternehmen bei.

Schlagwörter: Unternehmertum in etablierten Unternehmen; Mitarbeiter; unternehmerisches Projekt; Engagement; Projektscheitern; Transition; Motivation; Lernen aus Erfahrung; Skalenentwicklung.

1 INTRODUCTION

1.1 Setting the stage

Established, corporate organizations differ in their innovativeness and some organizations are better able to discover and implement innovative ideas than others (Van Burg & Romme, 2014; Van der Panne, Van Beers & Kleinknecht, 2003). A recent study by the consultancy Boston Consulting Group which assessed the innovation performance of major corporate organizations in various industries across the globe illustrates this fact (Wagner, Taylor, Zablit & Foo, 2014). Table 1 depicts the twenty organizations rated as being most innovative (Wagner et al., 2014) and Apple known for its products like iphone, ipad, or MacBook leads the list.

Rank	Organization	Industry
1	Apple	Technology and telecom
2	Google	Technology and telecom
3	Samsung	Technology and telecom
4	Microsoft	Technology and telecom
5	IBM	Technology and telecom
6	Amazon	Consumer and retail
7	Tesla Motors	Automotive
8	Toyota Motor	Automotive
9	Facebook	Technology and telecom
10	Sony	Technology and telecom
11	Hewlett-Packard	Technology and telecom
12	General Electric	Industrial products and processes
13	Intel	Technology and telecom
14	Cisco Systems	Technology and telecom
15	Siemens	Industrial products and processes
16	Coca-Cola	Consumer and retail
17	LG Electronics	Technology and telecom
18	BMW	Automotive
19	Ford Motor	Automotive
20	Dell	Technology and telecom

Taken from "The most innovative companies 2014: Breaking through is hard to do" (Wagner et al., 2014)

Table 1: Top 20 of most innovative organizations in 2014

According to this list, Apple's innovative activities appear to outperform those of its competitors within the technology and telecom industry such as Google, Samsung, Microsoft or IBM (Wagner et al., 2014). Apple's founder and former CEO, Steve Jobs, described his organiza-

tion's innovation success in one interview as follows (Kirkpatrick & Maroney, 1998, September 11):

> *"Innovation has nothing to do with how many R&D [= research and development] dollars you have. When Apple came up with the Mac, IBM was spending at least 100 times more on R&D. It's not about money. It's about the people you have, how you're led, and how much you get it."*

Indeed, the "people", i.e., individual employees, are central to entrepreneurially acting organizations as they develop innovative ideas, make decisions and overcome barriers to bring innovations into place (Corbett, Covin, O'Connor & Tucci, 2013; Harper, 2008; Shane & Venkataraman, 2000). In essence, employees make corporate entrepreneurship happen and corporate entrepreneurship researchers emphasize employees as one important reason why some organizations are more innovative than others (Klarner, Treffers & Picot, 2013).

Yet organizations increasingly face the challenge of attracting and retaining qualified employees for the pursuit of their entrepreneurial projects (Klarner et al., 2013) which becomes evident in recent surveys. In one survey among German organizations engaged in innovative activities, 49 % of the organizations reported that there is a shortage of skilled employees which might jeopardize their future business success (Schumann, Liecke & Schulz-Kamm, 2012). Another survey in which German innovative and technology oriented organizations were investigated makes the associated challenges explicit (Bienzeisler & Bernecker, 2008): The shortage of skilled employees leads to an overload of organizations' current workforce, raising problems when organizations seek to enter new markets and, thus, hindering growth initiatives.

Consequently, the management of an organization's current and future employee base emerges as a key success factor for entrepreneurially active organizations (Schmelter, Mauer, Börsch & Brettel, 2010). Not surprisingly Corbett, Covin, O'Connor and Tucci (2013) recently encouraged corporate entrepreneurship researchers to conduct studies which may answer "how organizations can attract, cultivate, and manage human capital in a way that allows for continuous corporate entrepreneurship efforts within the corporation" (Corbett et al., 2013, p. 817).

This thesis builds on their call and intends to increase our understanding of how to better use the potential of an organization's currently employed workforce for entrepreneurial initiatives. More precisely, I draw attention to employees assigned to *entrepreneurial projects – "new*

ventures, new products, new services, entering new markets, and/or implementing new processes" (Shepherd & Cardon, 2009, p. 923) – and employees' perceptions, attitudes, and behaviors. As engaged employees have been found to promote idea generation (Bakker & Xanthopoulou, 2013; Hakanen, Perhoniemi & Toppinen-Tanner, 2008), idea implementation (Bhatnagar, 2012; Hahn, Frese, Binnewies & Schmitt, 2012), and venture growth (Gorgievski, Moriano & Bakker, 2014) I study work engagement. Specifically, I examine facilitators of employees' work engagement such as project team specific aspects and failure activities. Further, I focus on employees transitioning from one entrepreneurial project to the next as previous research indicated that this process entails opportunities for increasing organizational performance (Cacciatori, Tamoschus & Grabher, 2012; Flohrer, 2014; Hackman & Wageman, 2005; Jiménez-Jiménez & Sanz-Valle, 2011). Specifically, I propose a concept of project transitions including experiential learning and motivational aspects and develop a scale to measure employees' transition performance.

The remainder of this introduction is structured as follows. In section 1.2, I provide a brief overview of the field of corporate entrepreneurship which builds the frame of this thesis while emphasizing in particular work on individual employees in entrepreneurial projects. In section 1.3, I outline the research questions which I intend to answer within this thesis. I present the structure of this thesis in section 1.4.

1.2 Corporate entrepreneurship research as the frame of this thesis

Corporate entrepreneurship as an important research field

Research on entrepreneurship originates in the early work of Schumpeter (Schumpeter, 1934, 1942) who stated that organizations grow through introducing new products, applying new methods of doing business, or entering new markets. This leads to established businesses being replaced by new ones – a process which Schumpeter called "creative destruction" (Schumpeter, 1942). Even though Schumpeter already built the foundation of our contemporary understanding of entrepreneurship in the 1930s (Barringer & Bluedorn, 1999; Van Burg & Romme, 2014), entrepreneurship as its own field of research is still young (Van Burg & Romme, 2014). By providing a *definition* accepted by many entrepreneurship researchers (Hayton & Cholakova, 2012; Ireland, Covin & Kuratko, 2009; Marvel, Davis & Sproul, in press), Shane and Venkataraman (2000) set the stage for advancing the field (Wiklund, Davidsson, Audretsch & Karlsson, 2011). They regard the field of *entrepreneurship as the "scholarly examination of how, by whom, and with what effects opportunities to create future*

goods and services are discovered, evaluated, and exploited" (Shane & Venkataraman, 2000, p. 218). I follow their definition in this thesis.

The academic work addressing entrepreneurial initiatives within established organizations is bundled in the literature of *corporate entrepreneurship* (Corbett et al., 2013; Dess, Ireland, Zahra, Floyd, Janney & Lane, 2003; Phan, Wright, Ucbasaran & Tan, 2009) – also called intrapreneurship (Parker, 2011) or corporate venturing (Burgelman & Välikangas, 2005). This thesis intends to contribute to this field of research and, therefore, focuses on *organizations* which develop *"a new venture within an existing organization, to exploit a new opportunity and create economic value"* (Parker, 2011, p. 20) *following "innovative and proactive behavior"* (Dess, Lumpkin & McGee, 1999, p. 85). In contrast, organizations pursuing entrepreneurial initiatives while not seeking to create economic but social (Austin, Stevenson & Wei-Skillern, 2006) or environmental value (Meek, Pacheco & York, 2010) are not the focus of this thesis.

Although entrepreneurship has emerged as its own field of research, corporate entrepreneurship researchers largely benefit from integrating aspects of *adjacent research fields* (Busenitz, Plummer, Klotz, Shahzad & Rhoads, 2014). For example, research on innovation allows deeper insights on the interplay between the individual actions of entrepreneurs and organizational determinants while striving for novelty (Crossan & Apaydin, 2010). In addition, the strategy literature provides a better understanding of the organizational processes which facilitate entrepreneurial behavior (Barringer & Bluedorn, 1999). Further, entrepreneurship researchers seeking to understand entrepreneurial feelings, emotions, intentions and behavior find cues in the organizational behavior literature and in the various domains of the psychology literature (Baum & Locke, 2004; Cardon, Gregoire, Stevens & Patel, 2013; Marvel, Griffin, Hebda & Vojak, 2007). Moreover, as entrepreneurial success largely depends on knowledge and learning (Minniti & Bygrave, 2001), the organizational learning literature is a useful source for entrepreneurship researchers (Wang, 2008; Zhao, Li, Lee & Chen, 2011). Finally, as entrepreneurial opportunities are projects "not yet in operation" (McMullen, Plummer & Acs, 2007, p. 275), the literature on project management may provide insightful aspects of how to exploit an entrepreneurial opportunity. Following this view on entrepreneurship research, I draw in my thesis – in addition to the corporate entrepreneurship literature – on work from those adjacent fields. Specifically, I use work from the organizational behavior and social psychology literature while studying work engagement. For the study on

project transitions, I borrow mainly from project management, organizational psychology, and organizational learning literatures.

Entrepreneurial projects in corporate entrepreneurship research

Most entrepreneurial initiatives in established organizations are carried out as *entrepreneurial projects, i.e., "new ventures, new products, new services, entering new markets, and/or implementing new processes"* (Shepherd & Cardon, 2009, p. 923). Entrepreneurial projects are typically anchored in *research and development (R&D) departments* (Parker, 2011; Rosenbusch, Brinckmann & Bausch, 2011; Zahra, 1996) as it is the aim of those departments to *"effectively and efficiently create, sustain and exploit […] the technological knowledge base needed by the company"* (Kerssens-van Drongelen & Bilderbeek, 1999, p. 36). Since entrepreneurial projects are the modus operandi in entrepreneurially active, established organizations, I use them as the context of this thesis.

While pursuing entrepreneurial projects, organizations have to cope with challenges posed by their external environments (Slevin & Covin, 1997). Specifically, organizations frequently deal with *dynamism which is prevailing in "changes in a firm's environment, arising from technological progress, competitive rivalry, regulatory developments, and similar forces"* (Zahra, 1993, p. 322). While dynamism may create opportunities (Zahra, 1993) – the emergence of the internet, for example, paved the way for numerous online business models – it most imporantly makes it difficult for organizations to predict future technologies or customer demands (Bettis & Hitt, 1995; McKelvie, Haynie & Gustavsson, 2011) and make appropriate decisions (Baron & Tang, 2011; Dess & Beard, 1984). Consequently, dynamism involves a high risk of entrepreneurial *project failure, i.e., the early termination of a project following low performance* (Shepherd, Haynie & Patzelt, 2013), and may induce high stress levels and anxiety among employees working on entrepreneurial projects (DeTienne, Shepherd & De Castro, 2008; Waldman, Ramirez, House & Puranam, 2001). This thesis acknowledges that entrepreneurial projects frequently fail.

In most cases, organizations run multiple entrepreneurial projects simultaneously, yielding a mix of innovations, risk levels and propensity for economic returns (Blau, Pekny, Varma & Bunch, 2004). To manage this portfolio of entrepreneurial projects by investing the limited entrepreneurial resources such as financial and human capital into the most prosperous projects, organizations use portfolio management strategies (Cooper, Edgett & Kleinschmidt, 1999; McGrath, 1999). Besides selecting entrepreneurial projects to be pursued, this includes

terminating poor projects (Behrens & Patzelt, in press; Kester, Griffin, Hultink & Lauche, 2011) which is, however, one of the most challenging decisions in entrepreneurially oriented organizations, as it may undermine managers' and employees' motivation (Balachandra, Brockhoff & Pearson, 1996). The notion that entrepreneurial projects are temporary and their assigned employees move after the end of one project to the next, is addressed in this thesis.

Individuals in corporate entrepreneurship research

Besides entrepreneurial projects, individuals play a major role for entrepreneurially active organizations (Corbett et al., 2013). Since the beginning of entrepreneurship research, individuals stand at the center of scholars' attention (Harper, 2008). In his early work, Schumpeter (1934) introduced entrepreneurship as a theory of acting individuals and established the image of entrepreneurs as "lone heros" who overcome barriers to bring new innovations into place (Harper, 2008). In subsequent studies, authors continued to focus on individuals, because only individuals can make entrepreneurial decisions (Harper, 2008; Shane & Venkataraman, 2000). Up until today individuals are important in entrepreneurship research in general and in corporate entrepreneurship research in particular, as recently emphasized by Corbett et al. (2013) in their stocktaking of the studies in this field and in their outlook on further research directions. Specifically, the authors stated that "if one drills down to its core, sustained competitive advantage is driven by CE [= corporate entrepreneurship] which is built from the knowledge, skills, and abilities of individuals" (Corbett et al., 2013, p. 819). Consistent with their view, this thesis puts the individual employee into the center of research.

The corporate entrepreneurship literature deals with *different types of individuals* in established organizations and, hence, with different research questions. First, studies were dedicated to the role of managers (e.g., Behrens & Ernst, 2014; Behrens, Ernst & Shepherd, 2014; Brundin, Patzelt & Shepherd, 2008; Corbett, Neck & DeTienne, 2007). For example, researchers tried to understand managers' decision making while exploiting (Behrens et al., 2014) or terminating entrepreneurial projects (Behrens & Ernst, 2014). Others were interested in the learning effects resulting from these decisions (Corbett et al., 2007). Further, researchers examined managers' influence on employees' attitudes toward entrepreneurial behavior (Brundin et al., 2008). Second, researchers studied the individual corporate entrepreneur who recognizes and commercializes opportunities within established organizations (e.g., Marvel et al., 2007; Parker, 2011). For example, scholars investigated corporate entrepreneurs' motivation (Marvel et al., 2007) while others focused on agency problems between corporate entre-

preneurs and managers (Jones & Butler, 1992). Finally, researchers focused on employees working on entrepreneurial projects (e.g., Cacciatori et al., 2012; Goffin & Koners, 2011; Koners & Goffin, 2007; Shepherd, Covin & Kuratko, 2009; Shepherd, Patzelt & Wolfe, 2011). For example, they examined how those employees learn from experiences with their entrepreneurial projects (Goffin & Koners, 2011; Koners & Goffin, 2007), transfer their knowledge to other entrepreneurial projects (Cacciatori et al., 2012; Nobeoka, 1995), or cope with a failure of their entrepreneurial project (Shepherd, Covin & Kuratko, 2009; Shepherd et al., 2011). This thesis intends to add to the latter research stream since it focuses on individual employees assigned to entrepreneurial projects.

In many cases, individuals pursuing entrepreneurial projects in established organizations work together with other individuals (Schmelter et al., 2010) and form a *team, i.e., a group of individuals "with a common goal that can only be achieved by appropriate combinations of individual entrepreneurial actions"* (Harper, 2008, p. 614). Entrepreneurship research acknowledged this fact by conducting studies on team formation (e.g., Bissola, Imperatori & Colonel, 2014; Ferriani, Cattani & Baden-Fuller, 2009; Somech & Drach-Zahavy, 2013). For example, scholars found that teams produce creative results if team members are selected according to their individual traits (Bissola et al., 2014). Others found that entrepreneurial performance increases if project employees with extensive experience work together in a team with employees having little experience (Ferriani et al., 2009). In addition, researchers performed analyses on, among other aspects, team processes (e.g., Brockman, Rawlston, Jones & Halstead, 2010; Sivasubramaniam, Liebowitz & Lackman, 2012; Stark & Bierly III, 2009). Authors suggested, for example, that communication within a project team is an important predictor of innovation performance (Sivasubramaniam et al., 2012) while conflicts may be obstructive (Stark & Bierly III, 2009). This thesis takes into account that teams play a major role in corporate entrepreneurship research by integrating team specific aspects.

Taken together, this thesis is anchored in the corporate entrepreneurship literature. Individual employees assigned to entrepreneurial projects in established organizations build the focus while I try to enhance our understanding of how to better use an organization's currently employed individuals for entrepreneurial initiatives. Next, I describe the research questions addressed in this thesis in greater detail.

1.3 Research questions

Whereas individual employees have been in the center of corporate entrepreneurship research since its beginning and their importance for innovation has been demonstrated (Corbett et al., 2013), we still know little how organizations may use the potential of their current employees most effectively to successfully conduct entrepreneurial initiatives (Corbett et al., 2013). While the push for an advance in this field mounts, due to the increasing shortage of skilled employees (Bienzeisler & Bernecker, 2008; Schumann et al., 2012), scholars in the corporate entrepreneurship literature and adjacent literature fields have already started to answer this question.

First, current research addresses factors which influence individual employees' perceptions, attitudes, and behaviors while working in an entrepreneurial setting and ultimately contribute to an organization's entrepreneurial success (Brundin et al., 2008; Gorgievski et al., 2014; Ireland et al., 2009). For example, Ireland et al. (2009) argued that employees who take a pro-entrepreneurship rather than contra-entrepreneurship perspective will more likely exploit entrepreneurial opportunities and, thus, contribute to a larger degree to entrepreneurial success. In addition, Brundin et al. (2008) found managers to influence their employees' willingness to act entrepreneurially which is important, as this is conducive to knowledge generation and opportunity identification. Further, entrepreneurship researchers regard individuals' engagement, among other aspects, as being essential for entrepreneurial success (Gorgievski et al., 2014) as they found that highly *engaged employees, i.e., employees who experience at work "a positive, fulfilling, work-related state of mind"* (Schaufeli, Salanova, González-Romá & Bakker, 2002, p. 74) *and perceive their work as energetic, meaningful, and engrossing* (Bakker, Albrecht & Leiter, 2011a), are better at generating innovative ideas (Hakanen et al., 2008). In addition, engaged employees appear to be better in exploiting opportunities as they show higher levels of persistence (Rich, LePine & Crawford, 2010; Schaufeli et al., 2002) and personal initiative (Hahn et al., 2012).

However, we understand little how to facilitate individuals' work engagement in an entrepreneurial setting. Specifically, our knowledge on team specific facilitators is limited (Christian, Garza & Slaughter, 2011; Freeney & Fellenz, 2013) although project teamwork is crucial in innovative organizations (Chowdhury, 2005; Forbes, Borchert, Zellmer-Bruhn & Sapienza, 2006; Harper, 2008). Further, employees in those organizations frequently experience project failure which is likely to influence the perception of their current entrepreneurial project

(Shepherd, Covin & Kuratko, 2009) and, therefore, the project team-engagement relationship – an important issue which remains only partly understood in research to date. In an attempt to close these research gaps, I raise the following research questions in this thesis:

(1a) How does an employee's perception of project teams facilitate the work engagement in an entrepreneurial project?

(1b) Which role do entrepreneurial project failures within organizations play for the relationship between project teams and employees' work engagement?

Those questions are addressed in this thesis's study entitled "Perceptions of project teams and project failures: How do they impact employees' engagement in entrepreneurial projects?".

Second, research to date has tried to understand how entrepreneurial project management needs to be designed to get the most from the potential of employees assigned to entrepreneurial tasks (Brettel, Mauer, Engelen & Küpper, 2012; Chiesa, 2000). For example, Brettel, Mauer, Engelen and Küpper (2012) suggested that employees apply an effectual approach (e.g., R&D approach is driven by given means rather than project targets) to entrepreneurial project work when this project work entails high innovativeness. In addition, Chiesa (2000) proposed, for example, a balanced distribution of power and responsibility across countries if organizations carry out entrepreneurial projects whose team members are globally spread. Further, researchers examined the performance potential provided by employees at the start or at the end of entrepreneurial projects (Goffin & Koners, 2011; Hackman & Wageman, 2005). They stressed that the start of an entrepreneurial project lays the foundation for employees' motivation during project work (Flohrer, 2014; Hackman & Wageman, 2005) which is an important factor for organizational success (Huselid, 1995). Likewise, they found that the end of an entrepreneurial project provides great opportunities for employees to learn from previous project experience (Ellis & Davidi, 2005; Goffin & Koners, 2011) which allows employees to perform better in subsequent tasks (Cacciatori et al., 2012; Jiménez-Jiménez & Sanz-Valle, 2011).

However, while the management of employees across a project's life cycle is well understood, the understanding of employees *transitioning across projects, i.e., moving from one entrepreneurial project after its end to the next project*, is limited. This is surprising since innovative organizations whose performance is under pressure due to risky entrepreneurial initiatives (Lin & Chen, 2005; York & Venkataraman, 2010) should try to exploit the performance opportunities provided by the transitions process such as effectively redeploying employees to

new projects (Shepherd, Patzelt, Williams & Warnecke, 2014), experiential learning at the project end (Goffin & Koners, 2011) or motivation at the project start (Flohrer, 2014; Hackman & Wageman, 2005). Further, project transitions will gain in importance since their frequency will mount following the trend of shorter new product development times (Cankurtaran, Langerak & Griffin, 2013). By addressing this research gap, I pose the following research questions in my thesis to set the stage for further research on project transitions:

(2a) Which aspects are important for employees successfully transitioning from one entrepreneurial project to the next?

(2b) How can the performance of a project transition be measured?

The questions above are answered in this thesis's study entitled "When is employee project transition successful? Development and validation of a new measure".

1.4 Structure of this thesis

This thesis is organized as follows. Chapter 2 gives an overview of the research project "Project Success Panel" which this thesis belongs to. I briefly outline the research project's design and summarize the academic questions addressed. Further, I introduce the researchers involved and explain their roles while I make my contribution to this research project clear. Finally, I outline the academic outcomes of the "Project Success Panel" to date.

Chapter 3 is dedicated to work engagement of employees working on entrepreneurial projects. It includes the development of a model which draws on self determination and normalization theory and theorizes on the perception of project teams which impacts employees' work engagement within large, established organizations with diverging frequency of project failures. Investigating this relationship is important as it provides further insights on engaging employees in entrepreneurial contexts of which our understanding is still limited although engaged employees have been found to be essential for discovering and exploiting opportunities (c.f. Gorgievski et al., 2014; Hakanen et al., 2008). The developed model is tested using survey data on 438 employees staffed on entrepreneurial projects. As hypothesized, the results support a U-shaped relationship between the two analyzed team aspects, team satisfaction and team diversity, and work engagement which is moderated by the frequency of project failure within the organization. These findings contribute to the corporate entrepreneurship literature helping clarify the drivers of employees' motivation in entrepreneurial contexts (Klarner et al., 2013; Monsen, Patzelt & Saxton, 2010), the role of emotions (Baron & Tang, 2011; Cardon, Der Foo, Shepherd & Wiklund, 2012), the principles of forming a team in an entrepreneurial

setting (Forbes et al., 2006; Knockaert, Ucbasaran, Wright & Clarysse, 2011), and the effects of entrepreneurial project failures (Shepherd, Covin & Kuratko, 2009; Shepherd et al., 2011).

Chapter 4 is dedicated to measuring the performance of project transitions. I offer a concept of project transition which embodies opportunities for an increase in organizational performance while employees move from one completed entrepreneurial project to the next one. As project transitions provide employees working on entrepreneurial projects with the opportunities for experiential learning (Cacciatori et al., 2012; Goffin & Koners, 2011) and motivation (Flohrer, 2014; Hackman & Wageman, 2005) which improve organizations' performance, this is an important field of study for entrepreneurship researchers. Yet this thesis is among the first to examine project transitions conceptually. Further, I develop and validate a new measurement scale to assess the performance of such project transitions while I follow the steps proposed by MacKenzie, Podsakoff and Podsakoff (2011) and use survey data of 712 respondents as well as interviews with 21 managers and employees working in entrepreneurial projects. By proposing the new transition performance scale which is composed of six subscales and 26 items, I intend to encourage future research. For example, I hope that future researchers empirically test the influence of project transitions on organizational performance.

Chapter 5 provides a discussion and conclusions of this thesis. I briefly summarize the main findings and contributions of this thesis. In addition, I outline implications of this thesis for future research and managerial practice. Finally, I offer conclusions to this thesis.

2 THIS THESIS AS PART OF THE RESEARCH PROJECT "PROJECT SUCCESS PANEL"

This thesis belongs to the research project "Project Success Panel". In the following sections, I briefly outline the research project's design, introduce the researchers involved and summarize the current academic outcomes while embedding my thesis in this context.

Research project design

The research project "Project Success Panel"[1] was set up by the Entrepreneurship Research Institute at the Technical University Munich (TUM) in the year 2011 to achieve a better understanding of employees' perceptions, attitudes and behaviors within large, established organizations while working on entrepreneurial projects and transitioning from one entrepreneurial project to the next. Figure 1 illustrates the overall design of the research project.

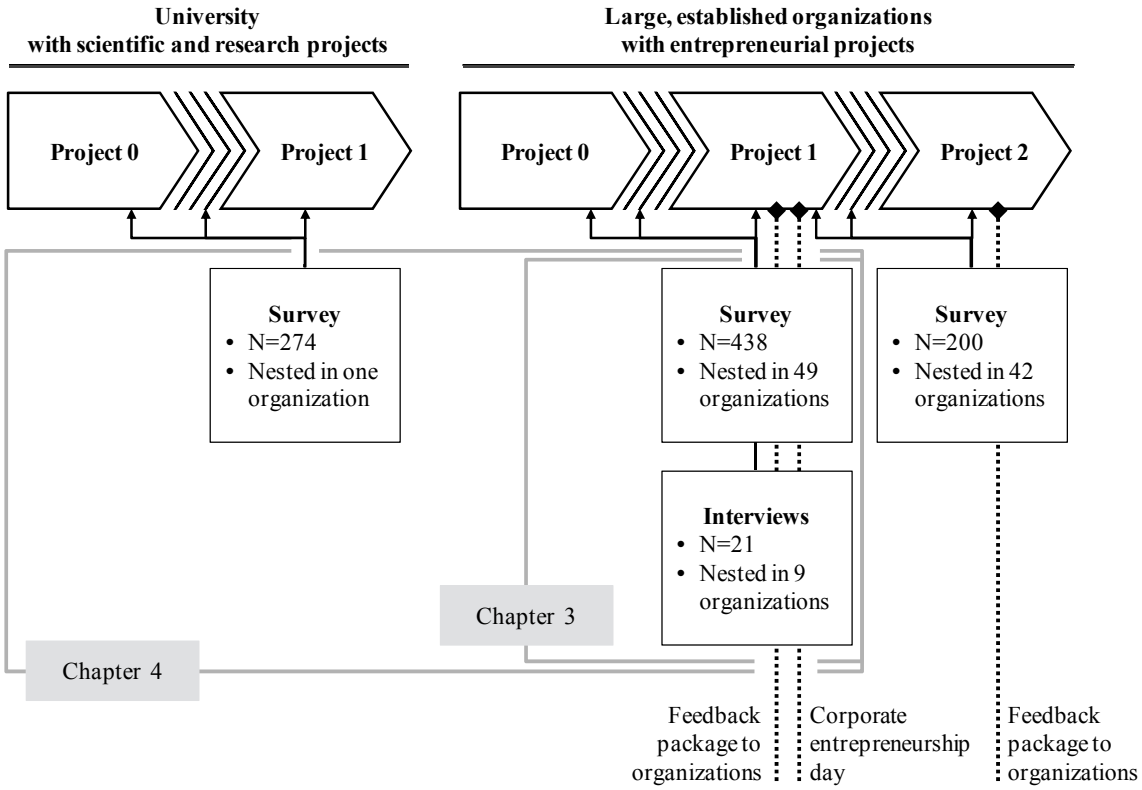


Figure 1: Design of research project "Project Success Panel" and this thesis

[1] Initially named "Bridge".

To gather the research issues described, three surveys with a total of 912 respondents were conducted within the "Project Success Panel" as illustrated in the picture above. More precisely, this research project included a pretest survey with university researchers and scientists of TUM (N=274) which allowed for developing a new measurement scale of transition performance. The survey comprised 162 items and was answered within 27 minutes on average. In addition, the "Project Success Panel" contained two survey rounds with employees assigned to entrepreneurial projects in large, established organizations (first round survey: N=438; second round survey: N=200) who were questioned across a sequence of entrepreneurial projects. All participants of the first round survey were invited to participate in a second round survey three weeks after the end date of their project (indicated in the first round survey). Both questionnaires comprised, for example, questions on employees' individual work style, the performance of their last entrepreneurial project, and their well-being on the project they were currently assigned. The first questionnaire included 230 items and was answered on average within 52 minutes, the second questionnaire included 151 items and the average response time was 33 minutes.

The "Project Success Panel" also included 21 interviews – eight interviews with entrepreneurial project members, eleven with entrepreneurial project leaders, and two with managers responsible for research and development departments (R&D) – conducted in nine organizations pursuing entrepreneurial projects. The interviews covered topics such as learning from project experiences, employee motivation and transitioning from project to project. The interviews were exploratory and did not follow a consistent structure. They lasted from 10 minutes to one hour and the average interview was conducted within half an hour.

The established organizations which participated in the "Project Success Panel" benefited from their involvement in two ways. First, they received feedback packages[2] on their (anonymized) employees' perceptions, attitudes and behaviors while working on entrepreneurial projects. One feedback package was provided after completing the first round survey and another package after completing the second round survey. Second, they were invited to the

[2] The feedback package on the first survey round's wave 1 covered 25 pages, the one on wave 2 covered 42 pages. For example, the latter included organization specific results for transition performance, job satisfaction or motivation. For each domain, benchmarks were provided. In addition, the package comprised a checklist which helps improve transition performance. If more than 5 employees had participated in the study, this detailed feedback package was sent to the contact person. Otherwise, the contact person received a non-organization specific version of the same document. The feedback on the second round survey was provided via an online platform with organization specific access.

workshop "Corporate Entrepreneurship Day" which the Entrepreneurship Research Institute organized in November 2012 at TUM to stimulate discussions among senior representatives of organizations engaged in entrepreneurial settings and allow for best practice exchange.

Research project team and support

Dr. Judith Behrens and Prof. Holger Patzelt led the research project. The project team also included the researchers Sonja Dittrich (2011-2012), Dr. Nick Flohrer (2011-2014) and myself (as of 2012). While designing and setting up the research project, Prof. Dean Shepherd (Indiana University Bloomington) and Prof. Marcus Wolfe (Ball State University) provided advisory support. In addition, the professors Shepherd and Wolfe were involved in the process of developing the transition performance measurement scale; they contributed substantially to the process of item generation and guided through the overall process of scale development.

The researchers Dittrich and Flohrer were involved in designing the questionnaires and collecting survey data from university researchers and scientists at Technical University Munich (pretest). Further, they started to collect survey data from employees assigned to entrepreneurial projects in large, established organizations (first round survey, wave 1: N=152). I continued collecting survey data (first round survey, wave 2: N=286; second round survey: N=200) and provided feedback to organizations after the first round survey. All three researchers were responsible for conducting interviews.

The research project team received support from business students at the Technical University Munich as part of graded student work (final theses, project studies): (1) Two students in the German diploma program assisted in conducting the *pretest* by approaching university researchers and scientists of TUM and by tracking their responses (Groos, 2012; Parulewski, 2012). (2) Three undergraduate students *established contacts* to three large, established organizations pursuing entrepreneurial projects by leveraging their personal networks and convincing the organizations to participate in the "Project Success Panel" surveys (Ausperger, 2013; Falter, 2013; Lamotte, 2013). (3) Two undergraduate students collected *secondary data* and assembled information about the participating organizations such as revenues or research and development expenses by screening annual reports and the organizations' websites (Knecht, 2013; Totzke, 2013). (4) Five students (undergraduates and students in the German diploma program) assisted in conducting *interviews* with employees assigned to entrepreneurial projects and managers responsible for entrepreneurial initiatives (Ausperger, 2013; Falter, 2013;

Lamotte, 2013; Meyer-Scharenberg, 2012; Parulewski, 2012). (5) Two undergraduate student teams helped develop *organization specific feedback packages* (Brand, Frech & Fuchsbrunner, 2014; Voglbauer, Lochner, Maurer & Ramstötter, 2015). (6) Finally, two students in the master program used parts of the survey data generated within the "Project Success Panel" to write their final theses (Niederzoll, 2012; Rampp, 2012) while not contributing to the overall research project design.

Academic outcomes of "Project Success Panel"

The "Project Success Panel" embodies the scientific work of different authors and includes – besides the students' graded work mentioned above – Flohrer's thesis (2014), this thesis, and Behrens, Wolfe, Shepherd and Patzelt's working paper (2015). Next, I briefly summarize these three studies and describe how they are embedded within the "Project Success Panel".

Flohrer's thesis (2014) spans across three main parts. In his first part, he used interview data and data from surveys with university researchers and scientists as well as from surveys with employees assigned to entrepreneurial projects (first round survey, wave 1) to develop a new measurement for the start of an entrepreneurial project. In his second and third part, he concentrated on the latter employee survey data (first round survey, wave 1) while examining project start related antecedents for employees being psychologically empowered at work and its effects on affective commitment.

Likewise, *this thesis* used survey and interview data of the "Project Success Panel" (see Figure 1). Using data of the first round survey with employees in large, established organizations (wave 1 and wave 2), chapter 3 intends to investigate the influence of team aspects and failure aspects on employees' work engagement in entrepreneurial projects. By building on interview data and survey data of the pretest and first round survey with employees in large, established organizations (wave 1 and wave 2), chapter 4 develops and validates a new scale to measure the performance of employees transitioning from one entrepreneurial project to the next and builds on Flohrer's (2014) work. My personal contribution to both chapters included data collection (in addition to data collected by my fellow researcher, see Flohrer, 2014), data analyzing, theory development and writing, while my scientific advisors, Prof. Holger Patzelt and Dr. Judith Behrens, were involved in scientific discussions and correcting the manuscript. Since chapter 3 is intended to be submitted to academic conferences and journals with all persons involved as coauthors, I use "we" instead of "I" as the personal pronoun in the manuscript of chapter 3.

Behrens et al.'s working paper (2015) used the full range of data provided by the "Project Success Panel", including the three survey samples and interview data. The authors empirically demonstrate that the performance of employees transitioning across projects influences the subsequent project's performance via employees' empowerment, affective commitment and work stress. In doing so, they relied on the new scale of transition performance as developed in chapter 4 of this thesis.

Taken together, the "Project Success Panel" spans across several researchers and large, established organizations and provides the starting point for conducting promising academic work and this thesis is part of it.

3 PERCEPTION OF PROJECT TEAMS AND PROJECT FAILURES: HOW DO THEY IMPACT EMPLOYEES' WORK ENGAGEMENT IN ENTREPRENEURIAL PROJECTS?

3.1 Introduction

"Engage your employees or lose billions" titled Forbes (Alvino, 2014, September 29) in an article referring to a recent survey conducted by Gallup Inc. according to which U. S. organizations fail to jointly exploit an economic potential of up to 550 billion U. S. dollars per year (118 billion euros in Germany) as only one third of their employees (15 percent in Germany) are engaged at work (Alvino, 2014, September 29; Bossy, 2014, March 31; Crabtree, 2013). *Work engagement is "the harnessing of organization members' selves to their work roles"* (Kahn, 1990, p. 694) which is why engaged employees *experience at work "a positive, fulfilling, work-related state of mind"* (Schaufeli et al., 2002, p. 74) and p*erceive their work as energetic, meaningful, and engrossing* (Bakker & Albrecht et al., 2011a).

The lack of employees' work engagement is especially critical for organizations which pursue *entrepreneurial projects – "new ventures, new products, new services, entering new markets, and/or implementing new processes"* (Shepherd & Cardon, 2009, p. 923) – for two reasons. First, working in those organizations involves high levels of stress induced by extreme challenges such as risky initiatives (Barringer & Bluedorn, 1999; Leiter, 2005), a constant need for improvisation (Hmieleski & Corbett, 2008), long working hours (Harris, Saltstone & Fraboni, 1999), and uncertainty and unpredictability (Baron & Tang, 2011; Beehr, Jex, Stacy & Murray, 2000; McMullen & Shepherd, 2006). Employees are better able to recover from these high stress levels (Sonnentag, Mojza, Demerouti & Bakker, 2012) if they are engaged at work. Second, engaged employees contribute to the entrepreneurial success as they persist in the face of difficulties (Rich et al., 2010; Schaufeli et al., 2002), take the initiative (Hahn et al., 2012), generate innovative ideas (Hakanen et al., 2008) and transform them into venture success (Gorgievski et al., 2014).

In spite of recent interest in the benefits of engaged employees for entrepreneurially acting organizations (e.g., Gorgievski et al., 2014; Hahn et al., 2012), little is known about how work engagement may be facilitated in those organizations. In particular, research on the impact of teams on employees' work engagement is scarce (Christian et al., 2011; Freeney & Fellenz,

2013), since studies on the antecedents of work engagement have primarily focused on employees' perceptions of motivational job characteristics, such as performance feedback (Schaufeli, Bakker & Van Rhenen, 2009), or contextual job characteristics, such as job security (Mauno, Kinnunen, Mäkikangas & Nätti, 2005). Yet *teams – a group of individuals "with a common goal that can only be achieved by appropriate combinations of individual entrepreneurial actions"* (Harper, 2008, p. 614) – are central to entrepreneurially oriented organizations (Chowdhury, 2005; Forbes et al., 2006; Harper, 2008) as opportunities are typically pursued in the context of entrepreneurial project teams (Griffin, 1997). The importance of team contexts is also acknowledged in research on independent ventures. For example, the quality of identified entrepreneurial opportunities depends largely on the composition of entrepreneurial teams with founders and investors (Lim, Busenitz & Chidambaram, 2013). The great potential of teams is also acknowledged by venture capitalists who rate the quality of entrepreneurial founder teams as a major decision criterion for their investments (Kamm, Shuman, Seeger & Nurick, 1990; Zacharakis & Meyer, 1998).

The present study aims to shed some light on employees assigned to entrepreneurially acting project teams and the team's role for engaging these employees by addressing the perception of two team aspects which account for two trends in organizations. First, organizations seeking to facilitate innovativeness begin being more sensitive to employees' feelings, emotions, and relations (Barczak, McDonough & Athanassiou, 2006; Cardon et al., 2012; Morieux & Tollman, 2014). We[3], hence, examine how the perceived team satisfaction – employees' "overall evaluation about working in their current team" (Shaw, Zhu, Duffy, Scott, Shih & Susanto, 2011, p. 391) – impacts an employee's work engagement. Second, we account for the trend that organizations employ an increasingly heterogeneous workforce to stimulate innovation (Gebert, Boerner & Kearney, 2006) and investigate how the perceived team diversity – the distributional difference among members of a team with respect to job related attributes (Bell, Villado, Lukasik, Belau & Briggs, 2011; Harrison & Klein, 2007) – affects an employee's work engagement. By building on the self determination theory (SDT), which states that individuals feel well when they are able to fulfill their basic human needs (Deci & Ryan, 2000), we examine how team satisfaction and team diversity become important predictors of work engagement in entrepreneurial contexts (Deci, Ryan, Gagné, Leone, Usunov & Kornazheva, 2001).

[3] This chapter uses "we" instead of "I" as personal pronoun in the manuscript (for reasons see chapter 2).

Teams in entrepreneurially acting organizations usually carry out temporary entrepreneurial projects, for example, a project lasting from a few months to two and a half years to develop new consumer products or services (Griffin, 2002). Importantly, those entrepreneurial projects face a high risk of *failure, i.e., are terminated early due to low performance* (Shepherd, Covin & Kuratko, 2009). For example, ninety percent of new drugs projects in the pharmaceutical industry never reach market (Cannon & Edmondson, 2005). Hence, employees in entrepreneurially acting organizations frequently experience project failure – either through own failure or through observing failure of their coworkers. On account of negative psychological reactions arising from project failure (Shepherd et al., 2013; Shepherd et al., 2011), the project failure frequency of an organization likely influences the relationships between team aspects and an individual's work engagement. Following the call of entrepreneurship researchers to consider the context in which entrepreneurial activities occur (De Clercq, Lim & Oh, 2013; Marvel et al., in press; Welter, 2011), we address the question in which "failure climates" employees are able to translate team aspects into work engagement. Our arguments draw on the normalization theory (Ashforth & Kreiner, 2002) which renders entrepreneurial project failures as ordinary events the more frequently they occur while reducing the emotional importance of each entrepreneurial project (Shepherd, Covin & Kuratko, 2009). Using a survey based sample of 438 employees assigned to entrepreneurial projects nested in 49 large organizations, we make the following contributions.

(1) First, we contribute to the *corporate entrepreneurship literature* and to the question of how employees in entrepreneurial contexts may be motivated (De Clercq, Castañer & Belausteguigoitia, 2011; Klarner et al., 2013; Marvel et al., 2007) as we find U-shaped curvilinear relationships between two team aspects in entrepreneurial projects, team satisfaction and team diversity, and employees' work engagement which is an important motivational concept (Christian et al., 2011; Kahn, 1990). Extant research demonstrated the influence of employees' attitudes (Baum & Locke, 2004; De Clercq et al., 2011), employee-manager relationships (Allen, Adomdza & Meyer, 2015; Brundin et al., 2008), and organizational environment (Hornsby, Kuratko & Zahra, 2002; Monsen et al., 2010) on employees' motivation in entrepreneurial contexts and we suggest to additionally acknowledge the motivational potential of entrepreneurially acting project teams. Second, our findings add to the developing field of emotions in entrepreneurship (Cardon et al., 2012). Previous research has mainly concentrated on the benefits of positive emotions (Baron & Tang, 2011; Brundin et al., 2008; Hayton & Cholakova, 2012; Welpe, Spörrle, Grichnik, Michl & Audretsch, 2012). In contrast, our

results suggest a downside of increased positive emotions (Baron, Hmieleski & Henry, 2012; Wolfe & Shepherd, in press) since we find that team satisfaction as a positive emotional concept and work engagement are negatively linked at low levels of team satisfaction. Third, we provide empirical evidence on how to form an entrepreneurially acting team (Forbes et al., 2006; Knockaert et al., 2011) by investigating the relationship between team diversity and employees' work engagement while working in entrepreneurial projects. While previous research found either similar (Amason, Shrader & Tompson, 2006) or diverse (Somech & Drach-Zahavy, 2013) teams to be beneficial, we support those authors who suggest that both extremes may be desirable (Cabrales, Medina, Lavado & Cabrera, 2008; Hmieleski & Ensley, 2007). Finally, we extend extant literature on project failure which has mainly examined employees' own project failures (Shepherd, Covin & Kuratko, 2009; Shepherd et al., 2011) and their consequences such as grief (Shepherd, 2003), disappointment (Shepherd et al., 2011), or emotional devastation (Dillon, 1998). In contrast, we focus on all failures within an organization and support recent work on accumulated failures (Shepherd et al., 2013). More precisely, we find statistical evidence that the frequency in which entrepreneurial projects fail within an organization affects translating team satisfaction (strong support) and team diversity (mixed support) into work engagement.

(2) In addition, this chapter provides important contributions to the *work engagement literature*. First, we extend the range of social predictors to work engagement (Christian et al., 2011; Freeney & Fellenz, 2013) which is currently limited to social support (Bakker, Van Emmerik & Euwema, 2006; Barbier, Hansez, Chmiel & Demerouti, 2013; Rich et al., 2010) as we propose team satisfaction and team diversity as additional predictors. Second, we help understand which organizational climate facilitates the development of work engagement (Albrecht, 2014; Bakker & Albrecht et al., 2011a). While work engagement researchers have focused on various "climate concepts" such as a "service climate" (Salanova, Agut & Peiró, 2005) or a "safety climate" (Nahrgang, Morgeson & Hofmann, 2011), we are the first to investigate a "failure climate" and show that it affects how team satisfaction and team diversity translate into work engagement. Third, we enhance the understanding of work engagement's conceptualization by finding that the three constituting work engagement dimensions – vigor, dedication, and absorption (Schaufeli et al., 2002) – diverge with respect to their team specific predictors. This result supports scholars who have analyzed the three dimensions separately (Cole, Walter, Bedeian & O'Boyle, 2012; Rodríguez-Sánchez, Schaufeli, Salanova, Cifre &

Sonnenschein, 2011) rather than examining work engagement as a composite construct (Avery, McKay & Wilson, 2007; Sonnentag, 2011).

(3) Further, our findings add to the *team literature*. Specifically, we contribute to the literature on interpersonal relationships within teams as we provide evidence that low and high levels of team satisfaction equally may have positive effects. While extant studies found mainly linear links between team satisfaction and outcome variables (Jehn, Northcraft & Neale, 1999; Nerkar, McGrath & MacMillan, 1996), our finding that low team satisfaction results in high levels of work engagement supports the limited number of studies on negative relational experiences (e.g., employees harming their coworkers) and their positive effects, for example, on well-being or on learning (Eby & Allen, 2012; Krischer, Penney & Hunter, 2010; McCauley, 2012). Finally, we help bring clarity into the frequently studied team diversity-performance-relationship by demonstrating that team diversity and work engagement are linked in a U-shaped relationship. Hence, we add robustness to previous work finding U-shaped relationships with team diversity (Earley & Mosakowski, 2000; Gibson & Vermeulen, 2003; Van der Vegt & Bunderson, 2005).

The remainder of this chapter is structured as follows. First, we begin by giving an overview of the contemporary understanding of the work engagement concept. We outline the principles of SDT and its implications on work engagement and develop hypotheses on the effect of team satisfaction and team diversity on engagement. In addition, we examine the moderating effect of the frequency of project failure within an organization. Second, we detail the methods involved in hypotheses testing. Third, we continue with reporting the regression results. Finally, we discuss the implications of our study for research and managerial practice before ending with a conclusion.

3.2 Theoretical development

3.2.1 Literature review of work engagement

A growing number of scientific studies in the organizational behavior literature (Sonnentag, 2011) underline the importance of work engagement as a motivational concept. In addition, its relevance for entrepreneurially acting organizations has recently been demonstrated (Gorgievski et al., 2014; Hahn et al., 2012). Next, we provide a brief literature review of its definition since there is an ongoing academic discussion about a consistent understanding of

work engagement (Bakker & Albrecht et al., 2011a), its consequences – in particular for organizations in entrepreneurial contexts – and antecedents.

Definition of work engagement

The work engagement literature distinguishes *three different perspectives* on work engagement: state engagement, trait engagement, and behavioral engagement (Macey & Schneider, 2008). Since we conceptualize work engagement, consistent with other important other in this field, as *a state* (e.g., Halbesleben & Wheeler, 2008; Kane-Frieder, Hochwarter & Ferris, 2014), we define work engagement[4] *as an active psychological state of individuals* (Parker & Griffin, 2011; Schaufeli & Bakker, 2004) *that is persistent and pervasive* (Barbier et al., 2013; Schaufeli & Bakker, 2004). Further, we conceptualize work engagement as "not focused on any particular object, event, individual, or behavior" (Schaufeli et al., 2002, p. 74). In contrast, studies describing work engagement as a *trait* understand engagement as a dispositional personality trait (Christian et al., 2011; Macey & Schneider, 2008; Schaufeli & Salanova, 2011). Authors from this stream of literature postulate, for instance, that individuals tend to be more highly engaged than others due to their proactive personality (Macey & Schneider, 2008). Other studies referring to work engagement as a *behavior* posit that engaged individuals put extra effort into a specific task and, thus, go beyond what has been expected (Macey & Schneider, 2008). Taken together, the three perspectives on work engagement describe a sequence (Macey & Schneider, 2008); trait engagement leads to state engagement, which in turn results in behavior engagement.

Further, *three dimensions* are reflected in the concept of work engagement as a state: vigor, dedication, and absorption (Schaufeli & Bakker, 2004; Schaufeli, Bakker & Salanova, 2006; Schaufeli et al., 2002). First, *vigor* is characterized by "high levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence even in the face of difficulties" (Schaufeli et al., 2002, p. 74). Second, *dedication* is characterized by "a sense of significance, enthusiasm, inspiration, pride, and challenge" (Schaufeli et al., 2002, p. 74). Third, *absorption* is characterized by "being fully concentrated and deeply engrossed in one's work, whereby time passes quickly and one has difficulties with detaching oneself from work" (Schaufeli et al., 2002, p. 75). Absorption reflects largely the concept of flow, an experience of focused attention, effortless concentration, distortion of time, and intrinsic en-

[4] There is an ongoing discussion in the literature on the potentially different meanings of job, work and employee engagement. For a review see Schaufeli and Salanova (2011). In our study, we use the term work engagement.

joyment (Csikszentmihalyi, 1990; Schaufeli et al., 2002). Different to the state of flow, absorption is not of temporary nature but refers to a more stable state of different strength (Bledow, Schmitt, Frese & Kühnel, 2011; Sonnentag, 2003). The three dimensions vigor, dedication, and absorption originate from different lines of reasoning (Schaufeli & Bakker, 2004). While vigor – also referred to as energy (Schaufeli et al., 2009) – and dedication – also referred to as identification (Schaufeli et al., 2009) – stem from early theoretical reasoning on work engagement (Bakker & Albrecht et al., 2011a; Maslach, 2011), absorption was been added later after having been found in qualitative research that absorption is closely related to the first two dimensions, vigor and dedication (Schaufeli & Bakker, 2004).

The three dimensions of work engagement – vigor, dedication, and absorption – are included in the *Utrecht work engagement scale* (UWES) (Schaufeli et al., 2002), which has developed into a leading concept in the work engagement literature. Different to other existing conceptualizations (c. f. Rich et al., 2010; Rothbard, 2001), UWES is largely spread and extensively used in empirical research (Sonnentag, 2011). It mirrors the original definition of Kahn – one of the first scholars to theorize about work engagement (Bakker, 2011; Christian et al., 2011) – according to which engaged employees bring themselves physically, cognitively and emotionally to their work roles (Kahn, 1990, 1992). Hence, we build our study on this body of research.

Scholars frequently emphasize the *uniqueness and importance of work engagement* as a distinct construct (Avery et al., 2007; Bledow et al., 2011; Christian et al., 2011; Cole et al., 2012; Maslach & Leiter, 2008; Parker & Griffin, 2011; Saks, 2006; Sonnentag, 2011). They value the concept's additional content and different focus relative to other traditional motivational constructs, including organizational commitment, job satisfaction, and job involvement (Christian et al., 2011). First, organizational commitment and work engagement both refer to positive psychological states (Schaufeli & Bakker, 2010). While organizational commitment represents a generalized state over time, work engagement may be influenced by particular situations (Kahn, 1990; Rich et al., 2010). Second, job satisfaction and work engagement both describe employees' well-being (Bakker, 2011). Job satisfaction refers to an employee's "affect about or toward work" (Schaufeli & Bakker, 2010, p. 14) and reflects a passive form of well-being (Bakker, 2011). In contrast, work engagement applies more to an employee's mood at work (Schaufeli & Bakker, 2010) and is rather active (Bakker, 2011). Finally, job involvement and work engagement capture employees' identification with their work

(Schaufeli & Bakker, 2010). Different to job involvement, which focuses mainly on identification issues, work engagement represents employees' identification and in addition employees' energy and flow at work (Schaufeli et al., 2002). Nevertheless, work engagement and the described motivational constructs overlap to some extent (Christian et al., 2011). This is why some scholars, though a minority, keep criticizing work engagement as being "old wine in new bottles" (Newman & Harrison, 2008).

In addition, work engagement gains strong attention in *managerial practice*. For example, some organizations started to frequently monitor their employees' work engagement using "engagement surveys" (e.g., Jenkins & Delbridge, 2013). The survey results even seem to impact the assessment of managerial performance as a leader of an entrepreneurial project in the aerospace and defense industry we interviewed described:

> *"In surveys, our employees are asked to rate their well-being within their workplace environment. We call the surveys in our organization 'engagement surveys'. They are conducted in specific time intervals. The target agreements of our managers include the survey results […]. When the survey results of one manager are worse than average, this manager is asked what is going on."*

Consequences of work engagement for the entrepreneurial process

Recent research has provided evidence that high work engagement levels are in particular beneficial to organizations in entrepreneurial contexts (Bakker & Xanthopoulou, 2013; Bhatnagar, 2012; Gorgievski et al., 2014; Hahn et al., 2012; Hakanen et al., 2008). More specifically, empirical research suggests that work engagement improves the entrepreneurial outcome across different stages of the entrepreneurial process: idea generation (Bakker & Xanthopoulou, 2013; Hakanen et al., 2008), idea implementation (Bhatnagar, 2012; Hahn et al., 2012), and venture growth (Gorgievski et al., 2014).

To begin with the first stage of the entrepreneurial process, work engagement facilitates the generation of ideas as work engagement positively correlates with creativity. For instance, Bakker and Xanthopoulou (2013) found in their study that teachers rate engaged school principles as being more creative than their less engaged counterparts. In addition, work engagement impacts the innovativeness of ideas. Evidence was provided by a study of Hakanen et al. (2008) among Finnish dentists. The authors found that engaged dentists show higher levels of personal initiative compared to less engaged dentists. This was, in turn, positively linked to

the innovativeness of the dentists' work units. Moreover, engaged employees seem to have an effect on successfully introducing innovative ideas as suggested by two studies. First, Bhatnagar (2012) came to the result that high levels of work engagement among Indian managers in industrial organizations support the implementation of innovations in new markets (Bhatnagar, 2012). Second, Hahn et al. (2012) demonstrated that vigor, an important dimension of work engagement (Barbier et al., 2013; Shirom, 2010), is associated with personal initiative which determines employees' behavior while pursuing entrepreneurial ideas. Finally, work engagement contributes to venture growth. For example, while using a sample of independent entrepreneurs, Gorgievski et al. (2014) showed that work engagement influences the entrepreneurs' positive affect, which in turn results in successfully growing businesses.

Consequences of work engagement beyond the entrepreneurial process

In addition, empirical studies showed that organizations benefit from highly engaged employees beyond the benefits for the entrepreneurial process. Specifically, engaged employees are more satisfied with their jobs (Kane-Frieder et al., 2014; Saks, 2006), perform better (Halbesleben & Wheeler, 2008; Rich et al., 2010) and experience less job tension (Kane-Frieder et al., 2014) than less engaged employees. A positive impact of work engagement has also been found with respect to organizational commitment (Bakker & Demerouti, 2007; Saks, 2006), organizational citizenship behavior (Rich et al., 2010), and staying with the organization (Saks, 2006; Schaufeli & Bakker, 2004). Moreover, scholars consider work engagement to be a means to prevent burnout[5] (Bakker, Albrecht & Leiter, 2011b). They postulate that employees, who are energetic and feel well at work, are less likely to feel exhausted or cynical about their jobs – both signs of burnout.

The positive effects of work engagement lead to bottom line outcomes for organizations which rarely failed to be mentioned in academic articles (Avery et al., 2007; Bakker & Albrecht et al., 2011a; Bhatnagar, 2012; Parker & Griffin, 2011). The magnitude of bottom line impact is illustrated in a study among 41 multinational organizations, administrated by the consultancy Towers Perrin (Towers Watson, 2011). Within the observation period of three years, organizations with highly engaged employees could improve their operating margin by

[5] This has led to a (ongoing) discussion in literature and the question whether work engagement and burnout cover the same phenomenon, however from different perspectives. Interested readers are directed to the work of Salanova, Bakker and Llorens (2006), Cole, Walter, Bedeian and O'Boyle (2012), and Maslach and Leiter (2008).

up to five percent; in contrast, the operating margin of organizations with low engagement declined substantially.

Regardless of the numerous positive effects, work engagement seems to also have negative effects for employees and organizations (Halbesleben, 2011). Too highly engaged employees may experience conflicts with their families while going the extra mile at work instead of investing their efforts at home (Halbesleben, 2011; Halbesleben, Harvey & Bolino, 2009).

Antecedents of work engagement

Given the positive effects of work engagement within organizations in general and within entrepreneurially acting organizations in particular, researchers have tried to understand how to get employees engaged. Hence, much work has been dedicated to the antecedents of work engagement.

One literature stream on the antecedents of work engagement grounds on the impact of *dispositional characteristics*. Proactive employees who, for instance, actively seek feedback (Cooper-Thomas, Paterson, Stadler & Saks, 2014; Hakanen et al., 2008) as well as conscientious employees who feel responsible (Christian et al., 2011) demonstrate high levels of work engagement. Further, self efficacy, organization based self esteem, and optimism (Bakker & Xanthopoulou, 2013; Barbier et al., 2013; Xanthopoulou, Bakker, Demerouti & Schaufeli, 2007, 2009), psychological empowerment (Bhatnagar, 2012), active coping (Weigl, Hornung, Parker, Petru, Glaser & Angerer, 2010), core self evaluations (Rich et al., 2010), and resiliency (Bakker & Xanthopoulou, 2013) positively influence employees' level of work engagement.

Another literature stream, which the majority of work engagement literature belongs to, focuses on *job characteristics* (Freeney & Fellenz, 2013) as antecedents for work engagement. Generally speaking, it has been shown that job resources positively influence work engagement and this effect is especially strong when job demands are high (Bakker & Albrecht et al., 2011b). In line with the job characteristics model of Humphrey, Nahrgang and Morgeson (2007), we distinguish between three types of job related antecedents to work engagement – motivational, contextual, and social job characteristics (Christian et al., 2011) – which we outline next.

First, *motivational job characteristics* refer to factors that provide motivational experiences to employees (Christian et al., 2011) and, thus, are antecedents to work engagement. For example, Schaufeli et al. (2009) showed that managers of a Dutch telecom organization were more engaged when their jobs were equipped with high autonomy, provided opportunities to learn, and allowed performance feedback (findings also supported by studies of Freeney & Fellenz, 2013; Menguc, Auh, Fisher & Haddad, 2013). Further motivational job characteristics predicting work engagement are high job control (Mauno, Kinnunen & Ruokolainen, 2007), significant and varying tasks (Christian et al., 2011), and congruent values (Rich et al., 2010).

Second, *contextual job characteristics* are physical demands of the job and other specific work conditions such as temperature or noise (Christian et al., 2011). These factors are determinants for work engagement and have been investigated by various researchers (Bakker et al., 2006; Demerouti, Bakker, Nachreiner & Schaufeli, 2001; James, McKechnie & Swanberg, 2011; Mauno et al., 2005). For example, Mauno et al. (2005) provided evidence of a significant relationship between employment conditions and work engagement in their study among Finnish health care employees. Specifically, the authors showed that employees with permanent contracts were less engaged when they perceived their job as insecure compared to a situation when they perceived their job as secure. This is different to temporary employees whose work engagement level is only marginally affected by changes in job insecurity.

Finally, *social job characteristics* refer to the social environment associated with one's job (Christian et al., 2011). Prior studies have mainly focused on supervisor or social support and its positive impact on work engagement (Bakker et al., 2006; Barbier et al., 2013; Brough, Timms, Siu et al., 2013; Freeney & Fellenz, 2013; James et al., 2011; Menguc et al., 2013; Rich et al., 2010; Saks, 2006; Schaufeli et al., 2009). Few studies marked an exception and analyzed additional social job characteristics. One example is the work of Avery et al. (2007) in which the authors investigated the work relationships of individuals employed in the United Kingdom. They demonstrated that individuals exhibit higher levels of work engagement if they are satisfied with their coworkers, and, if so, that older individuals are more engaged with their jobs when their age is similar to the age of their coworkers. Moreover, Salmela-Aro, Tolvanen and Nurmi (2011) analyzed students' social strategies applied during university and the effects on students' work engagement later in their jobs. They found that students, who get along with their peers (optimism in social situations), who are not inept in social situations (e.g., by using unfinished work as an excuse for not going out with a group), and who

do not socially withdraw, are strongly engaged with their early jobs after university. Despite several studies, our understanding of social job characteristics predicting work engagement is still limited which is why several scholars call for increased research efforts in this area (Christian et al., 2011; Freeney & Fellenz, 2013).

In sum, work engagement is an important motivational concept and has gained much attention by academics in the organizational behavior literature and recently in the corporate entrepreneurship literature. It positively affects individual outcomes and contributes to the performance of organizations. As we still lack a deep understanding of social job characteristics as antecedents to work engagement, we attempt to contribute to the field with the present chapter in this thesis by investigating the impact of team aspects on work engagement. We discuss this relationship using SDT which we outline next.

3.2.2 Self determination theory and work engagement

Building on the study of Meyer and Gagné (2008) who suggested using the self determination theory to further investigate work engagement, we establish this theory as the theoretical foundation for our model. To set the stage for the subsequent hypotheses development, we briefly introduce the underlying assumptions of SDT before focusing on the theory's links to work engagement. We conclude the section by outlining our theoretical model.

Assumptions of self determination theory

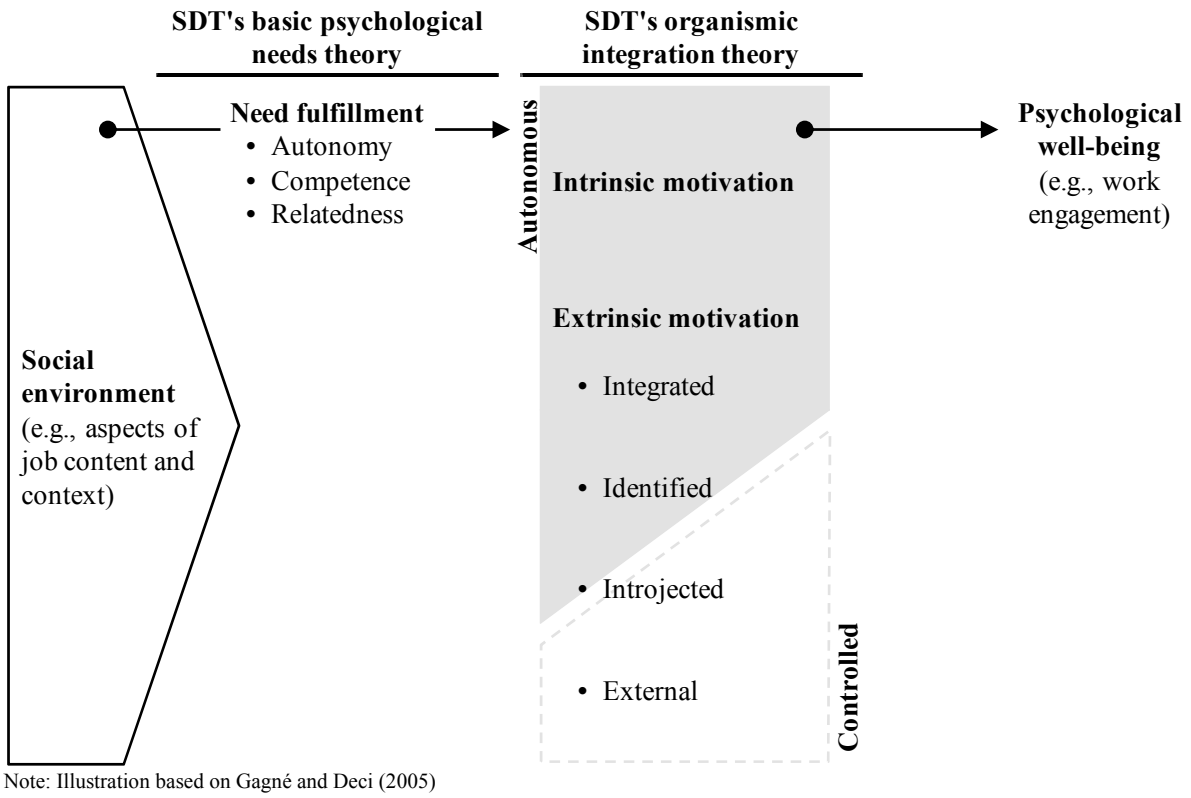
SDT is a theory used to describe *human motivation in social contexts* (Deci & Ryan, 2012). Its basic assumption is that individuals are "active, growth-oriented organisms" (Deci & Ryan, 2000, p. 229) and, thus, strive "to engage interesting activities, to exercise capacities, to pursue connectedness in social groups, and to integrate intrapsychic and interpersonal experiences into a relative unity" (Deci & Ryan, 2000, p. 229). This may be influenced by the individuals' social environments (Ryan & Deci, 2002). Due to its generic nature, SDT has been applied to various life domains, including learning in classrooms, promoting healthy behavior, or pertaining to physical activities (Deci & Ryan, 2012). Specifically in the work context, SDT is increasingly gaining attention (Gagné & Deci, 2005).

SDT embraces *five so called mini theories* on human motivation which have all emerged from different studies conducted by Deci and/or Ryan and which are all interconnected (Deci & Ryan, 2012; Ryan & Deci, 2002). (1) The cognitive evaluation theory – based on Deci and

Ryan (1980) – is dedicated to the impact of extrinsic on intrinsic motivation. The authors found, on the one hand, that extrinsic regulators such as rewards may thwart individuals' self determination and undermine their intrinsic motivation; on the other hand, extrinsic regulators such as positive feedback may increase individuals' felt competence and enhance their intrinsic motivation (Deci & Ryan, 2012). (2) The causality orientations theory – stemming from Deci and Ryan's work in 1985 (Deci & Ryan, 1985b) – postulates three aspects of personality, the so called causality orientations, which are "broadly integral to the regulation of behavior and experience" (Ryan & Deci, 2002, p. 21). The authors used the three causality orientations to predict personality outcomes, for instance self esteem (Deci & Ryan, 2012). (3) The goal content theory – introduced by Kasser and Ryan (1996) – refers to the effects of individuals' intrinsic and extrinsic life goals. The authors found, for instance, that a strong focus on extrinsic life goals undermines well-being (Deci & Ryan, 2012; Kasser & Ryan, 1996). (4) The organismic integration theory – going back to Deci and Ryan (1985a) and Ryan, Connell and Deci (1985) – investigates intrinsic and various types of extrinsic regulations which determine individual motivation and behavior. The authors found that intrinsic motivation is autonomous (Gagné & Deci, 2005), i.e., provides a sense of volition, while extrinsic regulations may be autonomous as well as controlled (Gagné & Deci, 2005), i.e., reflects a sense of pressure (Deci & Ryan, 2012). (5) The basic psychological needs theory – referring to Deci and Ryan (2000) – promotes the existence of three basic human needs. If the needs are fulfilled, well-being is facilitated.

Self determination theory and work engagement

The latter two mini theories have been used in previous studies to explain work engagement. While the organismic integration theory was utilized to describe the different types of motivations underlying work engagement, i.e., autonomous motivation which combines intrinsic and well internalized extrinsic motivation (e.g., Van Beek, Hu, Schaufeli, Taris & Schreurs, 2012), the basic psychological needs theory was applied to evaluate potential predictors of work engagement within employees' social environment (e.g., Trépanier, Fernet & Austin, 2015). These relationships are illustrated in Figure 2. Next, we outline the major assumptions of those two mini theories and explain how they are interrelated.



Note: Illustration based on Gagné and Deci (2005)

Figure 2: Self-determination theory and work engagement

Organismic integration theory: The organismic integration theory addresses two motivational concepts; the concept of intrinsic versus extrinsic motivation and the concept of autonomous versus controlled motivation (Ryan & Deci, 2002). "*Intrinsic motivation* involves people doing an activity because they find it interesting and derive spontaneous satisfaction from the activity itself" (Gagné & Deci, 2005, p. 331). Differently stated, intrinsic motivation is *autonomous* and provides "a sense of volition and having the experience of choice" (Gagné & Deci, 2005, p. 333). In contrast, *extrinsic motivation* "requires an instrumentality between the activity and some separable consequences such as tangible or verbal rewards" (Gagné & Deci, 2005, p. 331). The regulation by reward or punishment is a classic form of extrinsic motivation (Deci & Ryan, 2000) which is largely determined by *controlled motivation*, by "a sense of pressure, a sense of having to engage in the actions" (Gagné & Deci, 2005, p. 334).

An integral element of the organismic integration theory is the notion that extrinsic motivation is no longer limited to controlled motivational elements as postulated by the classic view, but may also include autonomous motivational elements (Deci & Ryan, 2000). This is the case when *individuals internalize extrinsic factors*, i.e., "transform socially sanctioned mores

or requests into personally endorsed values and self-regulations" (Deci & Ryan, 2000, p. 236). The organismic integration theory postulates a continuum of extrinsic motivation ranging from purely controlled to purely autonomous (Deci & Ryan, 2000). The more one moves from one extreme to the other, the more external factors have been internalized and the less external contingencies are needed for individuals to act. At the same time, the motivation is less controlled, but more autonomous.

The extrinsic motivation continuum is constituted by *four different types of extrinsic motivational regulation* (Deci & Ryan, 2000; Gagné & Deci, 2005). The first motivation type, external regulation, is solely controlled and has no autonomous elements (Gagné & Deci, 2005). It mirrors the classic perspective of extrinsic motivation, the motivation by reward and punishment (Skinner, 1953). For example, externally regulated employees work for the sake of a salary increase or to avoid criticism by their supervisor (Van Beek et al., 2012). The second motivation type, introjection, is mainly controlled and shows very few elements of an autonomous motivation (Gagné & Deci, 2005). Behavior in this state is regulated by pride or guilt (Gagné & Deci, 2005). An example for introjected regulation are employees who work because working makes them feel worthy (Gagné & Deci, 2005). The third motivation type, identification, represents a moderately autonomous motivation with few elements of a controlled motivation (Gagné & Deci, 2005). Here, individual behavior is driven by important goals, values, and regulations (Gagné & Deci, 2005). For instance, employees in R&D (research and development) departments often have to do unpleasant tasks like performing standardized material tests relevant for certifying a new product. Since they understand the importance of the certificate for the new product's market success, they feel moderately autonomous in their actions and, thus, are regulated by identification. Finally, the fourth motivation type, integration, represents a fully autonomous motivation as extrinsic factors are fully internalized (Gagné & Deci, 2005). Individuals' behavior is no longer driven by important but coherent goals, values, and regulations (Gagné & Deci, 2005). Using again the example of R&D employees, integration refers to employees who are in charge of generating innovative product ideas at work and who, in general, enjoy finding new, alternative ways of doing certain activities (Gagné & Deci, 2005).

Well internalized extrinsic motivation and intrinsic motivation collectively represent autonomous motivation which facilitates employees' *work engagement* (Meyer & Gagné, 2008). This relationship finds support in recent publications. For example, Van den Broeck, Lens, De

Witte and Van Coillie (2013) analyzed individuals' motivation at work in a representative sample of Belgium's population and found that those individuals scoring high in autonomous motivation were significantly more strongly engaged with their work than individuals scoring low in autonomous motivation. Further, Van Beek, Taris and Schaufeli (2011) analyzed the differences between workaholics and engaged employees by using a large sample of 1,246 Dutch employees (industry and organization type not specified) and demonstrated that engaged employees are driven by autonomous motivation while workaholics are driven by controlled motivation. Van Beek et al. (2012) came to a similar result while using a sample of Chinese health care professionals.

Basic psychological needs theory: The basic psychological needs theory enhances the organismic integration theory and postulates that autonomous motivation – intrinsic motivation and the internalization of external regulators – requires the fulfillment of basic human needs (Deci & Ryan, 1985a; Gagné & Deci, 2005; Koester & Losier, 2002, empirically tested by De Cooman, Stynen, Van den Broeck, Sels & De Witte, 2013). *Needs* are considered in SDT's basic psychological needs theory as essential nutriments for human well-being, similar to water for plants (Deci & Ryan, 2000; Deci et al., 2001). Hence, needs are important for all individuals across all cultures (Deci et al., 2001; Gagné & Deci, 2005). Research has shown that need fulfillment contributes to human well-being while negative consequences occur if the fulfillment of needs is threatened (Deci & Ryan, 2012; Ryan & Deci, 2002).

It is important to note that several assumptions underlie *SDT's view on needs.* First, needs are innate in individuals and do not result from socialization or learning (Van den Broeck, Vansteenkiste, De Witte, Soenens & Lens, 2010). Further, SDT focuses on individuals' ability to fulfill needs rather than need strength which may vary across individuals (Baard, Deci & Ryan, 2004; Van den Broeck, Vansteenkiste, De Witte & Lens, 2008). Moreover, need fulfillment may never be exhausted. Consequently, individuals' well-being improves when individuals are able to fulfill a need, independent from the current level of need fulfillment (Van den Broeck et al., 2010). Finally, SDT states that individual differences and, even more important for this chapter in this thesis, the social environment account for the degree to which human needs are fulfilled (Deci & Ryan, 2000).

The basic psychological needs theory posits *three types of innate needs* (Deci et al., 2001), the needs for autonomy, for competence, and for relatedness. First, the *need for autonomy* is the inherent desire for "experiencing choice and feeling like the initiator of one's own actions"

(Deci et al., 2001, p. 931). This definition captures autonomy as a subjective experience rather than an objectively observable task characteristic (Van den Broeck et al., 2010), which has been in focus of other autonomy concepts in organizational psychology (e.g., Hackman & Oldham, 1976). For instance, perceived decision latitude may fulfill an individual's need for autonomy (Bakker, Schaufeli, Leiter & Taris, 2008). In contrast, the need fulfillment is thwarted if employees feel controlled and feel as having to act against their will (Vander Elst, Van den Broeck, De Witte & De Cuyper, 2012).

Second, the *need for competence* is the inherent desire for "succeeding at optimally challenging tasks and attaining desired outcomes" (Deci et al., 2001, p. 931). The fulfillment of the need for competence is present when individuals feel they can extend their skills and feel able to master a specific task (Van den Broeck et al., 2010). For instance, giving proper feedback may fulfill the receiver's need for competence because feedback facilitates learning (Bakker et al., 2008). In contrast, the need for competence may be thwarted when employees feel insecure about the continuity of their jobs (Vander Elst et al., 2012).

Finally, the *need for relatedness* is the inherent desire for experiencing "a sense of mutual respect, caring, and reliance with others" (Deci et al., 2001, p. 931) and the need fulfillment is characterized by individuals striving "to be a member of a group, to love and care, and to be loved and cared for" (Vander Elst et al., 2012, p. 254). In other words, individuals fulfill their need for relatedness when they experience belongingness and feel connected (Baumeister & Leary, 1995; Vander Elst et al., 2012). However, one's contacts need to be meaningful (Vander Elst et al., 2012). For example, individuals living in a household with others report that they are better able to fulfill their need for relatedness than individuals living alone (Mellor, Stokes, Firth, Hayashi & Cummins, 2008). In contrast, need fulfillment is frustrated when employees are ignored or have to face hostility from coworkers (Trépanier, Fernet & Austin, 2013).

The fulfillment of the three needs – autonomy, competence, and relatedness – drives *work engagement* (Trépanier et al., 2015). For instance, Deci et al. (2001) analyzed the degree of need fulfillment among employees in Bulgarian and American organizations and found that employees were more engaged with their work, the better they were able to fulfill their needs. This result has been confirmed in subsequent studies with a sample of nurses (Trépanier et al., 2013, 2015) or with a sample of employees across various industries (Van den Broeck et al., 2008, exclusively for vigor).

There is no agreement in literature whether the fulfillment of a c*ertain need is more relevant for work engagement* than the fulfillment of another need. SDT' assumes no hierarchy among the three needs – autonomy, competence, and relatedness – in a way that one need becomes only relevant if the fulfillment of another need has reached a certain level (Van den Broeck et al., 2010). However, Deci and Ryan (2000) consider the needs for competence and autonomy as most powerful facilitators for intrinsic motivation and thus for work engagement. Two empirical studies provide support for this notion. First, Andreassen, Hetland and Pallesen (2010) observed that higher work enjoyment is associated with fulfilled needs for competence and autonomy, but not with a fulfilled need for relatedness. Second, Haivas, Hofmans and Pepermans (2014) examined the internalization of external regulators and found that a fulfilled need for relatedness has less impact compared to other needs. In contrast, the experiment of Kovjanic, Schuh and Jonas (2013) came to a different result as they found that the fulfilled need for autonomy – in contrast to the other two needs – is not significantly correlated to work engagement. The authors suspect correlations among the three needs to be the reason.

Taken together, the basic psychological needs theory extends the organismic integration theory by extending the view to the conditions under which motivation develops. While work engagement studies drawing on the organismic integration theory help understand the motivational principles of the work engagement concept, work engagement studies using the basic psychological needs theory provide insights on predictors of work engagement. Thus, in this chapter, we build mainly on the latter theory.

Theoretical model

SDT, in particular the basic psychological needs theory, builds the theoretical foundation for our model of predicting work engagement of employees working in entrepreneurial project teams. This model is illustrated in Figure 3. We investigate and theorize on two aspects of teamwork – an emotional team aspect, team satisfaction, and a structural team aspect, team diversity. Specifically, we argue that the relationship between the two team aspects and work engagement is described by a curvilinear U-shape. Further, we build on the theory of failure normalization and argue that the frequency of project failure within an entrepreneurially acting organization moderates the relationship between the two team aspects and work engagement.

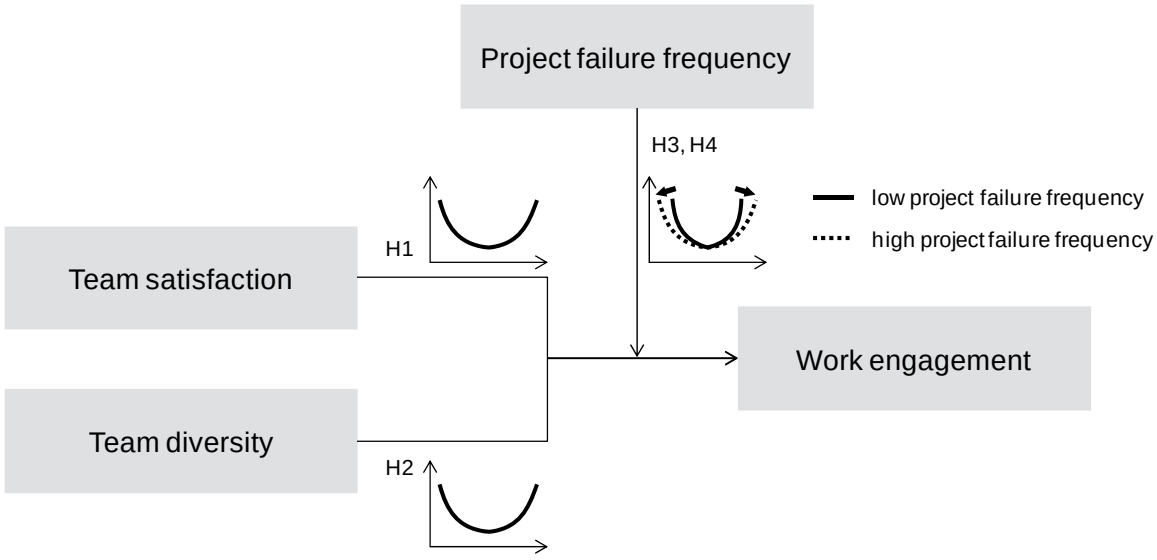


Figure 3: Theoretical model and summary of hypotheses

3.2.3 Team satisfaction and work engagement

Team satisfaction is an emotional team aspect that accounts for the trend in organizations of putting a stronger focus on employees' feelings, emotions, and relations (Barczak et al., 2006; Morieux & Tollman, 2014). Prior to developing hypothesis 1 which describes the impact of team satisfaction on employees' work engagement, we briefly outline key aspects of the team satisfaction literature – definition, level of analysis, and consequences – to clarify the concept of team satisfaction used in this thesis.

Concept of team satisfaction

Team satisfaction relates to "members' overall evaluations about working in their current team" (Shaw et al., 2011, p. 391). Contrary to studies that use team satisfaction as a determinant of team effectiveness and a performance measure (e.g., Der Foo, Sin & Yiong, 2006; Gil, Rico, Alcover & Barrasa, 2005), we refer to team satisfaction as being independent from a certain task or outcome of teamwork and focus on the social dimension (Nerkar et al., 1996) as we investigate in this chapter social predictors of work engagement. Therefore, we associate with team satisfaction the perceived quality of relationship with one's team members in an entrepreneurial project (Nerkar et al., 1996).

Studies examining team satisfaction vary with respect to the *level of analysis*. The level of analysis is contingent upon the applied theory (Chan, 1998; Gully, Incalcaterra, Joshi &

Beaubien, 2002; Morgeson & Hofmann, 1999) and scholars investigated team satisfaction as a team level (e.g., Beal, Cohen, Burke & McLendon, 2003; Dineen, Noe, Shaw, Duffy & Wiethoff, 2007) or as an individual level construct (e.g., Shaw et al., 2011; Stark & Bierly III, 2009). In this thesis, we conceptualize team satisfaction on the individual level since work engagement as the dependent variable is an individual level construct (Saks, 2006) that is mainly driven by individuals' perceptions (Kahn, 1990), for example, of one's job resources, work conditions, or team members.

The majority of studies investigated the *consequences of team satisfaction* by focusing on positive effects for an organization. For example, Jehn et al. (1999) found that employees who experience fewer relationship conflicts within their working teams show a stronger commitment toward their organizations and are more likely to remain with their current organizations. Moreover, high levels of team satisfaction within an organization's workforce have direct implications on performance. For instance, Nerkar et al. (1996) demonstrated that strong positive relationships within entrepreneurially acting project teams lead to higher innovation performance.

In this chapter, we theorize in hypothesis 1 on a U-shaped relationship between team satisfaction and work engagement by drawing on self determination theory (SDT) according to which employees are engaged when they are able to satisfy their basic human needs (Deci & Ryan, 2000; Deci et al., 2001). Specifically, we contend that low levels of team satisfaction are conducive for fulfilling the need for autonomy. Moreover, we argue that high levels of team satisfaction help employees fulfill their need for relatedness. Moderate levels of team satisfaction, however, do not facilitate substantial need fulfillment and, therefore, lead to lower work engagement.

Effects of low team satisfaction on work engagement

In the following section, we provide three arguments that low team satisfaction may facilitate the fulfillment of one's need for autonomy and, following SDT, that employees experiencing those conditions in their entrepreneurial project teams are engaged with their work.

First, employees in entrepreneurial projects who are not satisfied with their team classify their relationships with other team members as poor. They experience the interactions within the entrepreneurially acting team as unfriendly and consequently, build no strong emotional bonds with team members. This may lead to a low sense of relatedness with the team mem-

bers (e.g., De Jong, Curşeu & Leenders, 2014) and the risk of feeling even less related is quite low. Differently stated, the fear of a painful social exclusion (MacDonald & Leary, 2005) resulting from, for example, non team conform behavior is limited. Thus, the freedom for volitional behavior is high (Van den Broeck et al., 2010), employees are likely able to fulfill their need for autonomy while working in an entrepreneurial project and, as stated in SDT, are likely to engage strongly with their work.

Second, if individuals do not feel satisfied with their entrepreneurial project team and, as argued above, do not feel like belonging to this team, team specific norms – norms which add "control and regularity to interaction within groups" (O'Reilly III & Caldwell, 1985, p. 195) – will gain most likely very little attention and will barely be accepted by those individuals (Terry & Hogg, 1996). For instance, norms which regulate the appropriate process of task fulfillment or the expected quality of task outcome are consequently not important as regulators of individual behavior. Employees are likely to have the ability to stand behind their actions and develop a sense of autonomy (Chirkov, Ryan, Kim & Kaplan, 2003; Van den Broeck et al., 2010) that in turn leads, following SDT, to high levels of work engagement.

Finally, we assume that employees working in entrepreneurial projects who are not satisfied with their project team will interact little with their team members as they may not expect positive rewards from these interactions. At the same time, the amount of information shared among team members is limited (Balkundi & Harrison, 2006). Thus, individuals will not know about expectations of their team members or about the contingencies to be considered for task fulfillment. In other words, the perceived number of external regulators is low and the sense of autonomy is high (Van den Broeck et al., 2010). Hence, employees are likely able to fulfill their innate need for autonomy and, as SDT states, will be highly engaged with their work.

Effects of high team satisfaction on work engagement

As described above, employees are less able to fulfill their need for autonomy and are less engaged with their work, the more satisfied they become with their project team. However, if a certain threshold of team satisfaction is reached, employees are likely able to fulfill their need for relatedness and, as stated in SDT, their work engagement increases. In the following section, we provide three arguments for this relationship.

First, employees working on an entrepreneurial project frequently interact with their coworkers as communication and information sharing are often necessary to perform their tasks (Balkundi & Harrison, 2006). Employees might interact even more often with their team members when they are satisfied with the quality of relationships with their coworkers or, said differently, experience a high team satisfaction. Further, since employees work in their entrepreneurial project teams for a substantial amount of time in which they share personal information, collect joint experiences and develop interpersonal bonds (Harrison, Price & Bell, 1998), their team members likely become close. Thus, those frequent interactions with close and meaningful coworkers create a feeling of belongingness (Baumeister & Leary, 1995). Consequently, employees who are satisfied with their entrepreneurially acting team are able to fulfill their need for relatedness and, as stated in SDT, are likely to be highly engaged with their work.

Second, if employees are satisfied with their team in entrepreneurial contexts, they interact with their coworkers in the team in a pleasant way (Cammann, Fichman, Jenkins & Klesh, 1983; Shaw et al., 2011) and are courteous to each other (Kidwell, Mossholder & Bennett, 1997). Thus, the propensity of constant and persistent negative behavior decreases and, for example, humiliation, ridicule, or physical intimidation (Trépanier et al., 2013) are less likely to happen. While individuals who experience those types of negative behavior at work find it difficult to fulfill their relatedness need (Trépanier et al., 2013, 2015), employees who are satisfied with their team do not experience those types of behavior and have a high propensity to fulfill their need for relatedness. Hence, they are, by building on SDT, likely to report high levels of work engagement.

Finally, when employees are satisfied with their team, they are pleased with the relationships within the entrepreneurial project team and the way they are treated (Cammann et al., 1983; Shaw et al., 2011). Experiencing social support (Bowling, Beehr, Johnson, Semmer, Hendricks & Webster, 2004), for example, feeling one's well-being is cared about and receiving assistance from one's team members, has been associated with better fulfillment of the need for relatedness (Fernet, Austin, Trépanier & Dussault, 2013), which in turn results in higher work engagement as postulated in SDT. This coincides with empirical studies showing that social support positively relates to work engagement (e.g., Freeney & Fellenz, 2013; Rich et al., 2010).

In sum, we propose that team satisfaction influences employees' work engagement in entrepreneurial projects in two ways. For low levels of team satisfaction, team satisfaction will facilitate the fulfillment of the autonomy need. This negative relationship between team satisfaction and work engagement, however, turns into a positive relationship if team satisfaction reaches a certain threshold. For high team satisfaction, team satisfaction will facilitate the fulfillment of the relatedness need and the higher the team satisfaction, the more engaged employees are with their work. Thus,

> *Hypothesis 1: There is a U-shaped curvilinear relationship between team satisfaction and work engagement of employees acting in entrepreneurial projects: Work engagement decreases with increasing team satisfaction at low levels of team satisfaction, but increases at high levels of team satisfaction.*

3.2.4 Team diversity and work engagement

Next, we theorize on team diversity, a structural team aspect that accounts for the trend in organizations of employing a heterogeneous workforce to stimulate innovation (Gebert et al., 2006). In this section, we illuminate the major principles of the team diversity concept used in this chapter of this thesis by detailing on definition, level of analysis and known consequences. Subsequently, we elaborate on the relationship between team diversity and work engagement and develop hypothesis 2.

Concept of team diversity

Team diversity refers to "the distributional difference among members of a team with respect to a common attribute" (Harrison & Klein, 2007, p. 1200), such as team members' knowledge or experiences (Harrison & Klein, 2007). In this chapter, we focus on team members' distributional difference with respect to *job related attributes* and do not include less job related attributes like individuals' gender or age into the team diversity construct (Bell et al., 2011; Pelled, 1996). Recent work in the entrepreneurship literature supports this view as diversity with respect to demographic attributes, i.e., less job related, has not been found to significantly improve team effectiveness within independent ventures (Chowdhury, 2005).

Team diversity studies vary with respect to the *level of analysis*. One set of studies examined team diversity on the aggregated team level (e.g., Joshi & Roh, 2009; Stewart, 2006; Van der Vegt, Van de Vliert & Huang, 2005) while another set of studies referred to team diversity as

perceived by individuals (e.g., Avery et al., 2007; Cabrales et al., 2008). Following Chan (1998), we determine the level of analysis with respect to the theory (Gully et al., 2002; Morgeson & Hofmann, 1999) and capture team diversity as an individual level variable because we use the perceived team diversity as a predictor of individuals' work engagement. Further, we investigate team diversity as perceived team diversity because the perceived rather than the actual differences among team members prompts individual motivation and behavior (Harrison & Klein, 2007).

Scholars have devoted much attention to examining the *consequences of team diversity*, in particular the effects on team performance (Horwitz & Horwitz, 2007; Joshi & Roh, 2009). However, the results seem to be contradictory (Horwitz & Horwitz, 2007; Joshi & Roh, 2009). While some studies found highly diverse teams being more successful (e.g., Bantel & Jackson, 1989; Ely, 2004), other studies concluded that non diverse teams achieve better outcomes (e.g., Jehn et al., 1999; Leonard, Levine & Joshi, 2004). In their meta study, Horwitz and Horwitz (2007) tried to account for the competing views by using a more granular team diversity concept and a set of moderator variables, such as task complexity or team size. However, they came to no consistent results. Additionally, the subsequent study of Joshi and Roh (2009) explained the diverging prior results with contextual aspects such as industry or team types. Finally, Bell et al. (2011) found reasons for the opposite consequences of team diversity in specific demographic variables.

Given these different findings, Horwitz and Horwitz (2007) called for research investigating non linear consequences of team diversity, in particular curvilinear relationships. Following their research call, we theorize *in this chapter* in hypothesis 2 on a U-shaped relationship between team diversity and employees' work engagement in an entrepreneurial context. Specifically, we propose that employees in homogenous entrepreneurial project teams (low team diversity) are able to fulfill their need for relatedness and hence, building on SDT which links employees ability to fulfill their needs and work engagement (Deci & Ryan, 2000; Deci et al., 2001), are highly engaged with their work. Moreover, we propose that employees in heterogeneous entrepreneurial project teams (high team diversity) are able to fulfill their need for competence which, in line with SDT, leads to higher work engagement. Moderate diverse entrepreneurial project teams do not facilitate substantial need fulfillment which therefore results in lower work engagement.

Effects of low team diversity on work engagement

In the following section, we develop three arguments for a relationship between slightly diverse entrepreneurial project teams, individuals' propensity to fulfill their relatedness need and work engagement. Specifically, we propose that, for low team diversity, employees are less engaged with their work the more diverse their project team becomes.

First, entrepreneurial project teams of low diversity are characterized by high similarity among their team members. Research has shown that similarities result in mutual attraction because individuals hope to reinforce their own values through their similar counterparts (Byrne, Clore & Worchel, 1966). Therefore, individuals feel as belonging to a group and are able to fulfill their need for relatedness in less diverse entrepreneurial project teams. This is consistent with earlier studies finding a positive relationship between greater similarity and social integration (e.g., Brockman et al., 2010; O'Reilly III, Caldwell & Barnett, 1989). For instance, employees with the same skills share a common language and a common understanding (Bond & Houston, 2003) and will feel more related to each other than employees with completely different skills. Consequently, employees working in entrepreneurially acting project teams of very low diversity are likely able to fulfill their need for relatedness and, as suggested by SDT (Deci et al., 2001), are highly engaged with their work.

Second, according to Tajfel (1969) and Tajfel and Turner (1979), individuals categorize themselves into subgroups on the basis of similar attributes. Bias and negative attitudes toward members of other subgroups are likely the consequence (Joshi & Roh, 2009) while trust, communication, and cooperation within one's subgroup increase (Ely, 2004; Van Knippenberg, De Dreu & Homan, 2004). Hence, the less diverse members of one entrepreneurial project team are, the fewer subgroups will emerge, the more interpersonal relationships grow and the more likely it becomes that employees are able to fulfill their relatedness need. This theorized relationship finds support in previous work indicating an influence of social categorization on social integration (Mehra, Kilduff & Brass, 1998; Meyer & Schermuly, 2012; Van Knippenberg et al., 2004; Williams & O'Reilly III, 1998). Further, by drawing again on SDT, we argue that employees' work engagement levels are high as they are likely to fulfill their relatedness need.

Finally, if employees within an entrepreneurial project team are not diverse and very similar to each other, the risk of relationship conflicts is low (Jehn et al., 1999; Pelled, 1996). In contrast, conflicts may arise in diverse entrepreneurial project teams where, for instance, long

tenured employees work together with newcomers to an organization (Koeppel, 2011, November 11); a long tenured employee who keeps sticking to established processes may clash with short tenured team members willing to implement their fresh ideas. Consequently, the interpersonal relationships may suffer, interpersonal conflicts may occur and hamper the feeling of relatedness (Baumeister & Leary, 1995). While employees' need for relatedness is thwarted in more diverse teams, employees in teams with very little diversity are likely to be able to fulfill their need for relatedness and, as postulated by SDT, are highly engaged with their work.

Effect of high team diversity on work engagement

In line with the section above, higher team diversity leads to a lower likelihood of having employees fulfilling their relatedness need. However, if a certain threshold of team diversity is reached, team members are likely able to fulfill their competence need and are more engaged with their work. In what follows, three arguments are outlined to propose this relationship.

First, team members in diverse entrepreneurial project teams bring different cognitive abilities to teamwork (Cox & Blake, 1991; Horwitz & Horwitz, 2007) and activate new perspectives on ideas (Ely, 2004). This, in turn, was found to stimulate creativity, foster innovation and lead to higher new product performance (Bantel & Jackson, 1989; Haon, Gotteland & Fornerino, 2009) – the intended outcomes of entrepreneurial projects. Thus, as team members in diverse teams are more likely to succeed and attain desired outcomes in diverse entrepreneurial project teams, they are also more likely able to fulfill their need for competence (Deci et al., 2001) and, following SDT, show higher levels of work engagement.

Second, as team members of diverse entrepreneurial project teams cover a wide range of knowledge (Williams & O'Reilly III, 1998), they are very likely to have different opinions on a specific task. In order to reach consensus, team members are forced to thoroughly process available information, resolve conflicting issues and evaluate different courses of action (Van Knippenberg et al., 2004). Though being time consuming, this process leads to a higher decision quality (Williams & O'Reilly III, 1998). For instance, Dooley and Fryxell (1999) demonstrated that the decision quality in U. S. hospitals was higher when the decision makers voiced dissent. Experiencing increased quality of one's teamwork makes an employee in entrepreneurial projects feel successful and likely fulfills one's competence need (Gagné & Deci, 2005), which manifests again, as stated in SDT, in higher levels of work engagement.

Finally, the positive effect of an exchange with team members of different skills, experience and knowledge is not limited to higher creativity and increased innovation or higher decision quality as described before (Dooley & Fryxell, 1999; Williams & O'Reilly III, 1998). In addition, those interactions with diverse team members allow employees to be confronted with different ideas, to gain new insights on specific events (Williams & O'Reilly III, 1998), and to change interpretations of previous experiences (Fiol, 1994). Thus, diverse entrepreneurial project teams can create opportunities for individual development and alter individuals' competencies. Since employees in diverse teams are more likely able to fulfill their need for competence (Bakker & Demerouti, 2008), work engagement is therefore, following SDT, likely to be high in those teams.

In sum, we propose that the impact of team diversity on employees' work engagement in entrepreneurial contexts is two-fold. In less diverse entrepreneurially acting project teams, employees are able to fulfill their need for relatedness, which stimulates their work engagement. This negative relationship is likely to inverse into a positive relationship at a certain level of team diversity. Accordingly, in very diverse entrepreneurial project teams, employees will be able to fulfill their need for competence and, hence, engage strongly in their work. Thus,

> *Hypothesis 2: There is a U-shaped curvilinear relationship between team diversity and work engagement employees acting in entrepreneurial projects: Work engagement decreases with increasing team diversity at low levels of team diversity, but increases at high levels of team diversity.*

3.2.5 Failure normalization and moderating effect of project failure frequency

Having investigated the effects of teamwork on work engagement of employees in entrepreneurial contexts, we turn next to project failure which is another characteristic of entrepreneurially oriented organizations. In the following section, we first develop a deeper understanding of project failure for this chapter and explain why repeated project failure leads to a reduced emotional importance of project work by normalizing failure. Further, we argue that an organization's project failure frequency moderates the previously theorized relationships between team aspects and work engagement.

Concept of project failure

Entrepreneurial projects are "new ventures, new products, new services, entering new markets, and/or implementing new processes" (Shepherd & Cardon, 2009, p. 923). Since entrepreneurial projects tap new areas, the risk of *project failure, i.e., of being terminated early "due to the realization of unacceptably low performance as operationally defined by the project's key resource providers"* (Shepherd, Covin & Kuratko, 2009) is high. An example of project failure is Apple already launching tablet computers in 1993 (Paukner, 2014, September 24). Though being a huge success nowadays, the senior management back then decided to terminate the project early as the clients complained of immense technical problems and high prices (Paukner, 2014, September 24).

Literature has devoted considerable attention to *individuals' emotions following entrepreneurial failure* (Cannon & Edmondson, 2005; Shepherd & Cardon, 2009; Shepherd et al., 2013; Shepherd et al., 2011). Indeed, researchers found that project failure may prompt strong negative psychological reactions, such as grief (Shepherd, 2003; Shepherd, Covin & Kuratko, 2009), disappointment (Shepherd et al., 2011), and emotional devastation (Dillon, 1998). There are well documented reasons why individuals react to project failure with those strong emotions. First, employees who have devoted much time and energy to a specific entrepreneurial project (Shepherd et al., 2011) develop feelings of psychological ownership during project work (Pierce, Kostova & Dirks, 2001) which lead to feelings of loss and grief when the project fails (Shepherd & Cardon, 2009). Second, project failure may threaten individuals' innate desire to maintain high self esteem and being held high by others (Cannon & Edmondson, 2005). Finally, failure may have tremendous impact on an employee's career (Van der Panne et al., 2003) as mainly successes are being rewarded in many organizations, whereas failures are being punished (Cannon & Edmondson, 2005).

The negative psychological reactions induced by individuals' project failure can jeopardize project work in organizations in various ways. Specifically, researchers found that negative emotions following failure may hinder learning, which is important as project failures provide a great opportunity for learning (Cannon & Edmondson, 2001, 2005; Shepherd et al., 2011). Moreover, employees having experienced negative emotions as a consequence of failure tend to become more risk averse in subsequent projects (Lerner & Keltner, 2001; Shepherd & Cardon, 2009). Finally, negative emotions induced by project failure can also compromise

individuals' commitment to subsequent entrepreneurial projects (Shepherd, Covin & Kuratko, 2009) and to their organization (Shepherd et al., 2011).

The role of project failure in organizations which are active in entrepreneurial contexts is substantial (Shepherd et al., 2013). In fact, several studies (for an overview see Corbett et al., 2007) report an average entrepreneurial project failure rate of 25 to 40 percent. The *frequency of project failure* varies across organizations. In some organizations projects fail very often while in other organizations projects rarely fail. Three major differences across organizations – among many others (Van der Panne et al., 2003) – outline the main differences in project failure frequencies.

First, an organization's entrepreneurial orientation determines whether highly innovative, though uncertain projects are pursued (Shepherd et al., 2013). While some organizations follow an innovative strategy, position themselves as technology leader and face a higher likelihood of project failure, others stick to well established products and processes (Shepherd et al., 2013). The German car manufacturer BMW, for example, is a pioneer in electric vehicles. The organization took the risk of failure when it introduced an innovative electric car which relies on a lightweight body made of carbon fibers (Kehrer, 2013, September 17). Other, less innovative car manufacturers, however, stick to a chassis made of aluminum (Kehrer, 2013, September 17).

Second, organizations have varying management capabilities available (Shepherd et al., 2013). Some organizations are very effective in managing a project's constraints regarding schedule and budget (Sivasubramaniam et al., 2012) and in understanding external market developments (Maidique & Zirger, 1985) while others are not. According to a study by Cozijnsen, Vrakking and Van IJzerloo (2000), the management accounts for the majority of the differences between successful and non successful entrepreneurial projects. One prominent example for inadequate management capabilities is the German high speed train Transrapid (Hauck, 2014, September 24). During the thirty years of product development, other fast trains using a different technology emerged and airlines increased in importance. This changing market environment was not considered by the management of the Transrapid project, which is why the Transrapid eventually failed (Hauck, 2014, September 24).

Finally, the industry environment determines an organization's project failure frequency (Griffin, 1997). Organizations operating in hostile, uncertain or complex markets face more diffi-

culties while trying to successfully market their new products (Shepherd et al., 2013). In the pharmaceutical industry, for example, organizations deal with project failure rates (Cannon & Edmondson, 2005) that are much higher than those in the industrial goods segment (Redmond, 1995).

It is important to note that an *organization's project failure frequency* does not necessarily have to coincide with the frequency in which each *individual employee has experienced own project failures*. For example, an employee recently joining an organization may not have experienced the same frequency of entrepreneurial project failures as a long tenured employee (Shepherd et al., 2013). However, in organizations, employees likely discuss project failures in formal or informal conversations such as meetings or hallway chats (Cummings, 2004). Thus, it is likely that all employees within one organization have the same perception of that organization's project failure frequency while knowing about the strong psychological reactions associated with project failure, and a "failure climate" emerges.

Theory of failure normalization

In an organization in which employees perceive entrepreneurial project failures as happening frequently, employees might categorize project failures not as extraordinary, but as ordinary events (Ashforth & Kreiner, 2002; Shepherd, Covin & Kuratko, 2009). Thus, project failure becomes normalized (Ashforth & Kreiner, 2002). Normalization helps employees experience failure as less disruptive and problematic (Ashforth, Kreiner, Clark & Fugate, 2007). However, normalization comes with a reduced emotional importance of each single project (Shepherd, Covin & Kuratko, 2009), which is due to the tactics employees apply to normalize failure.

One tactic, a passive form (Ashforth & Kreiner, 2002; Ashforth et al., 2007) of coping with the prospect of failure, is habituation (Ashforth & Kreiner, 2002). In organizations, in which entrepreneurial project failure is frequently made a subject of discussion, employees get accustomed to those negative events and a project failure is perceived as a common occurrence (Ashforth & Kreiner, 2002). Consequently, negative emotions associated with the prospect of project failure diminish (Ashforth & Kreiner, 2002; Shepherd et al., 2011; Stephenson & Siddle, 1983). Simultaneously, the emotional importance of each single project declines (Shepherd, Covin & Kuratko, 2009).

Another tactic, a reactive form (Ashforth et al., 2007) of coping with the prospect of failure, is distancing oneself from the object which may cause negative psychological reactions (Ashforth et al., 2007; Levitin, 1964). Similar to morticians who emotionally detach themselves from the dead bodies they work with (Ashforth et al., 2007), entrepreneurial project employees may emotionally distance themselves from their projects. In doing so, morticians protect themselves from the burden of stigma associated with dirty work (Ashforth et al., 2007) and employees may protect themselves from the negative emotions in the case of project failure. At the same time, the emotional importance employees attach to each single project declines.

Effect on relationship between team aspects and work engagement

Given that the frequency of project failure within an organization impacts the way how important project work is perceived, it qualifies as a moderator of the relationship between project specific team aspects and individuals' work engagement (Shepherd et al., 2013). Next, we propose that the relationship between team satisfaction or team diversity and employees' work engagement in their current entrepreneurial project is contingent upon the frequency in which entrepreneurial projects fail within an organization. The frequency of project failure determines in particular, as we argue in the following section, the degree of failure normalization and the degree of need fulfillment, which as described by SDT determines the level of work engagement.

The relationship between *team satisfaction and work engagement* of employees in entrepreneurial projects describes a curvilinear U-shaped curve, as we have argued earlier in hypothesis 1. It is determined by employees' ability to fulfill their need for autonomy (for very low team satisfaction) and their need for relatedness (for very high team satisfaction). However, employees working in organizations, in which entrepreneurial project failures are frequently occurring and normalized, perceive their current entrepreneurial project as less important (Shepherd, Covin & Kuratko, 2009) and, thus, this project including its team is less conducive for individuals' need fulfillment. Consequently, for *low team satisfaction,* employees in frequently versus less frequently failing organizations are less able to fulfill their *need for autonomy* and have more difficulties to translate low levels of team satisfaction into high levels of work engagement. For example, in frequently – compared to less frequently – failing organizations, employees might feel less strongly relieved from external contingencies induced by their project team members, such as team norms and team expectancies, are less likely able to

fulfill their autonomy need and their work engagement is lower. Moreover, for *high team satisfaction*, employees of a frequently versus a less frequently failing organization will be less able to fulfill their *need for relatedness* and are less engaged with their work. For example, in frequently – compared to less frequently – failing organizations, employees might feel less related as their personal interactions with their team members become less personally meaningful and their work engagement will be lower.

Team diversity and work engagement of employees working in entrepreneurial projects are linked, as we have proposed in hypothesis 2, in a curvilinear U-shaped curve due to employees' ability to fulfill their need for relatedness (for very low team diversity) and their need for competence (for very high team diversity). Yet in organizations in which entrepreneurial project failures frequently occur and are normalized, employees attach less emotional importance to their current entrepreneurial project (Shepherd, Covin & Kuratko, 2009) and this project including its team plays a minor role for the individual's need fulfillment. Consequently, a high versus a low frequency of project failure within an organization will inhibit employees' fulfillment of their *need for relatedness*, which leads to lower levels of work engagement in frequently failing organizations derived from a certain level of *low team diversity*. For example, the similarity (Byrne et al., 1966) in less diverse teams will not as strongly stimulate interpersonal interactions and meaningful personal relationships in frequently versus less frequently failing organizations, which is why the sense of relatedness and work engagement is lower. Moreover, in organizations with frequent project failures compared to those with rare project failures, the fulfillment of employees' *need for competence* (Barbier et al., 2013) is thwarted and employees in organizations, in which projects frequently fail, find it harder to translate *high levels of team diversity* into high levels of work engagement. For example, in frequently – compared to less frequently – failing organizations, employees will likely underestimate the opportunity for individual development provided by highly diverse team members, feel less competent and are less engaged with their work.

Our reasoning on the moderating effect of an organization's project failure frequency is *consistent with two recent studies.* First, Shepherd and Cardon (2009) developed in a theoretical article propositions on individuals' well-being following the failure of an entrepreneurial project. They argued that individually experienced project failure thwarts the fulfillment of the need for competence, autonomy, and relatedness and thereby inhibits psychological well-being (Shepherd & Cardon, 2009). Second, this chapter is consistent with the empirical study

conducted by Vander Elst et al. (2012). The authors found that employees who perceive that their job is insecure – a high project failure frequency within an organization may be a signal for low organizational performance and insecure jobs (Balachandra et al., 1996) – face a frustration in need fulfillment, which in turn leads to lower levels of work engagement (Vander Elst et al., 2012).

In sum, employees working in organizations in which entrepreneurial projects frequently fail might normalize failure to a higher degree than employees working in organizations in which entrepreneurial projects rarely fail. Consequently, they attach less emotional importance to each single project and to each single project team. This is the reason why team aspects will be less influential for employees' need fulfillment and their work engagement in their current entrepreneurial projects. Thus,

Hypothesis 3: The frequency of project failure moderates the relationship between team satisfaction and work engagement of employees acting in entrepreneurial projects. The U-shaped curvilinear relationship between team satisfaction and work engagement becomes weaker with increasing project failure frequency in the organization.

Hypothesis 4: The frequency of project failure moderates the relationship between team diversity and work engagement of employees acting in entrepreneurial projects. The U-shaped curvilinear relationship between team diversity and work engagement becomes weaker with increasing project failure frequency in the organization.

3.3 Methodology

We test our theoretical model with a sample of employees working in entrepreneurial projects and perform hierarchical robust regression techniques using established measures. In the following, we detail on the associated methodological elements.

3.3.1 Sample

Our sample analyzes employees who are working in entrepreneurial projects in large German organizations. We used the Hoppenstedt[6] database, in which all corporate organizations in Germany are listed, as a starting point and selected large organizations with five hundred employees or more (Rosenbusch et al., 2011), since bigger organizations pursue a higher number

[6] Issued by Bisnode Deutschland GmbH.

of risky entrepreneurial projects (Corbett et al., 2007) and project failures are more likely to frequently occur. The remaining 1,050 organizations were contacted via two approaches. First, since it is costly for organizations to participate in our study, i.e., investment of up to 1.5 working hours of each participating, typically highly salaried R&D employee, we leveraged our personal networks and contacted the R&D department heads of 137 organizations. Second, we randomly contacted additional 183 organizations on this list within a time frame of 16 months. To increase the likelihood that the contacted organization pursues entrepreneurial projects and participates in our study, we focused on those organizations with a dedicated R&D manager on the executive level as R&D managers are responsible for running entrepreneurial initiatives with their departments (Kerssens-van Drongelen & Bilderbeek, 1999). In sum, we established 320 contacts to organizations pursuing entrepreneurial projects.

More precisely, we contacted these 320 organizations via phone and explained the purpose of our study. We asked for their participation and for naming employees who worked in entrepreneurial projects and, thus, were qualified to answer our survey. Further, to ensure that the organizations participating in our study provide multiple opportunities to experience project failure, we ensured in the phone calls that the organizations pursue mainly short and mid time projects lasting less than five years (exemplary project durations are displayed by Griffin, 1993). 49 organizations fulfilled the latter criterion, agreed to contribute, and participated in our study with additional team members of their R&D departments. Directly after the phone call, each contact person received an email, which reminded them to provide us with the exact names and email addresses of the participating employees. Altogether, the organizations named 558 employees assigned to entrepreneurial projects, whom we invited per email to our online survey. A maximum of three reminders stressing the importance of our study were sent to each participant at three week intervals. 438 employees in 49 organizations completed the survey which yields response rates of 78.5 percent relative to the employees invited and 15.3 percent relative to the organizations contacted.

To encourage organizations' participation, we offered an organization specific feedback package containing the study results. However, we bound the feedback package to a minimum participation rate of five employees per organization due to anonymity issues. Additionally, we offered each participating employee the possibility to win one of six Amazon vouchers for 50 euros. Full anonymity was assured to all participants.

The survey participants were on average 41.3 years (s.d. = 9.2[7]) old and have worked 10.1 years (s.d. = 8.7) for the same organization (see also Table 5). The sample consists of 63 female (14.4 percent) and 375 (85.6 percent) male employees; somewhat more than half of the participants led entrepreneurial projects (57.3 percent[7]). The participants had a variety of educational backgrounds. Of those 421 participants who have disclosed their discipline of study, 34.7 percent were mechanical engineers, 23.5 percent electrical engineers, 13.5 percent chemical engineers, 8.1 percent natural scientists and the remaining came from IT, business or other disciplines. The participants worked for organizations[8] which employed in the years 2010 to 2012 on average 55.5 thousand employees (s.d. = 79.1) and earned a mean yearly revenue of 17.4 billion euros (s.d. = 25.5), of which they invested in the mean 4.6 percent (s.d. = 3.4) in R&D activities[9]. A broad range of industry sectors was covered in our sample. 42.5 percent of the participants worked for organizations belonging to the industrial goods sector, 17.6 percent to chemicals and materials, 14.6 percent to consumer and electronics, 7.5 percent to automotive, 5.9 percent to medical, 4.1 percent to aerospace and defense, and the remaining to logistics, utilities, telecommunication or related services. The high variety in industry sectors also led to a high variety in entrepreneurial projects in terms of content, project lengths or team size. The entrepreneurial projects, to which our survey participants were currently assigned, lasted on average two and a half years, had a mean budget of 14.6 million euros (s.d. = 76.3) and employed on average 14.1 employees (s.d. = 24.1)[10].

The survey was administrated in either German or English, depending on the participants' preferences. Although our sample is drawn from organizations based in Germany, 13.5 percent of the participants wished to answer the survey in English as they were not German native speakers. To assure accuracy between both survey versions, we applied the back translation test (Brislin, 1970; Craig & Douglas, 2006). We originally designed the survey in English. As all authors of this chapter are native Germans, we translated it into German. Five bilingual doctoral students, fluent in both German and English, translated the German version back into English. Another independent post doctoral researcher, who is a native German and

[7] After mean-substitution of missing data.

[8] Displayed mean and standard deviation are calculated across all participants.

[9] R&D investment information was not disclosed for all organizations. To be consistent, employee and revenue figures shown for the reduced sample (N=399) and, thus, may slightly defer from the figures shown in Table 5.

[10] Project budget was not disclosed for all participants. To be consistent, the number of employees and project length is shown for the reduced sample (N=369) and, thus, may slightly defer from the figures shown in Table 5.

fluent English speaker, compared the original and back translated version and found no categorical, functional, and conceptual difference.

3.3.2 Measures

The survey participants were asked to answer all survey questions with respect to their entrepreneurial project to which they were currently assigned. We used established scales to measure the variables of our theoretical model. Since these variables may be confounded by variables which are not included in the theoretical model, we additionally entered control variables into the regression (consistent with McGrath, 2001). The control variables referred to individuals, to the project or team, and to the organization to account for the three reference levels of our model. We briefly summarize all measures in Table 2 and describe them in the following.

Work engagement. We measured our dependent variable work engagement using the widely spread (c. f. Halbesleben & Wheeler, 2008; Liao, Yang, Wang, Drown & Shi, 2013; Mauno et al., 2005; Menguc et al., 2013) 17 item Utrecht work engagement scale (UWES) (Schaufeli et al., 2002). The scale includes three dimensions. First, vigor was for example measured as "At my work, I feel bursting with energy". Second, dedication was for example measured as "I am enthusiastic about my job". Third, absorption was for example measured as "I get carried away when I am working". Each item was measured on a Likert scale from 1 "strongly disagree" to 7 "strongly agree". A Cronbach's alpha for the composite construct of .89 demonstrates a good reliability; the Cronbach's alphas of the three dimensions are .75 for vigor, .86 for dedication and .69 for absorption. All reliability measures are in the desired range except from the latter, which falls slightly below the accepted threshold of .7 (Hair, 2010).

Though displaying regression results for vigor, dedication, and absorption separately, we are mainly interested in work engagement as a composite construct. Therefore, we tested our hypotheses with the 17 item UWES (consistent with Bledow et al., 2011; Schmitt, Zacher & De Lange, 2013; Sonnentag et al., 2012). Further, we used the shorter nine item version of UWES for robustness checks (Bakker & Xanthopoulou, 2013; Schaufeli et al., 2006; Sonnentag et al., 2012). For this scale, we received a Cronbach's alpha of .89, indicating a high reliability.

Team satisfaction: We measured the first predictor variable team satisfaction using Shaw et al.'s (2011) four item team member satisfaction scale (consistent with Duffy, Shaw & Stark, 2000; Shaw et al., 2011; Stark & Bierly III, 2009), which is based on the global job satisfac-

tion scale published by Cammann et al. (1983). Exemplary items are "I am satisfied with the way I was treated by my team members" or "I am satisfied with the friendliness of my team members". All items were measured on a 7-point Likert scale ranging from "strongly disagree" to "strongly agree". The Cronbach's alpha is .88, indicating a high reliability (Hair, 2010).

Team diversity: We measured the second predictor variable team diversity using Cammann et al.'s (1983) two item group homogeneity scale, which refers to the diversity of backgrounds and skills and abilities. For example, we asked the participants for their assessment regarding "Members of my work group vary widely in their skills and abilities". Since recent work in the literature on corporate entrepreneurship and independent ventures found team diversity with respect to two additional attributes to be important predictors of entrepreneurial performance (e.g., Talke, Salomo & Kock, 2011; Talke, Salomo & Rost, 2010), we added two further items. First, we added one item reflecting the diversity in terms of team members' experience as research demonstrated that heterogeneous industry, functional or organizational experience within high tech startup or top management teams of innovative organizations increases the likelihood for high performance (Hayton, 2005; Talke et al., 2011). By adding this item to Cammann et al.'s (1983) two items, this three item scale reflects largely the heterogeneity scale as used by Campion, Medsker and Higgs (1993). Second, we added another item reflecting the diversity in terms of team members' seniority as recent work in the corporate entrepreneurship literature showed that this type of diversity facilitates innovation (Ferriani et al., 2009; Perretti & Negro, 2007; Talke et al., 2010) and, if present in an organization's top management team, is conducive to first mover advantages while introducing new products to the market (Srivastava & Lee, 2005). In sum, all four items reflect the task oriented diversity as outlined by Joshi & Roh, 2009 and each item was measured on a 7-point Likert scale, anchored in "strongly disagree" and "strongly agree". The scale consisting of these four items revealed a Cronbach's alpha of .69 and, thus, slightly failed to reach the threshold of .7 (Hair, 2010).

On account of this low reliability, we performed confirmatory factor analyses (CFA) to identify a scale version that best reflects the data. We found that the standardized factor loading of one item (diversity with respect to team members' backgrounds, see Appendix 1) was with .27 very low while the other items reached the cutoff of .5 (Hair, 2010). We excluded the respective item and used the three item version for testing our theoretical model while the other

scale versions are used for robustness checks. The increase in reliability to a Cronbach's alpha of .74 confirmed our approach.

Project failure frequency: We measured our moderator variable project failure frequency using one item. Specifically, we asked the participants "How frequently do projects fail at your organization?". The item was measured on a 7-point Likert scale according to which 1 illustrated "very infrequent" project failures within an organization, whereas "very frequent" project failures was manifested in a 7.

Controls referring to individual: We controlled for *age*, measured in years, and *gender* (female coded as 0, male coded as 1) as age and gender may influence an employee's work engagement (Avery et al., 2007; James et al., 2011; Mauno et al., 2005; Menguc et al., 2013; Rothbard, 2001). For example, women seem to be more engaged than men (Avery et al., 2007). Moreover, we controlled for *project experience*, which reflects the number of projects an employee has worked for because work engagement may correlate with an individual's professional experience (Avery et al., 2007). For example, prior research found evidence for a relationship between the time of working in one job and engagement (Allen, Poteet & Russell, 1998; Avery et al., 2007). Further, we included the control variable *position* as a dummy and differentiated between employees who act as project leader (coded as 1) and those who are project members (coded as 0). The reason for this control variable is that research found higher ranked employees to be more engaged (Avery et al., 2007).

Another control variable is *PANAS*, a two dimensional scale consisting of ten items referring to *positive affect* and ten items referring to *negative affect* (Watson, Clark & Tellegen, 1988) because recent work demonstrated that work engagement is sensitive to positive and negative mood (Bledow et al., 2011). Additionally, we included *team identification*, measured using the organizational identification scale of Mael and Ashforth (1992) adapted for team, and *affective commitment*, measured according to Allen and Meyer (1990). We controlled for these two variables because some authors have criticized work engagement as being confounded with identification and commitment (Macey & Schneider, 2008; Newman & Harrison, 2008).

	Variable	Number of survey items	Source of item wording in survey	Format scale	Cronbach's alpha	Share of missing data
Dependent variables	Work engagement	17	Schaufeli et al. (2002)	7-point Likert scale	.89	.000
	Work eng. short (robustn.)	9	Schaufeli et al. (2006)	7-point Likert scale	.89	.000
	Vigor	6	Schaufeli et al. (2002)	7-point Likert scale	.75	.000
	Dedication	5	Schaufeli et al. (2002)	7-point Likert scale	.86	.000
	Absorption	6	Schaufeli et al. (2002)	7-point Likert scale	.69	.000
	Vigor short (robustn.)	3	Schaufeli et al. (2006)	7-point Likert scale	.72	.000
	Dedication short (robustn.)	3	Schaufeli et al. (2006)	7-point Likert scale	.81	.000
	Absorption short (robustn..)	3	Schaufeli et al. (2006)	7-point Likert scale	.69	.000
Predictor variables	Team satisfaction	4	Cammann et al. (1983), Shaw et al. (2011)	7-point Likert scale	.88	.000
	Team diversity	3	Adapted based on Cammann et al. (1983), Talke et al. (2010), Talke et al. (2011), and others	7-point Likert scale	.74	.000
	Team diversity (robustn., A)	2	Cammann et al. (1983)	7-point Likert scale	.36	.000
	Team diversity (robustn., B)	3	Campion et al. (1993)	7-point Likert scale	.62	.000
	Team diversity (robustn., C)	4	Cammann et al. (1983) and two items derived from Talke et al. (2010), Talke et al. (2011), and others	7-point Likert scale	.69	.000
	Project failure frequency	1	New in this chapter	7-point Likert scale	n. a.	.014
Controls (individual)	Age	1	n. a.	Continuous (in years)	n. a.	.062
	Gender	1	n. a.	Dummy (0 = female; 1=male)	n. a.	.000
	Project experience	1	n. a.	Continuous (in number of projects)	n. a.	.000
	Position	1	n. a.	Dummy (0=project member; 1=project leader)	n. a.	.007
	Positive affect	10	Watson et al. (1988)	5-point Likert scale	.86	.000
	Negative affect	10	Watson et al. (1988)	5-point Likert scale	.82	.000
	Team identification	6	Mael & Ashforth (1992)	7-point Likert scale	.75	.000
	Affective commitment	8	Allen & Meyer (1990)	7-point Likert scale	.82	.000
	Time since last project failure	1	n. a.	Continuous (in weeks)	n. a.	.018
	Nationality	1	n. a.	Categorical (1=German; 2=non German, EU; 3=non EU)	n. a.	.000
Controls (project/ team)	Team size	1	n. a.	Continuous (in employees)	n. a	.005
	Project age	1	n. a.	Continuous (in months)	n. a	.082
Controls (organization)	Size of organization	Not from survey, but from annual reports and websites		Continuous (logarithm of average revenue of years 2010-2012)	n. a	.027
	Industry	Not from survey, but from annual reports and websites		Categorical (1-7, each representing different industry segments)	n. a	.000

Table 2: Overview of measures

We controlled additionally for variables which might affect employees' perception of an organization's project failure frequency. Thus, we controlled for the *time since last project failure*, measured by the weeks since employees had experienced their last project failure. This control variable accounts for the fact that the perceived frequency of an event is contingent upon the ease to which individuals remember relevant instances (Tversky & Kahneman, 1973). Moreover, we added *nationality* as a categorical control variable because the perception of success or failure varies across cultures (Chipulu, Ojiako, Gardiner et al., 2014; Cope, 2011). 1 denotes that the employees are German, 2 that they come from another EU country, and 3 refers to those employees coming from a non EU country while we established German employees as a reference against which other nationalities are assessed (Hair, 2010).

Controls referring to project or team: We included the control variable *team size*, the number of employees working together for one entrepreneurial project, because team size has been found to affect communication processes within teams (Ancona & Caldwell, 1992; Nerkar et al., 1996; Stewart, 2006) and may therefore confound the perception of relatedness. This, in turn, may influence the relationships between team satisfaction or team diversity and work engagement. Moreover, we controlled for *project age*, measured in months of project work, as project age may confound the independent variable, team satisfaction. For example, employees in long tenured teams may feel more related as they already have more opportunities to exchange with their team members, acquire personal information, and build interpersonal relationships (Harrison et al., 1998; Horwitz & Horwitz, 2007). The project age may also confound the independent variable, team diversity. For example, employees in long tenured teams may feel less related since team members may be less willing over time to solve conflicts resulting from diverse perspectives (Joshi & Roh, 2009).

Controls referring to organization: We controlled for the *size of organization*, measured by the logarithm of the average revenue (in euro, 2010-2012) because the size of an organization could affect the level of work engagement of its employees (Avery et al., 2007). An indication for this effect is given by Winkelmann (1999) who found that employees are absent from work longer in larger organization. Finally, we controlled for *industry* and accounted for the varying project failure frequencies across industries (Shepherd, Covin & Kuratko, 2009). We used a set of seven dummy variables, of which six dummies represent specific industry segments (industrial goods, automotive, chemicals and materials, consumer and electronics, aerospace and defense, medical industry) and one dummy represents the remaining industries. The

latter served as a reference, based on which the other six specific industry segments were assessed. Data to measure the size of an organization and the industry stems from the organizations' annual reports and websites.

Our data set included *missing data*. First, variables measured with survey items contained missing data as we allowed some questions (age, position, time since last project failure, project age, team size and project failure frequency) to be answered voluntarily. In doing so, we allowed employees to participate in our study even if they had doubts that the survey is administrated anonymously and responses cannot be traced back to the organization or to the participant. Nonetheless, few participants refrained from giving an answer and a maximum of 8.2 percent (for project age) of missing data was generated. Second, missing data was present for the variable size of organization (2.7 percent) because three organizations did not publicly disclose organizational information. Since the share of missing data was below ten percent for each variable, we replaced the missing data with the respective variables' means (Hair, 2010). Thus, the sample size remains at 438 observations.

Seven variables, thereof the dependent and independent variables, are measured with a set of three items or more. We combined the items to one single measure by averaging their score and, thus, created *summated scales* (Hair, 2010). This procedure allowed capturing the complex concepts in this study with one single measure (Hair, 2010). Moreover, using average scores rather than single items, reduced the reliance on single responses and, hence, the dependency on measurement errors occurring in those single responses which are always present when the observed value is not equal to the actual value of an item (Hair, 2010).

3.3.3 Hierarchical regression analysis and regression equations

We tested the theoretical model in several steps using hierarchical regression analysis, which is appropriate as we included potentially correlated independent variables and interaction terms in the regression model (Cohen, Cohen, West & Aiken, 2002; Shepherd et al., 2011). Hierarchical regression is a regression procedure according to which groups of variables are "entered cumulatively in a prespecified sequence" (Cohen et al., 2002, p. 158). We started with a base model that includes control variables and predictor – independent and moderator – variables and proceeded with the tests for U-shape (curvilinear models) and moderation (interaction models). Finally, we concluded with a full model that contains all effects.

The *base model* draws upon the classical regression model which establishes a linear link between the dependent variable Y and the independent variables X_1 and X_2. This equation may be written as follows (Jaccard & Turrisi, 2003; Wooldridge, 2003):

$$Y = a + b_1X_1 + b_2X_2 + e \quad \text{(E1)}$$

Using an estimation technique, the constant term a and the coefficients b_1 and b_2 are estimated (Wooldridge, 2010). The error term e accounts for the unobservable – not X_1 and X_2 specific – influences on Y (Wooldridge, 2010).

The *curvilinear models* account for our first two hypotheses, a U-shape of team satisfaction in hypothesis 1 and a U-shape of team formation in hypothesis 2. U-shape effects are non linear and require an estimation equation, in which the independent variable is included with a quadratic term (Aiken & West, 1991). The regression equation with the independent variable X is displayed in its simplest form below (Aiken & West, 1991; Jaccard & Turrisi, 2003):

$$Y = a + b_1X + b_2X^2 + e \quad \text{(E2)}$$

The *interaction models* point to hypothesis 3 and hypothesis 4, according to which we predict a different form of the U-shape for different values of the variable project failure frequency. This so called moderation or interaction (Jaccard & Turrisi, 2003) effect is represented by the following equation, in which X is the independent variable and Z is the moderator variable (Aiken & West, 1991; Jaccard & Turrisi, 2003):

$$Y = a + b_1X + b_2Z + b_3X^2 + b_4XZ + b_5X^2Z + e \quad \text{(E3)}$$

The *full model* combines all previous models and is described, as before, by the equation E3.

3.3.4 Estimation technique

To estimate the regression models, we relied on a derivation of the frequently used ordinary least squares (OLS) technique. OLS predicts the dependent variable for each observation (Hair, 2010) and the "estimation procedure sets the weights of the regression variate to minimize the residuals (e.g., minimizing the differences between predicted and actual values of the dependent variable)" (Hair, 2010, p. 198). Prior to using OLS, two concerns – non homoskedastic and non normal data – need to be considered.

One concern refers to *non homoskedastic data* which leads to inefficient OLS results and calls for an adaption of the estimation technique (Wooldridge, 2003). The assumption of homoskedasticity has to be rejected if the variance of the dependent variable is not constant across different levels of the predicting variables (Hair, 2010). Or differently stated, the errors depend on the independent variable (Cameron & Trivedi, 2010). We performed two tests[11] to detect potential heteroskedasticity in the data. According to the Breusch-Pagan/Cook-Weisberg test, the data is likely to be heteroskedastic (χ^2 (1) = 35.70, p > χ^2 = .000) (Wooldridge, 2003). However, the White test provided evidence for homoskedastic data (χ^2 (411) = 420.14, p = .37) (Wooldridge, 2003). Since many predictors are involved in our regression model and the White test may fall short (Wooldridge, 2003) we assume the more conservative case of heteroskedastic data (Cohen et al., 2002).

A remedy for heteroskedastic data is provided by OLS robust regression techniques (Wooldridge, 2003). We used the popular sandwich estimator (Kauermann & Carroll, 2001) – introduced by Huber (1967), White (1980) and Eicker (1967) – which calculates robust standard errors. Compared to OLS results, this leads to an adaptation in p-values and confidence intervals while coefficient estimates remain unchanged (Baum, 2006). The robust estimator assumes that the observations are independent. However, this independence assumption may not be true for our sample since our sample comprises several observations per organization. Thus, we applied the cluster option of the robust estimator, clustered by organization. In doing so, we account for potentially correlated errors within the organization and assume that errors between organizations remain uncorrelated (Baum, 2006; Cameron & Trivedi, 2010).

Another concern about the credibility of the estimation results may be raised by *non normal data* because it may affect statistical tests (Hair, 2010). Therefore, we investigated the skewness and kurtosis of all variables which are displayed in Table 3. Four of the control variables and one predictor variable, team satisfaction, were found to deviate from the normal distribution since they exceeded the skewness threshold of -2 to 2 and/or kurtosis threshold of 1 to 5 (thresholds[12] used for example by Shepherd et al., 2011). Yet nonnormality may only create serious problems if the sample size is small (Hair, 2010). Our sample of 438 observations is

[11] Performed after non-robust estimation of model 8 in Table 7.

[12] Kurtosis calculated in STATA 13 with optimal value of 3 according to D'Agostino, Belanger and D'Agostino Jr. (1990); thus, adaption of threshold for kurtosis of -2 to 2.

large as it outnumbers the recommended ratio of ten observations per variable (Hair, 2010). Hence, the observed deviations from the normality distribution are not an issue.

Variable	Skewness	Kurtosis
Threshold	-2 to 2	1 to 5
Controls referring to individual		
Age	.387	2.510
Project experience	4.365	24.980
Positive affect	-.292	3.197
Negative affect	1.139	4.021
Team identification	-.454	3.173
Affective commitment	-.294	2.837
Time since last project failure	2.870	11.756
Controls referring to project or team		
Team size	6.886	65.388
Project age	2.837	15.724
Controls referring to organization		
Size of organization	-.372	2.358
Predictors		
Team satisfaction	-1.769	7.222
Team diversity	-.331	2.806
Project failure frequency	.699	2.648
Dependent variables		
Work engagement (17 item version)	-.377	3.636
Vigor (17 item version)	-.386	3.775
Dedication (17 item version)	-.965	4.542
Absorption (17 item version)	-.258	3.027
Work engagement (9 item version)	-.448	3.468
Vigor (9 item version)	-.436	3.466
Dedication (9 item version)	-.862	4.068
Absorption (9 item version)	-.332	3.161

Note: Calculated with STATA 13; dummy variables and categorical variables not displayed

Table 3: Overview of skewness and kurtosis

3.3.5 Common method bias

Prior to estimating the theoretical model, we examined whether the independent and dependent variables are threatened by a common method variance. Common method variance refers to the variance that accounts for the measurement method and is not attributable to the constructs (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). There is a potential for having a common method bias in our data set because we measured the independent and dependent variable with self reported data from single survey participants (Spector, 2006; Williams, Cote & Buckley, 1989).

We performed CFAs to estimate the impact of common method variance in a three step approach (consistent with Breugst, Domurath, Patzelt & Klaukien, 2012; Podsakoff et al., 2003). First, we ran an analysis for the so called *trait model*, where all items of our two independent variables, team satisfaction and team diversity, and of our dependent variable, work engagement, loaded on their respective constructs and the constructs were allowed to correlate (Williams et al., 1989). All item loadings were significant ($p < .01$. loadings on respective construct from .14 to .87[13]). The goodness of fit indices RMSEA at .062 and SRMR at .054 indicated a good fit (Hu & Bentler, 1999; Steenkamp & Baumgartner, 1998); similarly, the two indices CFI and TLI are very close to the acceptable level of .9 or above (Steenkamp & Baumgartner, 1998). The significant χ^2, which points to a poor model fit, is not much of a concern due to its sensitivity to sample size (Hu & Bentler, 1999). Table 4 summarizes the CFA results.

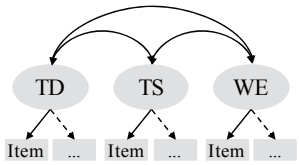
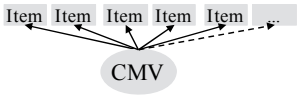
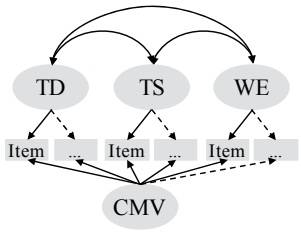
We built a second model, the *method model* (Williams et al., 1989), and we introduced a theoretical construct "common method variance". All items of team satisfaction, team diversity and work engagement loaded on this construct. The goodness of fit results are poorer compared to those of model 1. Hence, the items are not likely to represent just one single underlying construct such as a common method. Nevertheless, common method variance may still be prevalent within the data.

Thus, we established a third model, the combination of the *trait and the method model* (Williams et al., 1989). Here, all items loaded on their respective construct and, again, the constructs of our theoretical model were allowed to correlate (Podsakoff et al., 2003). Moreover, all items loaded on a theoretical construct "common method variance" to bundle the influence of our measurement method – the self reported survey – on the items. Despite an improvement of all four goodness of fit indices relative to the first trait model, the theoretical construct's variance of .000 (95 % confidence interval from .000 to .011) suggested that our measures are most likely not biased by our method.

For robustness purposes, we also tested for common method bias using the nine item version of UWES. The results with respect to goodness of fit (see Table 4) and variance (Variance =

[13] Six items fell below the suggested threshold of .5 Hair (2010). For the shortened work engagement scale with nine items, which is used for robustness checks, only one item ranges with a loading of .40 below the acceptable limit.

.000, 95 % confidence interval from .000 to .000) mirror the results described before. In sum, the tests indicate that common method variance was not a major concern in our model.

	Step 1: Trait model	**Step 2: Method model**	**Step 3: Trait and method model**
			
Results for 17 item version of UWES			
χ^2 (degr. of freedom)	671.86 (249) p < .001	1882.68 (253) p < .001	493.63 (229) p < .001
RMSEA	.062	.122	.051
CFI	.899	.610	.937
TLI	.888	.575	.924
SRMR	.054	.109	.041
Results for nine item version of UWES			
χ^2 (degr. of freedom)	201.86 (101) p < .001	1534.08 (105) p < .001	151.71 (88) p < .001
RMSEA	.048	.176	.041
CFI	.967	.532	.979
TLI	.961	.465	.972
SRMR	.037	.171	.032

N=438; Errors not displayed in illustration of measurement models
Thresholds for good fit: χ^2 = not significant; RMSEA, SRMR < .08; CFI/TLI > .9
TD = Team diversity; TS = Team satisfaction; WE = Work engagement; CMV = Common method variance

Table 4: Approach and results of common method bias assessment

3.4 Results

In what follows, we elaborate on the regression estimates in detail and provide an illustration of the effects after having clarified that multicollinearity is not an issue in this study.

Multicollinearity

Table 5 shows the mean values, standard deviations and correlations of all variables. Work engagement is significantly linked to the predictor variables team satisfaction and project failure frequency, but not to team diversity. Moreover, significant relationships exist between work engagement and many control variables, which supports their inclusion into the model. Both independent variables and a set of control variables such as positive and negative effect, affective commitment or team identification correlate significantly with each other. This may raise concerns of multicollinearity.

	Mean	s.d.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. Age	41.29	9.20															
2. Gender[1]	.86	.35	.12**														
3. Project experience	14.81	25.85	.22***	.05													
4. Position[2]	.57	.50	.19***	.07	.13**												
5. Positive affect	3.51	.62	.04	.13**	.05	.15***											
6. Negative affect	1.88	.59	-.03	-.03	-.05	.10*	-.39***										
7. Team identification	5.23	.95	-.06	.09	.00	.19***	.30***	-.04									
8. Affective commitment	4.56	1.01	.09	.06	.05	.16***	.39***	-.20***	.22***								
9. Time since last project failure	15.65	33.05	.21***	.05	.08	.05	.05	.05	.04	.00							
10. Team size	15.05	24.48	.02	.07	-.04	-.06	.00	.04	.02	-.08	.05						
11. Project age	17.11	18.29	.07	.03	-.09	.03	.04	-.03	-.07	-.01	-.05	.16***					
12. Size of organization	8.46	1.83	.03	.13**	-.07	-.12**	.06	-.03	.00	-.09*	.04	.18***	.15***				
13. Team satisfaction	6.05	.96	-.06	.08	-.02	-.01	.37***	-.37***	.33***	.25***	.00	.01	.06	-.03			
14. Team diversity	4.58	1.24	-.07	-.01	-.04	.08	-.06	.20***	.01	-.07	.02	.09*	.08	.05	-.15***		
15. Project failure frequency	2.54	1.37	-.09	.03	.04	.18***	-.05	.11*	-.06	-.17***	.13**	-.03	.00	-.02	-.16***	.11*	
16. Work engagement	5.24	.74	.06	.12**	-.02	.11*	.54***	-.29***	.26***	.47***	-.03	.00	.04	.08	.21***	.06	-.13**

N=438; * p < .05; ** p < .01; *** p < .001; (1) Gender: 0 = female, 1= male; (2) Position: 0 = project member, 1= project leader;
Categorical control variables Nationality and Industry not shown; missing data replaced by variables' means

Table 5: Descriptive statistics and correlations of the variables

Therefore, we calculated variance inflation factors (VIF) which are displayed in Table 6. The VIF is the inverse of the tolerance value, "the amount of variability of the selected independent variable not explained by the other independent variables" (Hair, 2010, p. 201). The higher the value of the VIF, the more variability is explained by other independent variables and the more likely multicollinearity is present (Hair, 2010). Special caution needs to be applied when interpreting the VIF of variables, whose quadratic term is included in the regression or which go into an interaction effect (Brambor, Clark & Golder, 2006). In these cases, VIFs are high because they contain non essential collinearity due to scaling (Dalal & Zickar, 2012). A remedy to this problem is provided by mean centering of the respective variables (Cohen et al., 2002) which removes non essential collinearity and, consequently, VIFs display merely the essential collinearity (Dalal & Zickar, 2012). For the sake of displaying VIFs, which are not confounded with non essential collinearity, we estimated all regression models after having mean centered team satisfaction, team diversity, and project failure frequency. The maximum VIF across all regression models is with 4.6 far below the suggested threshold of 10 (Cohen et al., 2002; Hair, 2010). Thus, multicollinearity is very unlikely in our model.

Mean centering of variables does not change the *conclusions* drawn from regression analyses in which variables are not mean centered. Yet the *way how to interpret* regression coefficients is different and specific caution needs to be applied when calculating interaction effects (Dalal & Zickar, 2012). While the highest order regression coefficient in an interaction model is identical across mean centered and uncentered regressions, the lower order regression coefficients diverge (Dalal & Zickar, 2012) and have a "different substantive meaning" (Echambadi & Hess, 2007, p. 443). In mean centered models, the coefficients identify the "effects of each variable when the other variables are at their mean values" (Echambadi & Hess, 2007, p. 442-443). Differently in uncentered models, the coefficients show the "effects of each variable when the other variables are at zero" (Echambadi & Hess, 2007, p. 442). Since the latter represents established customs in interpreting regressions results, we use uncentered variables for our further analyses (as in Bacharach, Bamberger and Vashdi (2005), Block, De Vries, Schumann and Sandner (2014), and others).

Variable	VIF	1/VIF
Controls referring to individual		
Age	1.36	.74
Gender	1.14	.88
Project experience	1.16	.86
Position	1.40	.71
Positive affect	1.59	.63
Negative affect	1.42	.71
Team identification	1.31	.76
Affective commitment	1.37	.73
Time since last project failure	1.15	.87
EU, non German	1.24	.81
Non EU	1.17	.85
Controls referring to project or team		
Team size	1.20	.83
Project age	1.21	.83
Controls referring to organization		
Size of organization	1.31	.76
Industrial goods	4.60	.22
Automotive	2.11	.47
Chemicals and materials	3.13	.32
Consumer and electronics	3.04	.33
Aerospace and defense	1.92	.52
Medical industry	2.01	.50
Predictors		
Team satisfaction	2.53	.39
Team diversity	1.22	.82
Project failure frequency	2.21	.45
Team satisfaction squared	2.79	.36
Team diversity squared	1.23	.81
Team satisfaction X Project failure frequency	2.81	.36
Team satisfaction squared X Project failure frequency	3.80	.26
Team diversity X Project failure frequency	1.14	.87
Team diversity squared X Project failure frequency	1.89	.53

Note: VIFs for Model 8; all variables mean centered except from dummy variables, categorical variables and dependent variable

Table 6: Variance inflation factors for full work engagement model

Effects of predictor variables

Table 7 demonstrates the regression results produced with OLS cluster robust estimation techniques. The dependent variable for all models is work engagement. We began with estimating the effects of the control variables (model 1) which account for a substantial amount of variance (R-squared = .415). We continued with including the independent variables team satisfaction, team diversity, and the moderating variable project failure frequency (model 2).

They explain additional variance and the increase is significant as Wald statistics demonstrate (ΔR-squared = .019, $p < .05$). Interestingly, we find a significant main effect of team diversity on work engagement ($b = .073$, $p < .01$), which we have not hypothesized. Team satisfaction and project failure frequency show small negative, though not significant, main effects.

Hypothesis 1 predicts a U-shaped relationship between team satisfaction and work engagement. To test this relationship, we added the quadratic term of team satisfaction in the next step (model 3). A significant and positive coefficient of this quadratic team satisfaction variable ($b = .068$, $p < .01$) shows support for hypothesis 1. According to Cohen et al. (2002) the hypothesis of a curvilinear effect may only be accepted if the difference between the models is significant. This is the reason why we used a Wald test to compare Model 3 with Model 2, which refers to the main effects. The Wald test results reveal a significant difference between the models, suggesting a curvilinear relationship. The increase in variance explained provides further support for this proposition (ΔR-squared = .021, $p < .01$).

Hypothesis 2 states that the relationship between team diversity and work engagement describes a U-shaped curve. As before, we therefore added the quadratic term of team diversity to the base model and estimated another regression (model 4). We find support for hypothesis 2 in the results. First, the coefficient of the quadratic term is positive and marginally significant ($b = .035$, $p < .1$). Second, the explained variance increases relative to model 2 and Wald test results suggest that the difference between both models is significant (ΔR-squared = .009, $p < .1$).

Additional support for hypothesis 1 and hypothesis 2 stems from the subsequent model (model 5) which includes the quadratic terms of team satisfaction and team diversity. Both quadratic terms are significant (team satisfaction: $b = .065$, $p < .01$; team diversity: $b = .032$, $p < .1$). Moreover, the R-squared of model 5 is significantly higher than the main effects representing model 2 (ΔR-squared = .028, $p < .01$).

	Base models		Curvilinear models			Interaction models		Full model
Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Controls referring to individuals								
Age	.005	.005	.003	.004	.003	.003	.005	.003
Gender[1]	.083	.100	.099	.109	.107	.122	.099	.117
Project experience	-.002	-.002	-.001	-.002	-.002	-.001	-.002+	-.001
Position[2]	-.007	-.011	-.014	-.012	-.015	-.027	-.008	-.023
Positive affect	.426***	.438***	.434***	.436***	.432***	.426***	.437***	.427***
Negative affect	-.106	-.147	-.139	-.153	-.145	-.142	-.161	-.153
Team identification	.068	.072+	.084*	.073+	.085*	.080*	.081*	.087*
Affect. commitment	.222***	.218***	.212***	.222***	.216***	.223***	.216***	.221***
Time since failure[3]	-.002	-.001	-.001	-.001	-.001	-.001	-.001	-.001
EU, non German	-.093+	-.109*	-.133*	-.116*	-.139*	-.110+	-.111*	-.112*
Non EU	-.010	-.013	-.004	-.031	-.020	.014	-.004	.018
Controls referring to project or team								
Team size	.001	.001	.001	.001	.001	.001	.001	.001
Project age	.001	.001	.001	.001	.001	.001	.001	.001
Controls referring to organization								
Size of organization	.020	.014	.008	.015	.009	.008	.010	.005
Industrial goods	-.210+	-.224+	-.179+	-.185+	-.146	-.161+	-.205+	-.156
Automotive	-.228	-.210	-.164	-.192	-.150	-.139	-.200	-.140
Chemicals/ materials	-.232+	-.216+	-.178+	-.190+	-.156	-.170+	-.219*	-.179+
Consumer/electronics	-.286*	-.292**	-.246*	-.253*	-.212*	-.229*	-.283**	-.229*
Aerospace/defense	-.531**	-.525**	-.446**	-.499**	-.426**	-.408**	-.541**	-.434**
Medical industry	-.288*	-.358**	-.307**	-.324**	-.279**	-.256**	-.329**	-.244*
Predictors								
Team satisfaction		-.042	-.750**	-.044	-.722**	-2.064***	-.048+	-1.849***
Team diversity		.073**	.075***	-.236	-.202	.076***	-.803**	-.602*
PFF[4]		-.040	-.045+	-.038	-.042+	-1.038**	-.627*	-1.396***
Team satisfaction sq.			.068**		.065**	.190***		.169***
Team diversity sq.				.035+	.032+		.095**	.072*
Team satisfaction X PFF						.402**		.352*
Team satisfaction sq. X PFF						-.038**		-.033*
Team diversity X PFF							.262+	.209
Team diversity sq. X PFF							-.027+	-.021
Model estimation results								
R-squared	.415	.434	.455	.443	.462	.469	.454	.481
Comparison to	-	Model 1	Model 2	Model 2	Model 2	Model 3	Model 4	Model 5
ΔR-squared	-	.019	.021	.009	.028	.014	.011	.019
Wald test (p-value)	-	.018	.004	.072	.009	.011	.080	.004

N=438; + p < .1; * p < .05; ** p < .01; *** p < .001; dependent variable (DV) = work engagement (17 items)
sq. = squared; (1) Gender: 0 = female, 1= male; (2) Position: 0 = project member, 1= project leader; (3) Time since last project failure; (4) PFF = Project failure frequency
Note: Constant term not displayed; results derived from robust regression, clustered by organizations

Table 7: Results of hypotheses testing

In hypothesis 3, we propose that project failure frequency moderates the curvilinear relationship of team satisfaction and work engagement of employees assigned to entrepreneurial projects. Further, we propose that the U-shape is stronger if the project failure frequency is low rather than high. The next model (model 6) provides evidence for this proposition by additionally including an interaction term to the variables included in model 3[14]. The interaction term between project failure frequency and squared team satisfaction is negative and significant ($b = -.038$, $p < .01$). As before, the explained variance and Wald statistics show that model 6 manifests in a significant improvement relative to the corresponding curvilinear model 3 (ΔR-squared = .014, $p < .05$).

Hypothesis 4 predicts a negative moderating effect of project failure frequency on the curvilinear relationship between team diversity and work engagement of employees acting in entrepreneurial projects. Or differently stated, the U-shape is stronger if projects fail less frequently. Thus, we included an interaction term additionally to the variables in model 4 (model 7). The interaction term's coefficient is negative and marginally significant ($b = -.027$, $p < .1$). Model 7 explains a higher share of variance than the curvilinear model 4, which provides some support for our hypothesis (ΔR-squared = .011, $p < .1$).

The previously described models do not fully represent our theoretical model since some variables are missing in each of these models. Therefore, we built a full model including all variables (model 8) and tested all hypotheses simultaneously. The amount of variance explained by the final model 8 is 48.1 percent, suggesting a very good model fit. Moreover, model 8 is significantly better than model 5 ($p < .01$) and all other previous models ($p < .05$) as the Wald tests demonstrated. The regression results affirm largely the conclusions drawn from the previous models. First, we support hypothesis 1 – a U-shaped relationship between team satisfaction and work engagement – due to a positive and significant coefficient of the quadratic team satisfaction variable ($b = .169$, $p < .001$). Second, we support hypothesis 2 – a U-shaped relationship between team diversity and work engagement – due to a positive and significant coefficient of the quadratic team diversity variable ($b = .072$, $p < .05$). Third, we support hypothesis 3 – negative moderating effect on U-shaped relationship between team satisfaction and work engagement – due to a negative and significant interaction term between the quadratic team satisfaction variable and project failure frequency ($b = -.033$, $p < .05$). However, we

[14] If a higher-order term is included in a regression model, all lower-order terms need to be included as well. This is here the quadratic term of team satisfaction and the interaction between project failure frequency and the linear term of team satisfaction. See also equation E3.

do not find support for hypothesis 4 stating a moderation effect of project failure frequency on the curvilinear relationship between team diversity and work engagement.

Further support for the U-shaped relationships stems from two additional analyses. First, the linear terms of team satisfaction and team diversity in curvilinear models represent the tangential lines if all other variables are zero or differently stated, they represent the slope at the intercept of the y-axis (Cohen et al., 2002). As both terms are negative in model 5 as well as in model 8, a U-shape is supported. Second, statistical tests on the prevalence of U-shaped curves as proposed by Lind and Mehlum (2010)[15] provide additional empirical evidence for an upright U-shaped curve between team satisfaction and work engagement ($p < .01$) and for an upright U-shaped curve between team diversity and work engagement ($p < .05$).

We illustrate the regression results in Figure 4 and in Figure 5. Figure 4 shows that the relationship between team satisfaction and work engagement describes a U-shape (dotted line, hypothesis 1). The minimum and turning point is at 5.475 (95% CI = 5.063 - 6.115). Additionally, two U-shaped curves are displayed – one narrower curve for low project failure frequency (below the median) and one wider curve for high project failure frequency (above the median), which illustrate the moderating effect of an organization's project failure frequency (hypothesis 3). Further, it is interesting that work engagement has different levels at the extremes of team satisfaction; employees being very unsatisfied with their team members in their current entrepreneurial projects report higher work engagement levels than those being very satisfied with their team.

Figure 5 depicts the effect of team diversity on work engagement. The relationship describes a weak U-shape (dotted line, hypothesis 2) with the minimum and turning point at 4.169 (95% CI = 2.402 - 4.646). The U-shape becomes more evident the less frequently projects fail within an organization. When projects fail very often, team diversity and work engagement are positively linked. However, the interaction effect of an organization's project failure frequency (hypothesis 4) found mixed support and the two curves for high (above the median) and low (below the median) project failure frequency are different from each other with weak significance.

[15] Used in user written STATA 13 (post) command "utest"; command applied after calculation of Model 8.

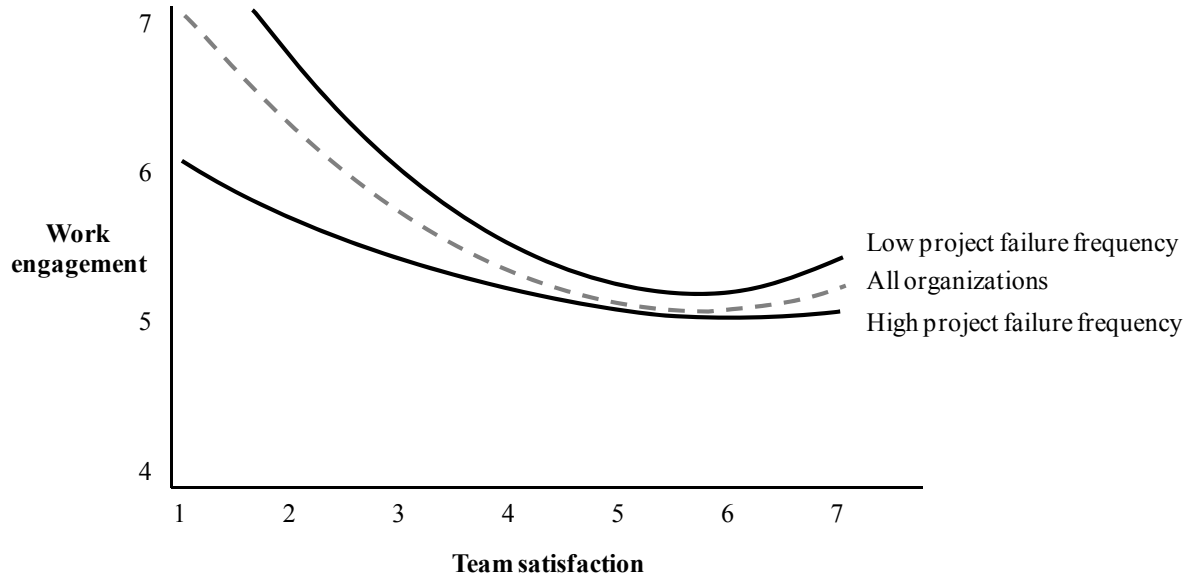


Figure 4: Curvilinear relationship between team satisfaction and work engagement and interaction effect of project failure frequency

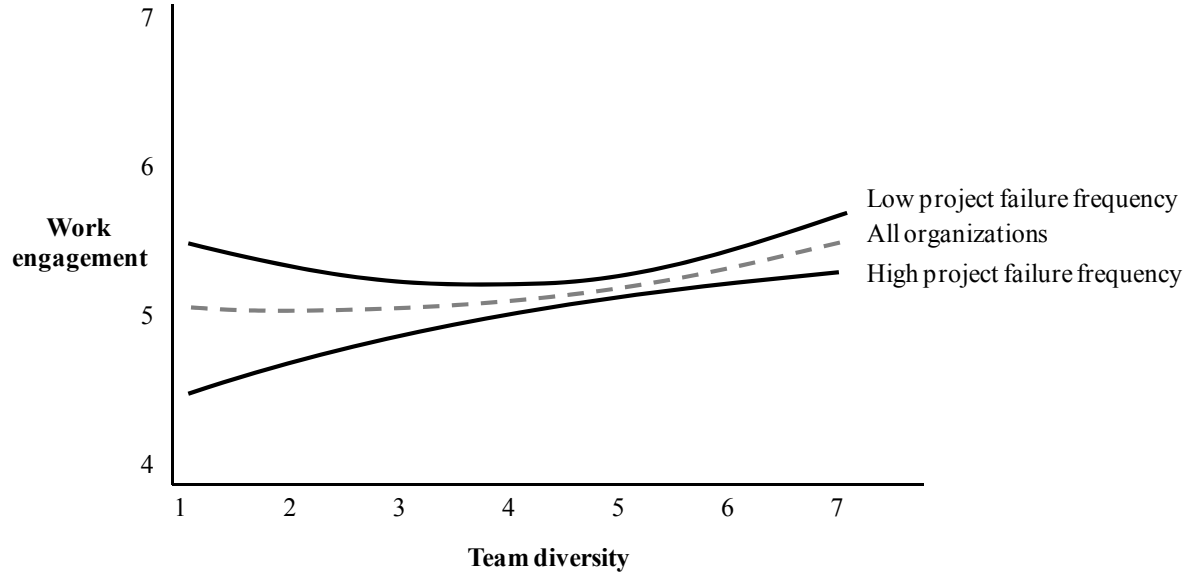


Figure 5: Curvilinear relationship between team diversity and work engagement and interaction effect of project failure frequency

Effects of control variables

Control variables influence the dependent variable in various ways. For the individual control variables age ($b = .003$, $p > .1$), position ($b = -.023$, $p > .1$), and project experience ($b = -.001$, $p > .1$), we found very low coefficient estimates and no significant influence on work engagement. The impact of gender is also not significant while the coefficient is higher

(b = .117, p > .1). As already found in previous empirical work (Bledow et al., 2011), a positive mood of the respondents – measured with positive affect – highly influences work engagement ratings (b = .427, p < .001). Negative mood – measured with negative affect – is negatively, however not significantly (b = -.153, p > .1), linked to work engagement. Given the positive significant impact of team identification (b = .087, p < .05) and affective commitment (b = .221, p < .001) on the dependent variable, we support previous researchers (Bakker & Albrecht et al., 2011b; Macey & Schneider, 2008) in their call for a strong correlation between the variables. The time since last project failure has – contrary to our expectations – a negative, albeit very little and nonsignificant effect (b = -.001, p > .1). Nationality seems to have little impact on work engagement; employees from other countries in the EU are significantly less engaged than German employees (b = -.112, p < .05). This finding most likely stems from our sample of organizations based in Germany, in which non German employees may have more difficulties to fulfill their need for relatedness than German employees. With respect to controls referring to the project or the team and to the organization, we do not find any significant influence on work engagement – except from the industry sector. Here, employees from different industry segments demonstrate significantly different work engagement levels. Different employment conditions (e.g., permanent vs. temporary contracts) or different types of entrepreneurial tasks (e.g., engine vs. windscreen wiper development) may be a reason (Christian et al., 2011; Mauno et al., 2005).

Robustness checks with different scale versions of team diversity

We conducted robustness checks to rule out the risk that the regression results and hypotheses support depend on how we measured team diversity. Table 8 provides a summary and displays again the regression results for Model 4, Model 7, and Model 8 (as in Table 7) which lead to a (mixed) support of hypothesis 2, stating a curvilinear relationship between team diversity and work engagement, and hypothesis 4, the interaction effects with the frequency of project failure. In addition, the table includes the regression results by measuring team diversity with Cammann et al.'s (1983) two item scale (Version A) which reveals a low Cronbach's alpha of .36, with a slight adaption of Campion et al.'s (1993) three item scale (Version B) which reveals a Cronbach's alpha of .62, and with the four item scale (Cammann et al.'s (1983) two items with two additional items – basis for main scale version of team diversity as used in this chapter) which reveals a Cronbach's alpha of .69. In sum, we find mixed statistical support for hypothesis 2 and marginal to strong statistical support for hypothesis 4 indicating mainly robust regression results across different measurements of team diversity.

	Team diversity: Main version α = .74; 3 items as in main model			**Team diversity: A version** α = .36; 2 items of Cammann et al. (1983)			**Team diversity: B version** α = .62; 3 items as in Campion et al. (1993)			**Team diversity: C version** α = .69; 4 items, i.e., Cammann et al.'s (1983) 2 items + 2 new items)		
Variable	Model 4	Model 7	Model 8	Model 4A	Model 7A	Model 8A	Model 4B	Model 7B	Model 8B	Model 4C	Model 7C	Model 8C
Controls												
Age	.004	.005	.003	.004	.004	.002	.004	.005	.003	.004	.004	.002
Gender[1]	.109	.099	.117	.104	.100	.119	.103	.096	.113	.114	.106	.122
Project experience	-.002	-.002+	-.001	-.002	-.002	-.001	-.001	-.001	-.001	-.002	-.002+	-.001
Position[2]	-.012	-.008	-.023	-.009	-.003	-.021	-.011	-.006	-.023	-.013	-.002	-.020
Positive affect	.436***	.437***	.427***	.435***	.440***	.429***	.438***	.442***	.432***	.432***	.435***	.424***
Negative affect	-.153	-.161	-.153	-.131	-.131	-.123	-.135	-.140	-.132	-.142	-.147	-.140
Team identification	.073+	.081*	.087*	.070+	.066+	.075+	.070+	.071+	.079+	.070+	.073+	.080*
Affect. commitment	.222***	.216***	.221***	.220***	.216***	.222***	.218***	.208***	.213***	.222***	.215***	.220***
Time since failure[3]	-.001	-.001	-.001	-.001	-.001	-.001	-.001	-.001	-.001	-.001	-.001	-.001
EU, non German	-.116*	-.111*	-.112*	-.099+	-.102+	-.097	-.100+	-.093+	-.092	-.109*	-.107*	-.106+
Non EU	-.031	-.004	.018	.006	.029	.058	.002	.025	.053	-.016	.011	.036
Team size	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001
Project age	.001	.001	.001	.001	.001	.001	.001	.001	.002	.001	.001	.001
Size of organization	.015	.010	.005	.017	.015	.010	.017	.012	.006	.015	.011	.006
Industrial goods	-.185+	-.205+	-.156	-.223+	-.213+	-.160+	-.223+	-.222+	-.172+	-.202+	-.212+	-.165+
Automotive	-.192	-.200	-.140	-.232	-.210	-.150	-.218	-.190	-.133	-.196	-.192	-.140
Chemicals and materials	-.190+	-.219*	-.179+	-.210+	-.204+	-.164	-.207+	-.202+	-.165+	-.198+	-.213*	-.177+
Consumer and electronics	-.253*	-.283**	-.229*	-.284*	-.256*	-.209*	-.285*	-.277*	-.231*	-.259*	-.262*	-.217*
Aerospace and defense	-.499**	-.541**	-.434**	-.530**	-.541**	-.423**	-.524**	-.561**	-.448**	-.518**	-.562**	-.453**
Medical industry	-.324**	-.329**	-.244*	-.336*	-.327*	-.234*	-.349**	-.333*	-.249*	-.347**	-.341**	-.256**
Predictors												
Team satisfaction	-.044	-.048+	-1.849***	-.043	-.045	-2.015***	-.042	-.049+	-1.953***	-.042	-.049+	-1.888***
Team diversity	-.236	-.803**	-.602*	.068	-.510*	-.306	.085	-.936*	-.696+	-.151	-.999*	-.695+
PFF[4]	-.038	-.627*	-1.396***	-.039	-.606*	-1.454***	-.040	-1.105**	-1.874***	-.040	-.908**	-1.624***
Team satisfaction squared			.169***			.185***			.180***			.173***
Team diversity squared	.035+	.095**	.072*	-.001	.057*	.037+	-.002	.099*	.075+	.025	.111*	.078+
Team satisfaction X PFF			.352*			.390**			.373**			.363**
Team satisfaction squared X PFF			-.033*			-.037**			-.036**			-.035*
Team diversity X PFF		.262+	.209		.239*	.189*		.442**	.380*		.364*	.284+
Team diversity squared X PFF		-.027+	-.021		-.024*	-.019+		-.044**	-.038*		-.036*	-.028+
ΔR-squared (p of Wald test)	.009+	.011+	.019**	.000	.006+	.018*	.000	.015**	.027***	.003	.011*	.021***

N=438; + p < .1; * p < .05; ** p < .01; *** p < .001; DV = work engagement (17 items); Note: Constant term not displayed; results derived from robust regression, clustered by organizations; (1) Gender: 0 = female, 1= male; (2) Position: 0 = project member, 1= project leader; (3) Time since last project failure; (4) PFF = Project failure frequency

Table 8: Results of hypotheses testing for different scale versions of team diversity

Robustness checks with different scale versions of work engagement

The weak support of hypothesis 4 in previously described models may be due to the fact that the three different dimensions of work engagement – vigor, dedication, and absorption – exhibit different relationships with the two team aspects and the moderating variable, project failure frequency. Therefore, we investigated the full model using each dimension of work engagement as the dependent variable (Model 9, 10, 11). In addition, we performed robustness checks and employed the short version measurements for vigor, dedication and absorption (Model 12, 13, 14). Table 9 provides an overview of the regression results. First, when *vigor* is the dependent variable, we find support for all of the four hypotheses (Model 9). Moreover, the results are robust across the two different measurement versions (Model 9 and Model 12). The variance explained is substantial in both vigor models (R-squared = .422/.439). Second, when *dedication* is used as the dependent variable (Model 10 and Model 13), we find evidence for support of hypothesis 1 while the evidence in the hierarchical regression steps for support of hypothesis 2 and hypothesis3 is mixed. Additionally, we do not find support for hypothesis 4. The variance explained is substantial in both dedication models (R-squared = .459/.458). Third, when *absorption* is the dependent variable (Model 11 and Model 14), hypothesis 1 and 3 find strong support and hypothesis 2 mixed support in the hierarchical regression steps while the regression results allow no support of hypothesis 4. The variance explained of the absorption models is lower than the variance explained of the other models (R-squared = .308/.338). In sum, the three work engagement dimensions differ with respect to support of the four hypotheses and the amount of variance explained. These results indicate that the engagement dimensions require a different team and organizational environment to evolve.

Finally, we estimated a full model using the dependent variable work engagement (Model 15), measured with the short version of UWES (Schaufeli et al., 2006) consisting of nine items instead of the 17 item version used in Model 8. We find evidence for support of hypothesis 1, 2, and 3 while the regression results allow no statistical support of hypothesis 4. However, a closer inspection of the hierarchical regression steps leading to the results displayed in Model 8 provide some support for hypothesis 4 (i.e., interaction effect as calculated in Model 7: $b = -.032$, $p < .1$). Thus, our findings are robust across the two scale versions of work engagement.

	17 item version			9 item version			
	Vigor	**Dedic.**	**Abs.**	**Vigor**	**Dedic.**	**Abs.**	**Eng.**
Variable	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15
Controls referring to individuals							
Age	.003	-.000	.005	.004	.001	.002	.002
Gender[1]	.073	.220*	.059	.139	.251*	-.026	.139
Project experience	-.001	-.002+	-.001	-.003*	-.001	-.002	-.002*
Position[2]	.029	-.023	-.074	-.013	-.044	-.067	-.041
Positive affect	.459***	.493***	.328*	.586***	.559***	.460***	.535***
Negative affect	-.276**	-.264*	.081	-.315*	-.324**	-.067	-.235+
Team identification	.044	.119*	.100*	.100+	.098	.105+	.101+
Affect. commitment	.131**	.281***	.250***	.211***	.308***	.273***	.264***
Time since failure[3]	-.002	-.000	-.000	-.002	-.001	-.001	-.001
EU, non German	-.219**	-.098	-.021	-.179**	-.073	.035	-.072
Non EU	.122+	.067	-.135	.172+	.116	.028	.105
Controls referring to project or team							
Team size	-.000	.000	.002*	-.000	.001	.001	.001
Project age	.002	.001	.001	.002	.001	.001	.001
Controls referring to organization							
Size of organization	-.009	.013	.012	-.040*	.003	.007	-.010
Industrial goods	-.087	-.112	-.268+	.096	-.055	-.108	-.022
Automotive	.051	-.150	-.322+	.185	-.112	-.133	-.020
Chemicals and materials	-.211	-.088	-.239+	-.087	-.052	-.150	-.096
Consumer and electronics	-.175	-.244*	-.266+	-.036	-.263*	-.189	-.162
Aerospace and defense	-.239+	-.263+	-.800***	-.319+	-.381*	-.708**	-.469*
Medical industry	-.125	-.289*	-.318*	-.169	-.312*	-.333+	-.271*
Predictors							
Team satisfaction	-1.914***	-1.612*	-2.022***	-1.997*	-1.842*	-2.405***	-2.081**
Team diversity	-.917**	-.361	-.528+	-.971**	-.503	-.724+	-.733*
PFF[4]	-1.742***	-.952*	-1.494**	-1.811**	-1.240*	-1.544**	-1.532***
Team satisfaction squared	.175**	.143*	.189***	.178*	.168*	.225***	.190**
Team diversity squared	.107**	.051	.059+	.113***	.067	.087*	.089*
Team satisfaction X PFF	.379*	.270	.406**	.435+	.363+	.431**	.409*
Team satisfaction squared X PFF	-.035*	-.025	-.040**	-.042+	-.035+	-.043**	-.040*
Team diversity X PFF	.337*	.085	.204	.326+	.146	.234	.235
Team diversity squared X PFF	-.036*	-.009	-.020	-.035+	-.016	-.026	-.026
Model estimation results							
R-squared	.422	.459	.308	.439	.458	.338	.493

N=438; + p < .1; * p < .05; ** p < .01; *** p < .001; DV = different dimensions/scales of work engagement as noted in first two lines of this table; (1) Gender: 0 = female, 1= male; (2) Position: 0 = project member, 1= project leader; (3) Time since last project failure; (4) PFF = Project failure frequency
Note: Constant term not displayed; results derived from robust regression, clustered by organizations

Table 9: Results of hypotheses testing for three dimensions of work engagement and shortened scale version of work engagement

Robustness checks with sample of project members and project leaders' perception of project failure frequency

In addition, we conducted analyses to check whether our results are robust with respect to the interaction effects coming from employees' own perception of the frequency of project failure within their organization. Therefore, we repeated the hierarchical regression steps and estimated models with a sample of project members only. Moreover, we calculated the frequency of project failure as perceived by project leaders (average) for each organization and used this new variable as moderator. As the original sample does not include at least one project leader and at least one project member per organization, four observations with missing data were generated. We applied mean substitution to use the maximum sample size of 187 observations. The regression results are displayed in Table 10.

From the inspection of the coefficients and significance levels, we find mixed support for hypothesis 1, the curvilinear relationship between team satisfaction and work engagement, and strong support for hypothesis 2, the curvilinear relationship between team diversity and work engagement. However, the regression results allow no support of hypothesis 3 ($b = -.001$, $p = .966$), the interaction effect of the relationship between team satisfaction and work engagement while we find the interaction effect of the relationship between team diversity and work engagement, hypothesis 4, is marginally significant.

The R-squared and Wald test results provide mixed evidence. While the increase in R-squared is significant ($p < .05$) for the curvilinear models (Model 18, Model 19, Model 20) and provides further support for hypothesis 1 and 2, it is not significant ($p > .1$) for the interaction models and full model which refer mainly to hypothesis 3 and 4 (Model 21, 22, 23). However, the absolute increase in R-squared from Model 19 to 22 and from Model 20 to 23 of .008 provides some evidence for support of hypothesis 4.

Taken together, we add robustness to the results supporting hypothesis 1, 2, and 4 while we find no support for hypothesis 3. In addition, since we relied in this regression analysis on measures from two sources, i.e., project members' perceptions (team satisfaction, team diversity, work engagement) and project leaders' perceptions (frequency of project failure), the risk of an endogeneity bias resulting from using measures on a single response basis is (at least partially) mitigated.

	Base models		Curvilinear models			Interaction models		Full model
Variable	Model 16	Model 17	Model 18	Model 19	Model 20	Model 21	Model 22	Model 23
Controls referring to individuals								
Age	.001	.002	.002	.003	.003	.002	.003	.003
Gender[1]	.119	.105	.056	.116	.067	.056	.102	.054
Project experience	-.002	-.001	-.002	-.002	-.003	-.002	-.002	-.003
Positive affect	.429***	.450***	.458***	.433***	.441***	.459***	.458***	.468***
Negative affect	-.196*	-.237**	-.232**	-.254**	-.249**	-.231**	-.219*	-.212*
Team identification	.111	.118+	.121+	.115+	.118+	.121	.117+	.119
Affect. commitment	.227**	.239**	.235**	.232***	.227***	.235**	.234***	.228**
Time since failure[2]	-.001	-.002	-.001	-.002	-.001	-.001	-.002	-.001
EU, non German	-.126	-.137+	-.230*	-.187*	-.284**	-.229*	-.172*	-.280***
Non EU	-.086	-.050	-.064	-.055	-.069	-.063	-.063	-.085
Controls referring to project or team								
Team size	.001	.000	.000	.000	.000	.000	.000	.000
Project age	-.003	-.003	-.002	-.003	-.002	-.002	-.003	-.002
Controls referring to organization								
Size of organization	.018	.015	-.001	.010	-.008	-.001	.012	-.005
Industrial goods	-.032	-.003	.222+	.049	.283*	.218	-.052	.205
Automotive	-.090	-.037	.204	.024	.274	.199	-.110	.160
Chemicals/ materials	.090	.056	.272	.068	.290	.267	.005	.256
Consumer/electronics	.032	.089	.320*	.160	.400**	.316	.054	.324
Aerospace/defense	-.181	-.128	.087	-.138	.083	.086	-.209	.031
Medical industry	-.099	-.081	.135	-.051	.172	.132	-.177	.056
Predictors								
Team satisfaction		-.042	-.784***	-.057	-.820***	-.790	-.049	-.899
Team diversity		.053+	.055+	-.331+	-.345+	.056*	-1.239*	-1.211*
PFF-PL[3]		.046	.051	.045	.050	.061	-.596+	-.582
Team satisfaction sq.			.070***		.072***	.072		.079
Team diversity sq.				.045*	.047*		.157*	.159*
Team satisfaction X PFF-PL						.004		.025
Team satisfaction sq. X PFF-PL						-.001		-.002
Team diversity X PFF-PL							.343+	.326+
Team diversity sq. X PFF-PL							-.042+	-.042+
Model estimation results								
R-squared	.449	.458	.478	.470	.492	.478	.478	.500
Comparison to	-	Model 16	Model 17	Model 17	Model 17	Model 18	Model 19	Model 20
ΔR-squared	-	.009	.020	.012	.034	.000	.008	.008
Wald test (p-value)	-	.195	.000	.047	.000	.996	.185	.385

N=187 (only project members); DV = work engagement (17 items); sq. = squared
+ p < .1; * p < .05; ** p < .01; *** p < .001; (1) Gender: 0 = female, 1= male; (2) Time since last project failure; (3) PFF = Project failure frequency as perceived by project leaders of respective organization
Note: Constant term not displayed; results derived from robust regression, clustered by organizations

Table 10: Results of hypotheses testing with sample of project members and project leaders' perception of project failure frequency

3.5 Discussion

Engaged employees are creative (Bakker & Xanthopoulou, 2013), persist in the face of difficulties (Schaufeli et al., 2002), take personal initiative (Hahn et al., 2012), and likely succeed in implementing new ideas in the market (Bhatnagar, 2012). In essence, organizations in entrepreneurial contexts benefit from engaging their workforce (Gorgievski et al., 2014). Thus, our objective in this chapter was to understand how work engagement – "a positive, fulfilling, work-related state of mind" (Schaufeli et al., 2002, p. 74) – may be facilitated. In doing so, we investigated teamwork and project failure which both have been acknowledged in the corporate entrepreneurship literature as important aspects of entrepreneurially acting organizations (e.g., Cope, 2011; Edmondson & Nembhard, 2009; Forbes et al., 2006; Harper, 2008; Shepherd, Covin & Kuratko, 2009). In this section, we highlight our theoretical contributions to the corporate entrepreneurship, work engagement, and team literature. Furthermore, we present implications for the managerial practice, address limitations of this chapter and show areas for future research prior to ending with a conclusion.

3.5.1 Theoretical implications

Implications for corporate entrepreneurship literature

This chapter has important implications for corporate entrepreneurship literature. First, we theorized and empirically explored a curvilinear, U-shaped relationship between two aspects occurring in entrepreneurial project teams – team satisfaction and team diversity – and employees' engagement in an entrepreneurial task, indicating their motivation at work (Christian et al., 2011; Kahn, 1990). More precisely, employees feeling only slightly satisfied with the relationship to their team members showed high levels of work engagement (hypothesis 1). They also reported high levels of work engagement when they were highly satisfied with their team members and even more interesting, they seemed to be less engaged than slightly satisfied employees. In addition, employees working in highly similar entrepreneurial project teams as well as employees working in highly diverse teams reported high levels of work engagement (hypothesis 2). These findings help increase our to date limited understanding of *how to motivate employees in entrepreneurial contexts* (De Clercq et al., 2011; Klarner et al., 2013; Marvel et al., 2007), i.e., facilitate that employees willingly undertake their work (Amabile, 1993). Previous research in the corporate entrepreneurship literature concentrated, while examining effects on motivational concepts, on the employees themselves and their personality traits (Baum & Locke, 2004) or emotions (De Clercq et al., 2011). In addition,

employee-manager relationships and the effects of managerial support (Hornsby et al., 2002; Marvel et al., 2007), managerial control (Allen et al., 2015; Hornsby et al., 2002), or managerial emotions (Brundin et al., 2008) were in focus as well as the organizational environment including its structure (e.g., spin alongs) (Hornsby et al., 2002; Klarner et al., 2013; Marvel et al., 2007) and reward system (e.g., financial rewards, recognition, risk) (De Clercq et al., 2011; Hornsby et al., 2002; Marvel et al., 2007; Monsen et al., 2010; Schmelter et al., 2010). Yet the impact of teams on employees' motivation in entrepreneurially acting organizations has received little attention although teams are regarded as catalysts for entrepreneurial success (Cooney, 2005) and entrepreneurial tasks are typically performed in the context of project teams (Griffin, 1997). Our study begins to fill this gap. Finally, by addressing project teams as an attribute of entrepreneurially oriented jobs, we add to the academic work in the corporate entrepreneurship literature which identified the motivational potential of other entrepreneurial job attributes such as time available or a challenging job design (De Clercq et al., 2011; Hornsby et al., 2002; Marvel et al., 2007).

Second, by examining employees' satisfaction with their entrepreneurially acting team members and by finding a curvilinear, U-shaped relationship with their work engagement (hypothesis 1), we contribute to the developing *research on emotions* in the entrepreneurship literature (Cardon et al., 2012). Prior work typically focused on the benefits of positive emotions for entrepreneurial activities (Baron & Tang, 2011; Hayton & Cholakova, 2012). For example, Hayton and Cholakova (2012) elaborated on the benefits that positive affective states may provide for developing ideas while Baron and Tang (2011) demonstrated their positive influence on entrepreneurs' creativity. Further, Welpe et al. (2012) stressed the positive impact of joy for exploiting entrepreneurial opportunities. Finally, in a corporate entrepreneurship context, Brundin et al. (2008) showed that managers who display positive emotions stimulate their employees' willingness to act entrepreneurially. We extend this literature on positive emotions and their benefits by underlining that an increase in positive emotions, in particular feeling satisfied with one's team, might be detrimental (for low levels of team satisfaction). That positive emotions may generate both, benefits and costs, was recently acknowledged by Wolfe and Shepherd (in press) who found an inverse, U-shape relationship between positive emotions and performance. In a similar vein, Baron, Hmieleski and Henry, 2012 proposed in their theoretical work on entrepreneurs' emotions an inverse, U-shaped relationship between the emotional concept of dispositional affect and individual's motivation. While our findings of an upright, U-shaped curve between the team satisfaction (emotion) and work engagement

(motivation) indicate the opposite relationship, we support Baron et al.'s (2012) and Wolfe and Shepherd's (in press) in their view that benefits and cost vary across different levels of positive emotions.

Third, we empirically explored the effects of team diversity on work engagement and found a curvilinear relationship according to which highly similar and highly diverse project teams promote work engagement (hypothesis 2). This finding provides insights on *how to form a project team in an entrepreneurial context*, a research field of which our understanding is limited (Cooney, 2005; Forbes et al., 2006; Knockaert et al., 2011). Entrepreneurship researchers recently began to answer this research question. (1) The corporate entrepreneurship literature addressed the effects of diversity with respect to task related attributes on entrepreneurial outcomes (e.g., Cabrales et al., 2008; Somech & Drach-Zahavy, 2013; Talke et al., 2011). For example, they examined the top management team's diversity within established organizations and showed positive impact on the implementation of innovations (Srivastava & Lee, 2005; Talke et al., 2011; Talke et al., 2010). In addition, research addressed the composition of entrepreneurially acting project teams and found diversity to promote creativity and innovation (Ferriani et al., 2009; Perretti & Negro, 2007; Somech & Drach-Zahavy, 2013). Cabrales et al. (2008) restricts these finding by demonstrating that diverse project teams are suitable for incremental innovations. When pursuing radical innovations, however, the authors suggest similar project teams (Cabrales et al., 2008). Our findings support this view that similar as well as diverse project teams may be desirable. (2) Moreover, entrepreneurial scholars have examined the composition of independent venture teams (Chowdhury, 2005; Lim et al., 2013; Schjoedt, Monsen, Pearson, Barnett & Chrisman, 2013). They have mainly concentrated on linear effects between team diversity and outcome variables. For example, diversity of a team's members was found to facilitate the positive evaluation of business ideas (Der Foo, Kam Wong & Ong, 2005) and the access to funding (Vogel, Puhan, Shehu, Kliger & Beese, 2014; Zimmerman, 2008). In a similar vein, authors stressed the advantages of diverse venture teams for innovativeness (Henneke & Lüthje, 2007) and entrepreneurial performance (Hayton, 2005). In contrast, authors found evidence for a superiority of combining similar team members, for example, when the independent ventures are highly novel (Amason et al., 2006). The curvilinear finding in our study, however, supports the work of those authors who found that similar as well as diverse venture teams may achieve strong performance (Hmieleski & Ensley, 2007).

Fourth, our finding that the "failure climate" (the frequency of failed projects within an organization) influenced the relationship between employees' work engagement in entrepreneurial projects and team satisfaction (hypothesis 3) as well as team diversity (hypothesis 4), though the latter statistical significance is mixed, contributes to the research on *failure of entrepreneurial projects.* Extant literature on project failure was mainly limited to employees' own failures and their individual consequences (e.g., Shepherd, Covin & Kuratko, 2009; Shepherd et al., 2013; Shepherd et al., 2011). For example, Shepherd, Covin and Kuratko (2009) argued that employees whose project has failed react with grief. We are among the first to suggest that entrepreneurial failure is a matter for more than just one individual and individual effects may also occur following failures of others. Further, we support recent work on accumulated failures (Shepherd et al., 2013) as we demonstrated that frequent project failures within organizations appear to have effects on employees. In addition, we line up with previous project failure studies (Shepherd, Covin & Kuratko, 2009; Shepherd et al., 2011) whose arguments are derived from the theory of normalization according to which extraordinary events are rendered ordinary the more often they occur (Ashforth & Kreiner, 2002). Thus, we support the application of the normalization theory, which was established to describe a normalization of emotions (Ashforth & Kreiner, 2002) or of dirty work (Ashforth et al., 2007), to project failure. Interestingly, we found strong empirical support for the effects of an organization's project failure frequency on translating team satisfaction into work engagement (hypothesis 3) while the support for the corresponding relationship of team diversity is mixed (hypothesis 4). It could be that a failure climate is more important for emotional aspects like team satisfaction while structural aspects like team diversity have little effect. This interpretation is supported by previous studies finding that failure influences individuals' emotions (Shepherd et al., 2011).

Implications for work engagement literature

In addition, this chapter provides contributions to the work engagement literature. First, we measured the *influence of team aspects on work engagement* (hypotheses 1 and 2) and found statistical evidence. We, therefore, answered calls for increased research efforts on social predictors (Christian et al., 2011; Freeney & Fellenz, 2013). Prior studies on work engagement antecedents have focused on motivational job characteristics (e.g., opportunity to learn, Schaufeli et al., 2009, or performance feedback, Menguc et al., 2013) or contextual job characteristics (e.g., job security, Mauno et al., 2005, or physical workload, Demerouti et al., 2001) while social job characteristics like teamwork have not yet been sufficiently considered

and are mainly limited to social support at work (e.g., Bakker et al., 2006; Barbier et al., 2013; Rich et al., 2010; Schaufeli et al., 2009). Specifically, our findings advocate team satisfaction and team diversity as additional social predictors of work engagement (Christian et al., 2011; Freeney & Fellenz, 2013). In addition, we extend the findings of Avery et al. (2007) who have examined two predictors of work engagement which are related to those in our study, the satisfaction with older/younger employees and the age diversity within a team.

Second, we showed that the frequency in which project failures occur within organizations moderates the relationship between teamwork in entrepreneurial projects and employees' work engagement. More precisely, we found that extreme failure climates – measured by frequent project failures within an organization – hinder employees from translating team satisfaction (hypothesis 3) and team diversity (hypothesis 4) into work engagement. Thus, we help understand the *climate for work engagement* (Albrecht, 2014; Bakker & Albrecht et al., 2011a), i.e., "employees' shared perceptions about formal and informal organizational structures, events, practices, policies, and procedures that are rewarded, supported, and expected in their organizational context" (Bakker & Albrecht et al., 2011a, p. 12, referring to Reichers & Schneider, 1990). While previous work engagement studies devoted attention to broad climate concepts (Jenkins & Delbridge, 2013), service climates (Salanova et al., 2005), safety climates (Nahrgang et al., 2011), innovation climates (Hakanen et al., 2008) or team climates (Costa, Passos & Bakker, 2014), we demonstrated that "failure climates" are important for work engagement.

Third, as we have tested our theoretical model with the composite scale of work engagement and in addition with the scales of the three work engagement dimensions separately, a contribution of our study arises for the *conceptualization of work engagement* with the Utrecht work engagement scale (Schaufeli et al., 2002). Since its introduction, there is an ongoing discussion in the literature (e.g., Liao et al., 2013; Schaufeli et al., 2006; Sonnentag, 2003) whether this scale reflects one composite factor (work engagement) or three factors (vigor, dedication, and absorption, Schaufeli et al., 2002). Similarly, researches have examined work engagement using a composite, single score (e.g., Avery et al., 2007; Bakker & Xanthopoulou, 2013; Sonnentag, 2011) or have investigated the three constituting work engagement dimensions separately (e.g., Cole et al., 2012; Mauno et al., 2007; Rodríguez-Sánchez et al., 2011; Shirom, 2010). Recently, Bakker and Albrecht et al. (2011b) have reinforced the need for further research on work engagement dimensions. Our findings suggest

that a differentiation of the dimensions is to be preferred to a composite scale (Schaufeli et al., 2006) since we showed that the three dimensions vigor, dedication, and absorption have different predictors. More precisely, we found that vigor, dedication, and absorption diverge with respect to the predictor team diversity and its interaction (hypothesis 2 and hypothesis 4) while team satisfaction and its interaction appear to have the same effect across the three dimensions (hypothesis 1 and hypothesis 3). In addition, since we found support for all four hypotheses when vigor was the dependent variable, we posit that vigor is more sensitive to social aspects than the other two dimensions and we support Barbier et al. (2013) and Shirom (2010) in their assumption that vigor is the most important work engagement dimension.

Implications for team literature

Finally, this chapter adds to the team literature. Since we found a curvilinear effect of t*eam satisfaction* on work engagement (hypothesis 1), we extend existing research in the organizational and social psychology literature that has mainly focused on linear relationships between team satisfaction and individual or organizational outcomes (e.g., Jehn et al., 1999; Nerkar et al., 1996; O'Reilly III et al., 1989; Reynolds & Kaplan, 1990). For example, high levels of team satisfaction are conducive to individual health (Reynolds & Kaplan, 1990) and innovation performance (Nerkar et al., 1996). In a similar vein, researchers found negative effects from low levels of team satisfaction, like lower organizational commitment (Jehn et al., 1999), higher intentions to leave (O'Reilly III et al., 1989), and lower performance (De Jong et al., 2014). In contrast, our findings support the notion that "negative relational experiences aren't always bad" (Eby & Allen, 2012, p. 405). Indeed, negative social experiences have been shown to stimulate learning (McCauley, 2012) and employees who harm their team members have been found to benefit from their behavior as they may feel less emotionally exhausted (Krischer et al., 2010). Thus, we combine in our study previous findings according to which low and high relational experiences may be beneficial.

In addition, by finding an upright, U-shaped relationship between team diversity and work engagement (hypothesis 2), we attempt to bring more clarity into the extensively discussed relationship between *team diversity* and performance since the effects of diversity on work engagement may reflect in parts the same processes as effects on performance (Van Knippenberg et al., 2004). While previous studies adopt opposing positions by either advocating highly diverse teams (e.g., Bantel & Jackson, 1989; Ely, 2004) or very similar teams (e.g., Jehn et al., 1999; Leonard et al., 2004), we combine both positions within our study. In doing

so, we respond to Horwitz and Horwitz's (2007) call for investigating non linear diversity effects. Indeed, studies have already found curvilinear relationships between team diversity and organizational outcomes (e.g., Gibson & Vermeulen, 2003; Jetten, Spears & Manstead, 1998; Van der Vegt & Bunderson, 2005). For example, Jetten et al. (1998) advocate for a balance between similar and diverse team members and suggest an inverted U-shaped relationship. In contrast, Gibson and Vermeulen (2003) found an upright U-shaped relationship between team diversity and team learning behavior. Our findings add robustness to the latter notion and suggest that the relationship between team diversity and important individual outcomes is best described by an upright U-shaped curve (Earley & Mosakowski, 2000; Gibson & Vermeulen, 2003; Van der Vegt & Bunderson, 2005).

3.5.2 Managerial implications

Our study comes also with important implications for the managerial practice in entrepreneurially active organizations since it helps managers understand the interplay between team aspects, project failure climate and work engagement. First, our findings demonstrate that medium levels of team satisfaction do not prompt highest work engagement levels. Thus, managers could encourage their entrepreneurially acting project teams to organize (non work related) team events and, thereby, try to promote interpersonal relationships to reach highest team satisfaction and work engagement levels. Second, managers could try to prevent moderately diverse teams when they assign employees to entrepreneurial projects since very similar and very diverse teams translate into higher work engagement. Third, managers may reinforce a similarity or diversity perception through their way of communication and, thus, facilitate the development of work engagement. Finally, managers working in organizations with frequent project failures need to recognize that their employees find it hard to fulfill basic human needs for relatedness or autonomy and are consequently less engaged. Those organizations face a high risk of getting into a vicious circle starting with low work engagement among their employees, leading to less creativity, less likelihood for project success, higher project failure frequency and resulting in even lower work engagement among their employees. In order to mitigate this risk, managers need to continuously put effort into establishing a working climate that facilitates employees' work engagement.

3.5.3 Limitations and future research

There are some limitations of our study which could be fruitful avenues for further research. First, we relied on *employees' subjective perceptions* of team satisfaction, team diversity, and an organization's project failure frequency. Although employees' perceptions impact individual motivation (Breugst et al., 2012), future research could investigate the effect of objective ratings on employees' work engagement. Interesting insights could arise from addressing how the actual diversity in entrepreneurial project teams translates into work engagement, since the actual diversity rather than the perceived diversity may be directly influenced by managers through assigning employees to teams. Second, we measured the *frequency of project failures on a single item basis* which is, as all measures, not perfect. Future empirical studies could add robustness to our findings and capture organizations' failure climates with additional measures. For example, they could include an item addressing the failure rate as it is documented in an organization's controlling system or an item referring to the failure frequency relative to competing organizations.

Third, since the design of *our study was cross sectional,* we were not able to identify the directions of the causal relationships between the team aspects and work engagement. While it is difficult to believe that employees' work engagement level influences their diversity perception, a case for reverse causality could be made for team satisfaction. Future research could conduct interviews to clarify the direction of this relationship. In addition, the cross sectional design allowed only for findings on short term relationships. This is especially important since we know from burnout research that enduring low levels of social support may lead to feelings of burnout (Schaufeli et al., 2009) which demonstrates patterns similar to work engagement (Cole et al., 2012). Future research could additionally conduct longitudinal studies and thus, bring clarity into the causation of relationships and offer an explanation on the stability of the relationship between team satisfaction and work engagement over time.

Finally, we drew in our study on *two theories* to develop our theoretical model, the self determination theory and the normalization theory. However, we did not explicitly measure employees' ability to fulfill their innate human needs (self determination theory) or the degree of failure normalization within organizations (normalization theory). Future studies might conduct a finer grained investigation of the relationships presented in this chapter and test for mediation effects for example using Van den Broeck et al.'s (2010) need fulfillment scale and

the failure normalization scale published by Shepherd et al. (2011) while we were already collecting data.

Above and beyond addressing this study's limitations, we hope future research will extend our findings and enhance the corporate entrepreneurship literature. First, future studies could continue assessing team specific predictors of work engagement and focus on aspects qualified to describe teamwork of entrepreneurially acting organizations. Interesting insights could arise, for example, from investigating the effects of trust in teams (Breugst et al., 2012), temporary membership (Edmondson & Nembhard, 2009), or information sharing (De Clercq, Dimov & Thongpapanl, 2013). Second, researchers could explore the impact of failure climates using additional theoretical frameworks. For examples, they could focus on the perceived level of external control, i.e., reporting and controlling efforts. These efforts will increase with a growing number of project failures since project failures are very costly to an organization (Shepherd & Cardon, 2009) and may undermine employees' intrinsic motivation and well-being (Deci & Ryan, 1985b). Additionally, researchers could focus on negative performance feedback which is associated with project failure (Shepherd et al., 2011). The prospect of negative performance feedback may make employees fear for their rewards such as bonus or acknowledgement (Cannon & Edmondson, 2005) and may undermine intrinsic motivation and well-being (Gagné & Deci, 2005). Finally, scholars could enhance the literature on motivating employees in entrepreneurial contexts by investigating the model proposed in this chapter with dependent variables which are linked to work engagement such as entrepreneurial passion (Gorgievski et al., 2014).

3.5.4 Conclusions

To conclude, having engaged employees in entrepreneurial projects is one important factor for organizations to become and remain successful. Those employees may develop higher work engagement when their project team and the organizational environment demonstrate specific characteristics. We theorized and found that employees who are highly satisfied as well as employees who are not at all satisfied with their team members assigned to their entrepreneurial project are able to fulfill basic human needs and are therefore highly engaged with their work. Our findings suggest that this is more difficult for employees working in organizations in which entrepreneurial projects frequently fail. We also theorized and found that employees working in highly similar as well as employees working in highly diverse teams while pursuing entrepreneurial projects are better able to fulfill their needs and are very engaged while

there is some difference among employees experiencing different frequency of project failure within their organizations. Our theorizing and findings – based on self determination theory and failure normalization theory – suggest that team aspects and the organizational environment are important predictors of work engagement. In the end, we have provided some evidence on engaging a workforce in entrepreneurial contexts, which we hope stimulates future research.

4 WHEN IS EMPLOYEE TRANSITION ACROSS ENTREPRENEURIAL PROJECTS SUCCESSFUL? DEVELOPMENT AND VALIDATION OF A NEW MEASURE

4.1 Introduction

Entrepreneurial projects are temporary organizations (Packendorff, 1995; Svejvig & Andersen, 2015) *in which new products, new services, or new processes are developed or introduced into the organization or new markets are entered* (Shepherd & Cardon, 2009). The duration of such projects varies across organizations and depends on multiple factors such as the number of stakeholders involved or the type of products being developed (Cankurtaran et al., 2013; Griffin, 2002). For example, new cars are developed in projects lasting three to four years (Grünweg, 2013, February 10) while a new smartphone may be developed within ten months (Scheimann, 2011, April 10). After the entrepreneurial project has ended, its project team is dispersed (Huemann, Keegan & Turner, 2007) and each employee – project members and project leaders – moves on to the next project (Huemann et al., 2007).

This *transition process between projects, i.e., employees moving after the end of one project to the next*, has gained little attention in extant corporate entrepreneurship literature which is surprising for two reasons. First, transitions become more important as development cycle times and project durations rapidly decrease (Cankurtaran et al., 2013) and, consequently, employees transition to new projects more frequently. Second, since organizations pursuing entrepreneurial projects act within uncertain environments and their market success is always at risk (Lin & Chen, 2005; York & Venkataraman, 2010), performance indicators of those organizations are constantly under pressure. Effective project transitions as a means to improve organizational performance, however, seem to be overlooked to date.

Indeed, evidence from prior research suggests that the transition process provides multiple opportunities for performance increase, specifically when focusing on employees as the most important resource in entrepreneurially active organizations (Crossan, Lane & White, 1999). First, toward the end of an entrepreneurial project, employees have accumulated a substantial amount of project related experience (Goffin & Koners, 2011). If employees learn from these experiences during the transition process (Ellis & Davidi, 2005; Prencipe & Tell, 2001; Zollo & Winter, 2002), they will benefit in upcoming projects and organizational performance may

be increased (Cacciatori et al., 2012; Jiménez-Jiménez & Sanz-Valle, 2011). Second, the project start as part of the transition process is a unique opportunity to lay the foundation for future project work while assigning a new project team (Hackman & Wageman, 2005) and to facilitate employee motivation (Flohrer, 2014). Motivated employees in turn have been shown to be a major predictor of organizational performance (Huselid, 1995). Finally, the period in between two projects may contribute to performance if organizations efficiently manage their key resources, time and personnel (Cooper et al., 1999), during the transition process by effectively redeploying project employees after an entrepreneurial project has ended (Shepherd et al., 2014).

The academic work in this chapter is among the first to investigate the process of employees moving from one entrepreneurial project to the next and pursues two objectives. First, to facilitate an advance in research on project transitions, I propose a concept of transition performance by drawing on literature from the fields of corporate entrepreneurship, project management, organizational psychology, and organizational learning. I regard *transition performance as high if an organization has exploited its opportunities for performance increase while employees transition to the next project*. Second, using questionnaire data of 712 respondents and interviews with 21 employees assigned to entrepreneurial projects or managers, I develop and validate six new scales – one scale for each performance opportunity in the transition process – which collectively measure how successfully employees have transitioned.

By proposing a new concept and measurement for transition performance, I set the stage for future research. First, I encourage research on project transition-related performance drivers in entrepreneurially active organizations which is important, as those organizations constantly struggle to meet their performance expectations (Lin & Chen, 2005). Second, future research could examine in which type of organizations high transition performance is more likely and empirically assess, for example, the influence of industries, project durations, types of entrepreneurial projects, or team size on transition performance. Finally, the notion of employee transitions as an integral element of today's organizations contributes to the developing research related to "rethinking project management" (Svejvig & Andersen, 2015), which aims at enhancing the classic project view with valuable praxis proven practices (Svejvig & Andersen, 2015). It is my hope that researchers from this area consider project transitions in concep-

tual studies and use the new transition performance measurement in their quantitative analyses.

In the following sections, I propose a concept of transition performance. I review extant literature to identify opportunities for an increase in organizational performance toward the project end, at the project start, and in the period in between two projects prior to defining six constructs of transition performance. Next, I outline the method used for developing and validating new scales to measure these six constructs including the process of item generation and refinement. Further, I present the results for the measurement model assessment, scale reliabilities, measurement and structural invariance, convergent and discriminant validity, and test for social desirability bias. Finally, I close with a discussion by suggesting specific avenues for further research, outlining limitations, and providing a conclusion.

4.2 Toward a consistent concept

In the following section, I review extant literature and draw on 21 interviews[16] conducted in nine organizations pursuing entrepreneurial projects – eight interviews with entrepreneurial project members, eleven with entrepreneurial project leaders, and two with managers of research and development departments (R&D) – to provide a thorough understanding of the transition process and its opportunities for performance increase. I focus on those opportunities which are related to *entrepreneurial project employees – project team members and project team leaders* – since researchers regard employees as being fundamental for idea development in entrepreneurially acting organizations (Crossan et al., 1999). Further, I argue that performance opportunities are present toward the project end, at the project start, and in the period in between projects.

Specifically, I identify six opportunities which are illustrated in Figure 6 and of which two refer to the project end (individual experiential learning and team experiential learning), three to the project start (briefing, team relatedness, and team competence), and one to the period in between two projects (efficiency management). If all opportunities are fully exploited, a high transition performance is achieved. Thus, I classify these six opportunities as the six constructs which collectively represent the concept of transition performance.

[16] Interviews have been conducted in the context of the research project "Project Success Panel" to which this thesis belongs.

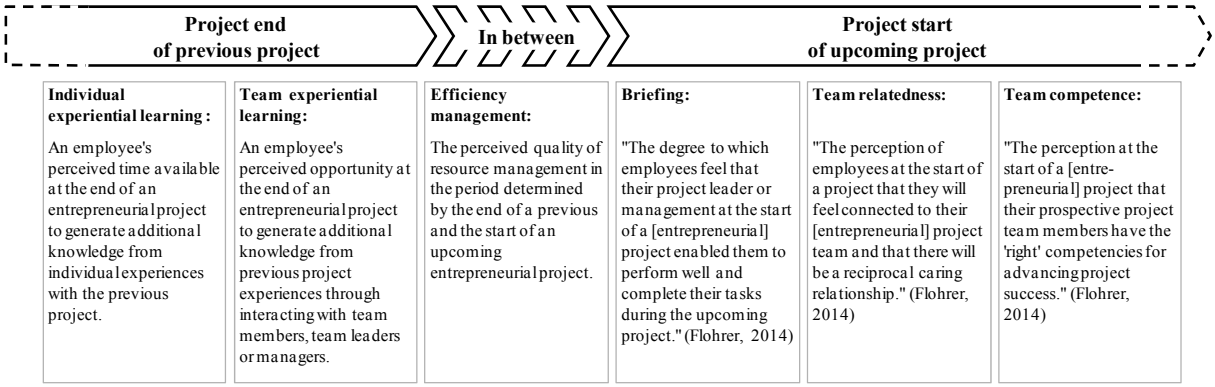


Figure 6: Constructs of transition performance concept across the three periods of project transition

4.2.1 The project end

I begin by examining the project end. While I first clarify the meaning of project end in entrepreneurial projects and give a short review of the current research, I conclude the following section by defining two specific opportunities which may increase future organizational performance.

Definition of project end

Extant literature has defined the end of an entrepreneurial project by the "release of a project's resources" (Shepherd et al., 2014, p. 2) prior to assigning project employees to other duties (Pinto & Prescott, 1988). Since I build on employees as key resource for entrepreneurially acting organizations (Crossan et al., 1999), I refer to the project end from an employee's perspective and define the *project end* in this chapter as *the end of an employee's project specific workload*. In addition, I regard project end as a period rather than as a specific point in time because the release of project resources and, consequently, the end of an employee's workload may unfold over time (Green, Welsh & Dehler, 2003). For example, a member of an entrepreneurial project described a project end in an interview conducted by Shepherd et al. (2014) as follows (p. 16):

> *"I think it was in August last year. At that time, it was said the whole thing was to be put on hold for three months … Later the customer said 'We're going to take a break, we'll stop for now, wait three months and then we'll decide whether we should continue or not'. During that nothing happened on our side."*

The project end in extant literature

In extant literature, the end of entrepreneurial projects is addressed from two different angles. First, the project end was the focus of researchers who identified *factors leading to the end of a project* (e.g., Balachandra et al., 1996; Kester et al., 2011; Pinto & Prescott, 1988). For example, scholars found that projects follow a project life cycle and come naturally to an end when the project goals have been reached (Pinto & Prescott, 1988). However, entrepreneurial projects may also come to an end without having achieved their goals when managers decide to stop a project (Kester et al., 2011). This managerial decision making gained much research attention in the corporate entrepreneurship literature (e.g., Behrens & Ernst, 2014; Behrens & Patzelt, in press; Green et al., 2003; Kester et al., 2011). For example, managers were found to decide on an early project end when projects perform poorly or when projects no longer comply with an organization's strategy (Behrens & Patzelt, in press; Kester et al., 2011). Thus, managers contribute to organizational performance with their decisions on the project end. However, decisions to stop a project are difficult and frequently delayed because managers feel psychologically committed to entrepreneurial projects (Balachandra et al., 1996; Behrens & Ernst, 2014).

Second, researchers investigated the entrepreneurial project end while addressing *employees' attitudes and behaviors* (Shepherd, 2003; Shepherd et al., 2011) and mainly examined the ends of non successful or failing entrepreneurial projects, i.e., when a project comes to an early end "due to the realization of unacceptably low performance as operationally defined by the project's key resource providers" (Shepherd, Covin & Kuratko, 2009). Scholars postulated that employees likely react to a failed entrepreneurial project with grief (Shepherd, 2003; Shepherd, Covin & Kuratko, 2009), disappointment (Shepherd et al., 2011), or emotional devastation (Dillon, 1998). These negative psychological reactions, in turn, affect employees' commitment to their organization (Shepherd et al., 2011). In addition, scholars acknowledged that experiences of entrepreneurial project failures provide a great opportunity for employees to learn (Shepherd & Cardon, 2009; Shepherd, Covin & Kuratko, 2009; Shepherd et al., 2014; Shepherd et al., 2011) and learning from experiences in turn appears to impact organizational performance (Madsen & Desai, 2010).

Taken together, extant literature suggests two specific opportunities toward the project end to increase organizational performance, managers stopping projects and employees learning from previous project experiences. Since this chapter intends to examine the role of em-

ployees rather than the role of managers, I elaborate on learning from experiences (experiential learning) in what follows.

Project end related facilitators of performance

Experiential learning refers to the possibility for an organization *"to articulate, elaborate and draw inferences from experience"* (2001, p. 1376) *for the sake of generating additional knowledge* (Dweck, 1986; Jiménez-Jiménez & Sanz-Valle, 2011; Spreitzer, Sutcliffe, Dutton, Sonenshein & Grant, 2005). The idea of experiential learning goes back to theorists assuming a continuous cycle of action which is followed by learning influencing again subsequent action (Kolb, 1984; Marsick & O'Neil, 1999). Accordingly, experiential learning occurs while employees act in projects (Cope, 2005) and it *intensifies when employees systematically analyze their experiential data, cognitively elaborate on it, and transfer their generated knowledge from automatic to conscious* (DeRue, Nahrgang, Hollenbeck & Workman, 2012; Ellis & Davidi, 2005). I focus on this latter aspect of experiential learning in this chapter consistent with other studies exploring experiential learning toward the end of entrepreneurial projects, i.e., when most project-related experiential data has accumulated (Goffin & Koners, 2011; Koners & Goffin, 2007; Shepherd et al., 2011; Von Zedtwitz, 2002). Since an organization may make use of two sources of learning from experiences toward the end of project, individual and team experiential learning (Crossan et al., 1999; Goffin & Koners, 2011; Swan, Scarbrough & Newell, 2010), I investigate both sources in what follows.

First, *individual experiential learning* reflects *generating knowledge from individuals' own experiences* (Anseel, Lievens & Schollaert, 2009; Goffin & Koners, 2011) and is considered fundamental for organizational learning (Kim, 1993). Previous research posited that experiential learning helps employees not repeat mistakes (Cannon & Edmondson, 2005; Goffin & Koners, 2011), change routines (Michael & Palandjian, 2004) and solve problems (Goffin & Koners, 2011). Further, experiential learning improves product, process, and administrative innovations (Jiménez-Jiménez & Sanz-Valle, 2011) and facilitates new market entries (Maidique & Zirger, 1985). Thus, while experiential learning promotes organizational performance in general (Cacciatori et al., 2012) it is in particular important to improve entrepreneurial performance (Jiménez-Jiménez & Sanz-Valle, 2011). However, the process of learning is time consuming (Huy, 1999; Moon, 1999; Rudolph, Morrison & Carroll, 2009) as it requires incremental changes of the memory, specifically the part of the memory where stable knowledge and patterns of the environment are stored (Evans, 2008; Smith & DeCoster,

2000). For example, Shepherd et al. (2014) addressed the time aspect of experiential learning in their recent study; they suggested that individuals are in many cases more able to learn from their experiences when they are provided with sufficient time by a delayed project end.

Since learning from employees' individual experiences is an opportunity at the end of an entrepreneurial project to improve future organizational performance, I perceive individual experiential learning as the first dimension of transition performance. I define the construct as follows:

> ***Individual experiential learning:*** *An employee's perceived time available at the end of an entrepreneurial project to generate additional knowledge from individual experiences with the previous project.*

Second, *team experiential learning is generating knowledge from experiences within a team* (Goffin & Koners, 2011). Learning in teams – *team refers to two or more employees working together to achieve a common goal* (Costa et al., 2014) – results in general from interacting, discussing and exchanging different perspectives (Edmondson, 1999) among team members, team leaders, and managers, which is why team experiential learning leads to employees learning from the experiences of others (Ellis, Hollenbeck, Ilgen, Porter, West & Moon, 2003; Goffin & Koners, 2011). The positive effects of team experiential learning are considerable. For example, Edmondson (1999) showed in her study on manufacturing organizations that learning in teams results in higher team performance and, thus, higher organizational performance. Van der Vegt and Bunderson (2005) came to a similar result while analyzing teams in the oil and gas industry. It is important to note that learning within teams becomes more and more important (Edmondson & Nembhard, 2009) which is consistent with the expansion of teamwork in entrepreneurially acting organizations due to rapidly evolving knowledge and increasing time pressure (Edmondson & Nembhard, 2009). Therefore, scholars have developed mechanisms to stimulate team experiential learning (Goffin & Koners, 2011), such as lessons learned databases (Goffin & Koners, 2011), checklists (Riek, 2001) or post project reviews (Goffin & Koners, 2011) – also called debriefings (Eddy, Tannenbaum & Mathieu, 2013; Vashdi, Bamberger, Erez & Weiss-Meilik, 2007), after action reviews (Villado & Arthur, 2013), after event reviews (Ellis & Davidi, 2005), or post mortems (Koners & Goffin, 2007). These post project reviews – interventions in which both project members and project leaders (Koners & Goffin, 2007) jointly recall previous project experiences (Eddy et al., 2013) and achieve an understanding of the reasons for project success or failure (Ellis, Men-

del & Nir, 2006) – are widely spread in current organizations to facilitate team experiential learning (Williams, 2008). For example, Chrysler holds post project reviews at all critical points of the product development process (Baird, Holland & Deacon, 1999). As the review results are frequently presented to management committees (Koners & Goffin, 2007), managers are often involved in the process of team experiential learning.

Since learning from experiences within teams is an important performance facilitator toward the end of an entrepreneurial project, I include team experiential learning as the second dimension of transition performance. Therefore, I define this construct as follows:

> ***Team experiential learning:*** *An employee's perceived opportunity at the end of an entrepreneurial project to generate additional knowledge from previous project experiences through interacting with team members, team leaders or managers.*

4.2.2 The project start

Having investigated opportunities to increase organizational performance toward the project end, I turn in the following section to opportunities at the start of entrepreneurial projects. I clarify the meaning of project start, review the project start related literature and conclude with a definition of three opportunities of performance increase.

Definition of project start

In contrast to the project end, the start of an entrepreneurial project is not clearly defined in literature. In the project management literature, a project starts by defining project goals, developing a project plan, and organizing a project team (Halman & Burger, 2002; Hamburger, 1992; Pinto & Prescott, 1988). However, researchers examining new product development processes suggested that conceptual activities (e.g., defining project goals or plans) occur before the project has started in the so called project front end (Akbar & Tzokas, 2013; Khurana & Rosenthal, 1998). As both definitions do not reflect employees' perspective – on which I concentrate in this chapter – I perceive the *start of an entrepreneurial project* consistent with the end of an entrepreneurial project as the *start of an employee's project specific workload.*

Similar to the project end, the project start is rather a period than a specific point in time as the leader of an entrepreneurial project in the aerospace and defense industry described in an interview:

> *"The project start takes three or sometimes four week. And then, the pressure of work starts."*

The project start in extant literature

Although not consistently defined in literature, the project start was frequently investigated in academic articles of different literature fields, such as entrepreneurship or project management. First, researchers focused on *activities* to be performed while a new project starts (e.g., Hamburger, 1992; Khurana & Rosenthal, 1998; Markham, 2013). For example, they regarded idea definition or technology evaluation as essential tasks at the start of an entrepreneurial project which both have performance impact (Khurana & Rosenthal, 1998; Markham, 2013). Further, market related activities including understanding client needs or assessing the opportunity (Khurana & Rosenthal, 1998; Markham, 2013; Pinto & Prescott, 1988) and activities with respect to planning and organizing (Hamburger, 1992; Khurana & Rosenthal, 1998; Markham, 2013; Mathieu & Rapp, 2009; Pinto & Prescott, 1988) are performed at the project start and influence the project's performance.

Second, prior research elaborated on one specific project start activity in more detail and examined *assigning resources to projects* (e.g., Mathieu & Rapp, 2009; Van Oorschot, Sengupta, Akkermans & Van Wassenhove, 2010). While there is a variety of project resources to be assigned (e.g., financial capital), Van Oorschot et al. (2010) perceived employees as most important resource for entrepreneurial projects. Further studies underlined this view stating that, by assigning employees, managers lay the foundation for future teamwork (Mathieu & Rapp, 2009). More precisely, in this phase of an entrepreneurial project, managers define the team size (Stewart, 2006), the diversity of the team (Stewart, 2006), roles and responsibilities (Hamburger, 1992; Mathieu & Rapp, 2009), and team competencies (Haon et al., 2009), and thus, determine the preconditions for project and organizational performance (Stewart, 2006).

Third, scholars addressed the project start by stressing its *motivational opportunity*. For example, Flohrer (2014) demonstrated that the project start impacts the degree to which employees feel empowered at work. In addition, Schmid and Adams (2008) found that the project start is the project phase in which employees reach the highest motivation levels. Find-

ings from other researchers indicate where the great motivational opportunity at the project start comes from; the definition of team composition by assigning employees at the project start determines the extent to which project employees communicate (Ely, 2004) among each other during their project work or feel as a cohesive team (Sivasubramaniam et al., 2012). This influences the level of employee motivation (Zaccaro, Rittman & Marks, 2002) which is crucial for organizational performance (Huselid, 1995).

Taken together, extant literature proposes various opportunities at the start of an entrepreneurial project to set the stage for future project performance (Ericksen & Dyer, 2004; Hackman & Wageman, 2005; Markham, 2013; Mathieu & Rapp, 2009) and thus, for organizational performance. Since this chapter concentrates on employees, I continue with employee motivation and give a short definition prior to evaluating means to motivate employees at the start of an entrepreneurial project.

Project start related facilitators of performance

Employee motivation is "a set of energetic forces […] to initiate work-related behavior and to determine its form, direction, intensity, and duration" (Latham & Pinder, 2005, p. 486). Thus, employees who feel highly motivated at work are "persistent, creative, and productive, turning out high quality work that they willingly undertake" (Amabile, 1993, p. 185) and contribute in a larger extent to organizational performance than weakly motivated employees (Huselid, 1995). Motivation results from an interaction between employees and their environment (Latham & Pinder, 2005). Since employees interact at the project start with a new project environment and a new team environment, I investigate those two aspects in more detail.

(1) Starting a new entrepreneurial project means that employees *interact with a new project environment*, e.g., with a new project task, new project goals, or new project stakeholders (Pinto & Prescott, 1988). To familiarize employees with their new project environment, organizations frequently (Hoegl & Schulze, 2005) hold a *briefing – "a scheduled team meeting prior to the performance of a team activity, in which team members set and confirm strategies, roles, expectations, and key performance issues"* (Vashdi et al., 2007, p. 2007). Briefings, also called kickoffs (Hamburger, 1992) or team launch meetings (Ericksen & Dyer, 2004), help employees understand a project task (Barczak et al., 2006) and allow for knowledge sharing (Hoegl & Schulze, 2005) and, thus, facilitate mastering the future task. Further, briefings provide an opportunity for motivating project employees as briefings may

reduce employees' uncertainty with respect to the upcoming project (Feldman & Brett, 1983) which diminishes employees' stress level and influences employees' motivation at work (Ashford, Lee & Bobko, 1989; Rafferty & Griffin, 2006). Moreover, briefings allow for communication between managers, project leaders, and project team, which promotes employee motivation (Flohrer, 2014, referring to Harborne & Johne, 2003). In addition to motivation, briefings are conducive to the performance of the upcoming project and the overall organization because they increase the team's performance by providing rich information at the beginning of teamwork (Ericksen & Dyer, 2004; Mathieu & Rapp, 2009).

Since briefings provide an opportunity for motivating employees at the project start and motivated employees positively impact entrepreneurial project and organizational performance, I include briefing as the third dimension of transition performance. I define the construct consistent with Flohrer (2014, p. 55):

> ***Briefing:*** *"The degree to which employees feel that their project leader or management at the start of a [entrepreneurial] project enabled them to perform well and complete their tasks during the upcoming project."*

(2) In addition, starting a new entrepreneurial project implies that employees *interact with a new team environment* (Ericksen & Dyer, 2004), i.e., with new project members and a new project leader. This interaction provides an opportunity for employee motivation if the new team helps employees at the project start fulfill their basic human needs (Deci & Ryan, 2000), specifically their need for relatedness, their need for competence, and their need for autonomy (Deci & Ryan, 2000). While there is some controversy related to the need for autonomy (Chirkov et al., 2003; Kovjanic et al., 2013), researchers agree on the motivational nature of fulfilled needs for relatedness and competence (Chirkov et al., 2003) which is why I concentrate on these latter two needs.

(2i) The *need for relatedness refers to individuals' inherent desire for "mutual respect, caring, and reliance with others"* (Deci et al., 2001, p. 931) and embodies feelings of belongingness (Baumeister & Leary, 1995). If the new team helps employees fulfill their need for relatedness, the interaction with a new team environment provides a motivational opportunity (Deci & Ryan, 2000; Flohrer, 2014; Gagné & Deci, 2005; Shepherd & Cardon, 2009). For example, Kovjanic et al. (2013) demonstrated in an online experiment that individuals who were able to fulfill their need for relatedness were more engaged with their task. Similarly, Trépanier,

Fernet and Austin (2013) found a positive relatedness-engagement relationship using a sample of Canadian nurses. In addition to motivation, a fulfilled need for relatedness impacts employees' performance at work (Baard et al., 2004; Van den Broeck et al., 2010) and thus, organizational performance. While this team relatedness-performance link was examined in studies taking a subjective perspective and focusing on employees' perceptions of relatedness (Baard et al., 2004; Van den Broeck et al., 2010), it was also investigated in studies with an objective view (e.g., Van Knippenberg et al., 2004; Williams & O'Reilly III, 1998). Researchers stated that employees in homogenous teams who are related, for example, with respect to their age, sex, or race develop trustworthy relationships with their team members (Ely, 2004; Van Knippenberg et al., 2004), engage less often in conflicts (Williams & O'Reilly III, 1998) and, hence, contribute to higher team performance (Jehn et al., 1999).

Since a new team that helps fulfill the need for relatedness at the project start prompts employee motivation in entrepreneurial projects and is conducive to organizational performance, I include the construct team relatedness as fourth dimension of the transition performance concept. I follow Flohrer (2014) and define the construct as follows (p. 79):

> ***Team relatedness:*** *"The perception of employees at the start of a project that they will feel connected to their [entrepreneurial] project team and that there will be a reciprocal caring relationship."*

(2ii) Moreover, *the need for competence reflects individuals' inherent desire for "succeeding at optimally challenging tasks and attaining desired outcomes"* (Deci et al., 2001, p. 931). If the new team helps employees at the entrepreneurial project start fulfill their need for competence, the interaction with a new team environment provides an additional motivational opportunity (Deci & Ryan, 2000; Flohrer, 2014; Gagné & Deci, 2005). Specifically, employees were found to be more engaged with their work (Kovjanic et al., 2013) and to enjoy their work to a higher degree (Andreassen et al., 2010) if they were able to satisfy their competence need. Moreover, a fulfilled need for competence positively influences employees' performance at work (Baard et al., 2004). This finding is consistent with studies examining the team competence-performance link from an objective rather than subjective perspective (e.g., Balachandra, 1996; Haon et al., 2009). More precisely, researchers found that the assignment of employees who are competent for a specific project task (Haon et al., 2009) predicts project success (Balachandra et al., 1996; Cohen & Bailey, 1997; Patanakul, 2013; Patanakul, Mi-

losevic & Anderson, 2007) and, thus, is a facilitator of organizational performance (Stewart, 2006).

Since a new team, if it helps employees fulfill their competence need at the project start, positively impacts motivation in entrepreneurial projects and is conducive to organizational performance, I count team competence as the fifth dimension of transition performance. I define the construct consistent with Flohrer (2014) as follows (p. 81):

> ***Team competence:*** *"The perception at the start of a [entrepreneurial] project that their prospective project team members have the 'right' competencies for advancing project success."*

4.2.3 Period in between two projects

Consistent with the previous sections, I clarify in this section the meaning of the period in between two entrepreneurial projects and continue with deriving and defining an opportunity to increase organizational performance.

Definition of period in between two projects

Since the *period in between two entrepreneurial projects* has gained little research attention to date, I cannot draw on existing research for its definition. Thus, I define this period in line with the other two periods of the transition process *as the period that is determined by the end of an employee's workload for the previous project (project end) on the one hand and by the start of an employee's workload for the upcoming project on the other hand (project start)*. Depending on the timing of the prospective project start relative to the previous project end, there are three different situations which employees may experience while they move from one project to the next. Those situations (A, B, C) are illustrated in Figure 7.

First, employees may stop working for one entrepreneurial project and directly continue working for the next project (Situation A). A project team member in the automotive industry described this situation in an interview as follows:

> *"There was no overlap time in which you could say 'I work here a little bit and then there a little bit'. Instead, there was a clear cut. Today this, tomorrow that."*

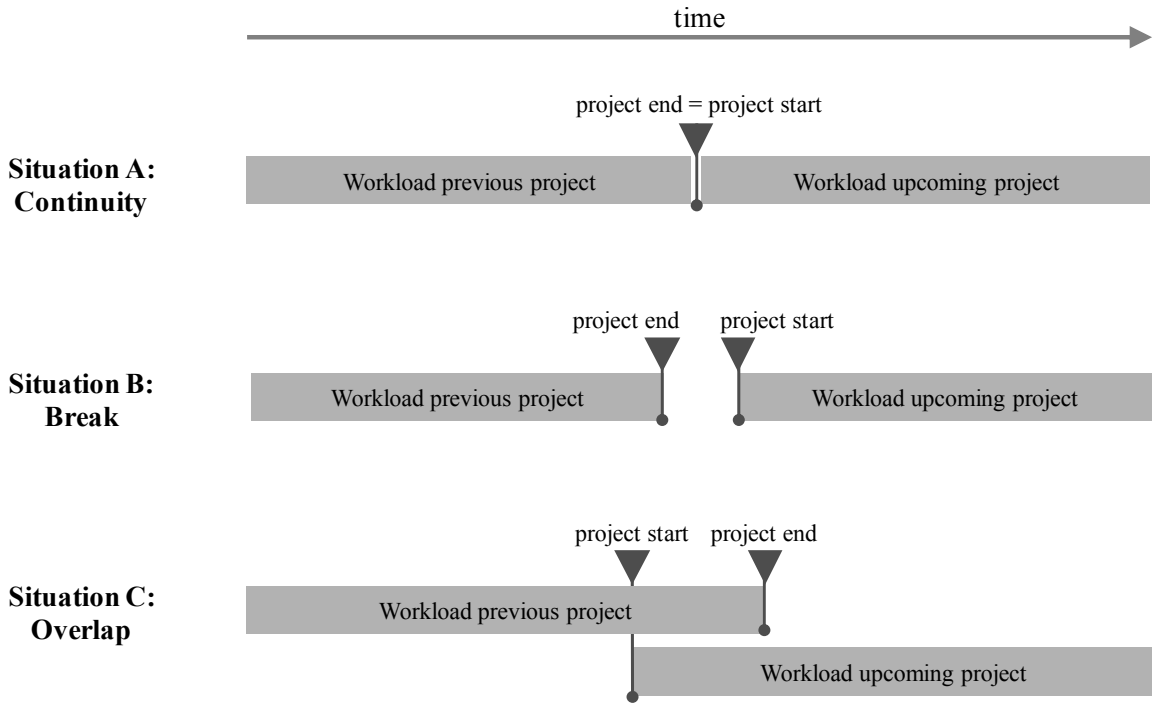


Figure 7: Three types of situations in the period in between two projects

Second, the period in between two projects may be more complex and time consuming. For example, a project member in an industrial goods organization explained that he had a break (Situation B) after his last entrepreneurial project.

> *"The senior management stopped our project from one day to the next. […] This decision was very surprising and the team members had to experience an idle period."*

Third, employees may have to work simultaneously for the previous and upcoming project over a period of time (Situation C). A project leader in an organization which produces goods for the medical industry described this situation and stressed that the workload for the previous and upcoming project frequently overlap:

> *"I wish projects would not overlap in a too high degree. The last weeks of a project are often the most stressful weeks; thus, it is not possible to perform the most important activities for the next concept [of the upcoming project] at the same time."*

The period in between two projects in extant literature

Different to the project end and the project start, research on the period in between two projects is limited. However, two literature streams addressed a potential *break between the end of the previous project and the start of the upcoming project* (Situation B). First, by minimiz-

ing the time lag in between two projects, researchers conducted simulation studies to solve project scheduling problems (Kolisch & Padman, 2001; Leus & Herroelen, 2004) and to improve organizational performance (for an overview see Kolisch & Padman, 2001). Second, researchers examining the management of entrepreneurial projects for increased organizational performance suggested, for example, to avoid allocating resources on nonproductive project phases (Cohen, Eliasberg & Ho, 1996), like a break in between two projects. In a similar vein, Shepherd et al. (2014) argued that it is important in many cases to rapidly redeploy resources of a failing entrepreneurial project to avoid a nonproductive phase and sunk cost, which could have detrimental performance effects.

In addition, studies on multi project management help understand the *overlap in workload of two subsequent projects* (Situation C) (e.g., Krishnan & Ulrich, 2001; Nobeoka, 1995; Patanakul, 2013). Researchers in this field emphasized that an overlap in project work allows organizations to utilize their resources more efficiently and to increase their organizational performance because employees' workload may be balanced across projects (Krishnan & Ulrich, 2001; Patanakul, 2013). Further, when employees work for multiple projects in parallel, knowledge transfer and learning (Nobeoka, 1995) are facilitated and the organizational performance improves (Goffin & Koners, 2011).

Taken together, existing research emphasizes that the management of entrepreneurial project resources such as time (Kolisch & Padman, 2001; Marvel et al., 2007) or employees (Patanakul, 2013; Shepherd et al., 2014) is an important opportunity for performance increase in the period in between two projects.

Facilitators of performance in the period in between two projects

A cautious management of resources is important for entrepreneurially acting organizations which have to equip multiple promising project ideas with typically scarce resources (Cooper et al., 1999). Those project resources yield higher outputs if they are efficiently managed (Davis & Peri, 2002, p. 87). Indeed, researchers regard the efficient use of organizational resources as an elementary aspect of entrepreneurial performance (e.g., McGrath, Tsai, Venkataraman & MacMillan, 1996; Sivasubramaniam et al., 2012; Verona, 1999). For example, Sivasubramaniam et al. (2012) used efficiency variables as performance indicators in their meta analysis on the determinants of entrepreneurial success.

Since the efficient use of entrepreneurial resources is an opportunity to increase organizational performance in the period in between two entrepreneurial projects, I include efficiency management as the sixth and final transition performance dimension. I define the construct as follows:

> ***Efficiency management:*** *The perceived quality of resource management in the period determined by the end of a previous and the start of an upcoming entrepreneurial project.*

In sum, I defined six constructs which provide opportunities to improve organizational performance while employees transition from one project to the next. Collectively, those six constructs constitute the transition performance concept used in this chapter.

4.3 Method

I argue in the following section that extant literature does not provide appropriate measurements for each of the six transition performance constructs. Therefore, I develop new scales and follow the scale development steps proposed by MacKenzie, Podsakoff and Podsakoff (2011) – who combined prior work on scale development (e.g., Anderson & Gerbing, 1988; Bagozzi, Yi & Phillips, 1991; Steenkamp & Baumgartner, 1998; Edwards, 2001). (1) First, I build on the conceptual definitions of the six transition performance constructs (MacKenzie et al., 2011) which I have developed in the previous section (section 4.2). (2) Second, I generate items representing the six constructs including the test for content validity (MacKenzie et al., 2011) and present the item set for each of the six new transition performance scales (section 4.3.1). (3) Third, I specify the measurement model (MacKenzie et al., 2011) and illustrate it (section 4.3.2). (4) Fourth, I refine the item sets (MacKenzie et al., 2011) using a pretest sample of scientific researchers and an industry sample of R&D employees (section 4.3.3) while I apply a stringently defined item refinement procedure (section 4.3.4). (5) Finally, I assess the measurement model fit (section 4.4.1) and scale reliability (section 4.4.2). Further, I validate the six transition performance scales (MacKenzie et al., 2011) for cross-sample validity using measurement invariance tests with the industry sample (section 4.4.3) and conduct tests for convergent and discriminant validity (section 4.4.4) as well as tests for social desirability bias (section 4.4.5).

In this chapter, the detailed procedure of scale development differs across the six transition performance constructs as illustrated in Figure 8. While I follow the previously described

steps (1-5) to develop new scales to measure the constructs individual experiential learning, team experiential learning, and efficiency management, I continue the work of Flohrer (2014) for the remaining three scales. In his thesis, Flohrer (2014) developed scales for briefing, team relatedness, and team competence by covering all scale development steps (1-4) except from the test for cross-sample validity (5). For reasons of consistency and completeness, I include Flohrer's (2014) results in this chapter.

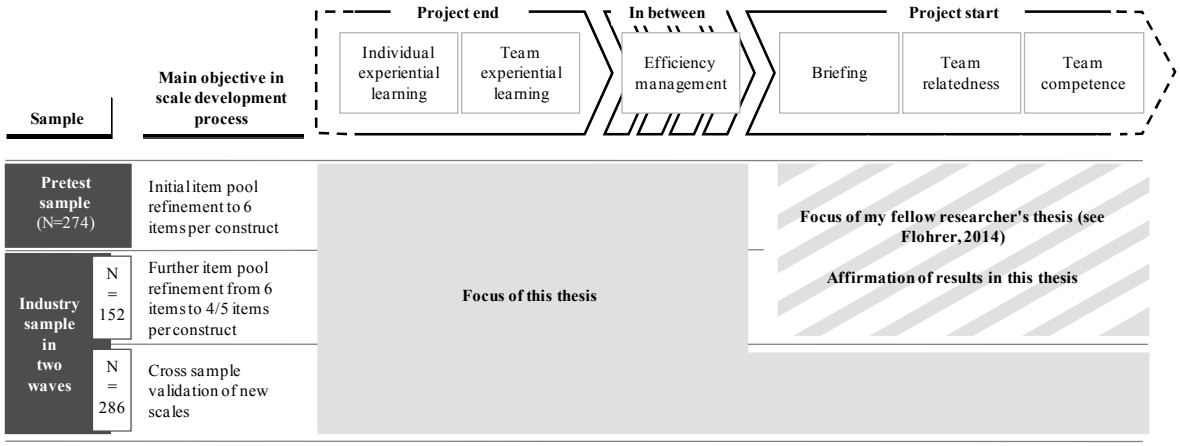


Figure 8: Item refinement and cross-sample validity tests across the six transition performance constructs

4.3.1 Item generation

In the following sections, I review existing research for scales to measure the six transition performance constructs. Since I find no appropriate measures which are applicable in this chapter, I continue with item writing by building on two sources (MacKenzie et al., 2011) [17]. On the one hand, I establish a theoretical foundation for each construct and phrase items on this basis. On the other hand, I enhance the item set with findings from the interviews conducted with managers and employees assigned to entrepreneurial projects. Finally, I present an item set for each of the six constructs which exhibit four characteristics. (1) The items reflect employees' perception because employees are the focus of this chapter. (2) The item sets include reverse items as reverse items are important to maintain the participants' attention during questionnaire responding (Kline, 2005). (3) The item sets comprise items which go

[17] Items were jointly generated within the research project team "Project Success Panel". Since I contributed to the research project by reviewing extant literature on appropriate measurements, establishing the theoretical foundation, and deducting insights from interviews, I write in this section "I" while in some cases meaning "we as a research project team". For further details see chapter 2.

little beyond the theoretical understanding of the specific domain to capture potentially relevant content which would elsewise have been overlooked (Clark & Watson, 1995). (4) The items are tested for content validity – "the degree to which items in an instrument reflect the content universe to which the instrument will be generalized" (Straub, Boudreau & Gefen, 2004, p. 424). German and American researchers (three professors and four PhD students who are all active in the fields of management, entrepreneurship and psychology) compared the item list with the construct definitions (Anderson & Gerbing, 1991) and minor adaptations in item wording were made.

4.3.1.1 Items for individual experiential learning

I begin with generating items to measure the project end related constructs, specifically individual experiential learning, which captures an employee's time available at the end of a project to generate additional knowledge from individual experiences with the previous project. In what follows, I outline measures of individual experiential learning which have been used by researchers to date. Since those extant measures are hardly appropriate for this thesis, I establish a foundation based on theory and interviews and deduct items for a new scale.

Measures in extant literature

Individual experiential learning, i.e., employees who learn from their own project experiences, was to date investigated in experiments and in quantitative studies. First, researchers used *experiments* to assess the effect of individual learning but lack a measurement of the learning process itself (e.g., Daudelin, 1996; Goodman, Wood & Hendrickx, 2004). For example, Daudelin (1996) conducted an experiment in which she asked managers of a large organization to reflect on a challenging task which they had experienced before and she made them list their lessons learned afterwards. She found that the number of listings which she used as a measure for the amount of learning is independent from the type of experience managers reflected on (for example positive versus negative experiences).

Second, scholars used *quantitative studies* to examine different aspects of individual experiential learning and consequently provided diverse learning scales (e.g., Jerez-Gomez, Céspedes-Lorente & Valle-Cabrera, 2005; Shepherd et al., 2011). For example, researchers provided scales to assess learning capabilities (e.g., Chiva, Alegre & Lapiedra, 2007; Jerez-Gomez et al., 2005), i.e., the characteristics at work that facilitate learning processes such as how an organization tolerates errors (Chiva et al., 2007). However, learning capability scales are dif-

ficult to apply for this chapter as they assess continuous learning and do not explicitly address individual experiential learning at the project end. Other researchers provided scales to measure individual experiential learning toward the project end, specifically toward the end of failing projects (e.g., Carmeli & Gittell, 2009; Shepherd et al., 2011) while assessing for example the relationship between psychological safety and learning from failure experiences (Carmeli & Gittell, 2009). Since those learning scales ignore the time consuming nature of individual experiential learning, it is difficult to measure the individual experiential learning construct in this chapter with those learning scales. Finally, Bezuijen, Van den Berg, Van Dam and Thierry (2009) focused on and measured opportunities of learning, i.e., "employees' perceptions of the time and opportunity they received for individual development" (Bezuijen et al., 2009, p. 1255, based on Maurer and Tarulli, 1996). However, this scale focuses on learning in general rather than explicitly on learning from experiences at the end of a project which is important for the individual experiential learning construct in this chapter. In sum, since existing scales only partly allow for a measurement of the construct individual experiential learning, I develop a new scale.

Foundation in theory and interviews

To develop items for a new scale, I draw on the *accumulation-articulation-codification-concept* (Prencipe & Tell, 2001; Zollo & Winter, 2002) which has recently been used as a theoretical basis to describe individual experiential learning in the corporate entrepreneurship literature (Shepherd et al., 2014). The concept embodies three activities to learn from experience (Prencipe & Tell, 2001; Zollo & Winter, 2002). First, the *accumulation* of experience comprises the "semi-automatic stimulus-response processes" (Zollo & Winter, 2002, p. 341) leading to an adaption of operating routines. It results mainly from learning by doing or learning by using (Prencipe & Tell, 2001). Since the accumulation activity is relevant during the whole project life cycle and puts no emphasize on a project's end, it is not the focus of this chapter. Second, knowledge *articulation* refers to making experiences explicit and expressing knowledge (Prencipe & Tell, 2001; Zollo & Winter, 2002). It may occur on the one hand on the individual level through learning by reflection or thinking (Prencipe & Tell, 2001) and on the other hand on the team level through learning by discussing or confronting (Prencipe & Tell, 2001). Third, knowledge *codification* is "the creation of externalized knowledge, brought forward in linguistic and symbolic representations" (Prencipe & Tell, 2001, p. 1379). This activity includes, for example, experiential learning while documenting lessons learned in manuals or process descriptions (Prencipe & Tell, 2001) and is conducive to transferring

knowledge to upcoming projects (Prencipe & Tell, 2001), one of the most challenging tasks in organizations in entrepreneurial contexts (Goffin & Koners, 2011).

In addition, I build for item generation on three *categories of knowledge* generated from project work experiences (Corbett et al., 2007) whose accumulation, articulation, and codification contribute to individual experiential learning (Prencipe & Tell, 2001; Zollo & Winter, 2002). I consider (1) knowledge on project execution, for example, knowledge referring to project budgets, problem solving, or time schedule (Corbett et al., 2007; Goffin & Koners, 2011), (2) knowledge on resource management such as knowledge on the management of competency gaps (Cooper et al., 1999; Corbett et al., 2007), and (3) knowledge on project strategy which includes, for example, the management of commercial and technical risk (Corbett et al., 2007; Riek, 2001).

Finally, to generate further items, I use insights from *interviews*. For example, a project leader in the automotive industry acknowledged the importance of individual employees learning from previous experiences at the end of an entrepreneurial project:

> *"Learning and reflection at the end of a project would not be bad and is discussed [in our organization] from time to time. However, it is not done in reality. [...] When one project has ended, one does not look back any more."*

Similarly, a project member in the industrial goods industry expressed the need for individual experiential learning at the project end:

> *"[I wish I had] more time to complete the project documentation."*

Item overview

Items to measure the construct, individual experiential learning, are phrased to reflect the previously described learning concept (Prencipe & Tell, 2001; Zollo & Winter, 2002), specifically the two experiential learning activities knowledge articulation (individual level) and knowledge codification. Moreover, they represent the three knowledge categories (Corbett et al., 2007) and the insights gained from interviews. In addition, since the construct takes into account that learning takes time, I phrased the items like "I still have not had time to think about the last project in order to learn from it". In sum, I propose seven items with anchors ranging from 1 "strongly disagree" to 7 "strongly agree" and present them in Table 11.

Item number	Items	Foundation
IEL1*	If I had more time to reflect about the past then I could improve the chance that future projects will be more successful (R).	– Knowledge articulation, esp. learning by reflection and thinking (Prencipe & Tell, 2001; Zollo & Winter, 2002) – Interview with project leader in automotive industry – Learning needs time (Huy, 1999; Moon, 1999; Rudolph et al., 2009)
IEL2*	I still have not had time to think about the last project in order to learn from it (R).	
IEL5+	I have not had sufficient time to think about how to more effectively run a project (R).	– Knowledge articulation, esp. learning by reflection and thinking (Prencipe & Tell, 2001; Zollo & Winter, 2002) – Learning through reflecting on project related (Shepherd et al., 2011) knowledge categories (Corbett et al., 2007); one item per category: (1) knowledge on project execution (Corbett et al., 2007; Goffin & Koners, 2011) (2) knowledge on resource management (Cooper et al., 1999; Corbett et al., 2007) (3) knowledge on project strategy (Corbett et al., 2007; Riek, 2001) – Learning needs time (Huy, 1999; Moon, 1999; Rudolph et al., 2009)
IEL6	There has not been time to think about how to better allocate resources (time and money) to managing the factors critical to project success (R).	
IEL7	I have not had time to process the information about the last project that would enable me to better execute a project's strategy (R).	
IEL3*	I wish I had time to document the mistakes that we made with the last project (R).	– Knowledge codification (Prencipe & Tell, 2001; Zollo & Winter, 2002) – Interview with project member in industrial goods industry – Learning from success and failure experience important (Ellis & Davidi, 2005) – Learning needs time (Huy, 1999; Moon, 1999; Rudolph et al., 2009)
IEL4*	I wish I had time to document the things that we did well with the last project (R).	

* Item belongs to final scale; + Item eliminated after pretest; (R) Item reversed
Note: All items introduced with "Now, please think about the time since your engagement in the old project ended."

Table 11: Items of the individual experiential learning scale

4.3.1.2 Items for team experiential learning

Next, I generate items to measure the construct, team experiential learning, which captures an employee's perceived opportunity at the end of a project to generate additional knowledge from previous project experiences through interacting with team members, team leaders, or managers. Since a literature review produces only partly appropriate team experiential learning scales, as I demonstrate in the following section, I phrase new items based on theory and interviews.

Measures in extant literature

Employees who learn from project experiences through interacting with other organizational members have been the focus of numerous experiments and quantitative studies. First, *experiments*, which represent the majority of work in this field (e.g., DeRue et al., 2012; Eddy et al., 2013; Ellis et al., 2003; Ellis & Davidi, 2005), did not measure team experiential learning directly but indirectly through a change in output and, hence, are hardly appropriate to derive a measurement of team experiential learning. For example, DeRue et al. (2012) compared leadership capabilities before and after team review meetings and concluded that leadership capabilities may develop through learning from experiences within teams. In another study, Ellis et al. (2003) measured the effectiveness and efficiency in which teams performed tasks and assumed that the differences across various types of project teams were due to different degrees of team experiential learning. Finally, Eddy et al. (2013) concluded, by analyzing the improvement in team processes following different types of team reviews, that team experiential learning can be facilitated through guided team reviews.

Second, researchers addressed aspects of team experiential learning in *quantitative studies* in which they used psychometric scales. For example, Cacciatori et al. (2012) investigated the outcome of team experiential learning and concentrated on participants who rated their use of lessons learned as stored in best practice, databases, manuals of reports (Cacciatori et al., 2012). While important aspects of team experiential learning such as discussions of joint experiences (Eddy et al., 2013) were not explicitly considered, their scale is difficult to apply in this chapter. Other authors examined team learning behavior (e.g., Edmondson, 1999; Gibson & Vermeulen, 2003; Van der Vegt & Bunderson, 2005). Edmondson (1999), for example, measured team learning behavior which is, as she found, a mediator between team beliefs and team performance (Edmondson, 1999). Her team learning behavior scale includes items like "We regularly take time to figure out ways to improve our team's work process" (Edmondson, 1999, p. 363) and thus, intends to measure continuous experiential learning rather than experiential learning at the project end. Building on the work of Edmondson (1999), Van der Vegt and Bunderson (2005) measured team learning behavior, i.e., continuous experiential learning rather than experiential learning at the project end, in their study on the effects of team diversity. Similarly, Gibson and Vermeulen (2003) assessed team learning behavior using another team learning behavior scale with items like "Team members maintain a high level of idea exchange" (Gibson & Vermeulen, 2003, p. 222) and assessed its relationship with team diver-

sity. Since their scale also does not explicitly focus on experiential learning at the project end, I can hardly benefit from existing scales in this chapter.

In sum, although extant literature has addressed team experiential learning empirically in experiments and quantitative studies, the existing measurements are hardly appropriate to measure team experiential learning in the view of this chapter. Hence, I develop a new scale for team experiential learning which is why I generate new items in what follows.

Foundation in theory and interviews

For item generation, I build on the previously described accumulation-articulation-codification-concept (Prencipe & Tell, 2001; Zollo & Winter, 2002) and base the items of the new team experiential learning scale, consistent with the item generation for individual experiential learning, on *knowledge articulation and codification*. In addition, consistent with recent work on team experiential learning (DeRue et al., 2012; Eddy et al., 2013), I draw on the work of Ellis and Davidi (2005) who enhanced the latter learning concept by including *feedback* as an additional essential activity to learn from previous experiences. Feedback is defined as "information with which a learner can confirm, add to, overwrite, tune, or restructure information in memory" (Ellis & Davidi, 2005, p. 858). Consequently, feedback helps employees focus on most relevant experiences while they learn (Anseel et al., 2009).

Moreover, I draw on the *psychological ownership concept* (Pierce et al., 2001) which posits that employees may feel like owning an entrepreneurial project when they exercise control during project work, know project specific details, or invest much personal effort into this project (Pierce et al., 2001). Since employees are likely to experience these conditions during their project work (Shepherd et al., 2011), they are likely to establish a close relationship with their project (Shepherd & Cardon, 2009), develop strong feelings of ownership, and find it difficult to detach themselves at the end of a project (Pierce et al., 2001). Therefore, organizations in entrepreneurial contexts bear the risk that project employees who are transitioning remain strongly committed to their previous projects and are not open to understand the requirements of other projects across the organization during this time (Swan et al., 2010). Thus, employees are likely to be only slightly motivated to engage in sharing their knowledge generated from experiences – an important aspect of team experiential learning – toward the end of an entrepreneurial project (Swan et al., 2010). I include items to account for this issue.

Finally, I base the item generation on *interviews* because employees provided insights on experiential learning mechanisms in teams which are used in organizations at the end of entrepreneurial projects. For example, a project leader in the research and development department of a defense and security organization described organizational standards for team experiential learning:

> *"In our company, there is a clearly defined process, namely lessons learned. This includes all employees and it means that a review is held at the end of a project in which everyone gets the opportunity to express where he or she perceives a potential for improvement and where there are aspects, which have not gone well and which should be done differently. Just aspects which one thinks others could profit from if one expresses this topic."*

For others, like a research and development manager in the airline industry, team experiential learning procedures would be highly desirable, but are not in practice yet. He stated:

> *"We have not yet systematically organized this [= team experiential learning at the end of a project]. This is a weak point."*

Item overview

Items of the new team experiential learning scale are phrased to reflect team specific activities to learn from experiences which are derived from the two learning concepts described (Ellis & Davidi, 2005; Prencipe & Tell, 2001; Zollo & Winter, 2002), the concept of psychological ownership (Pierce et al., 2001), and insights gained from interviews. Taken together, I phrased 15 items with anchors ranging from 1 "strongly disagree" to 7 "strongly agree" which are displayed in Table 12.

Item number	Items	Foundation
TEL1*	Managers requested that I provide them feedback on the last project.	– Knowledge articulation, esp. learning by discussing and confronting (Prencipe & Tell, 2001; Zollo & Winter, 2002) – Managers are responsible for knowledge transfer across the organization and team experiential learning is crucial for this transfer (Crossan et al., 1999) – Interview with project leader in defense and security organization
TEL2*	The managers sought my opinion about how to improve a future project's chance of success.	
TEL3*	The management was interested in the "lessons learned" from my experience with the previous project.	
TEL4*	There was an open discussion about what had happened with the last project.	
TEL6+	There were meeting(s) amongst team members that discussed the transition "out of" the previous project.	
TEL7+	It was important to my manager/supervisor, that I make all important documents from the old project easily accessible.	– Knowledge codification (Prencipe & Tell, 2001; Zollo & Winter, 2002) – Psychological ownership: detaching oneself from the previous project as precondition for team experiential learning (Pierce et al., 2001; Swan et al., 2010)
TEL8+	After an exchange of ideas about the project with management (manager/supervisor), I felt “free” to commit to the next project.	
TEL9+	Despite of the efforts of my organization, I am still thinking about the old project (R).	
TEL10+	Managers discussed the reasons behind the need for redeploying people.	– Feedback on previous performance as essential learning activity (Ellis & Davidi, 2005)
TEL11+	I feel that managers told me all I needed to know about why I was being assigned to another project.	
TEL12+	I felt that there was clear communication about the reasons behind my reassignment.	
TEL5*	The organization took formal steps to debrief me.	– Interview with R&D manager in airline industry – Team experiential learning mechanisms, for example post project reviews, are very heterogeneous (Von Zedtwitz, 2002); items are worded to cover the big variety of review tools used in practice.
TEL13+	My organization performed the usual 'ritual' to close the old project.	
TEL14	There were meetings to reflect on the past project to learn from the experience.	
TEL15+	There was a closing event with the whole project team to properly end the old project.	

* Item belongs to final scale; + Item eliminated after pretest; (R) Item reversed
Note: All items introduced with "How has the 'exit' out of your last project been?"

Table 12: Items of the team experiential learning scale

4.3.1.3 Items for briefing

In the following sections, I address scales to measure the transition performance constructs related to the project start and I begin with briefing which measures "the degree to which employees feel at the start of a project that their project leader or management enabled them to perform well and complete their tasks during the upcoming project" (Flohrer, 2014, p. 55). I

give a brief overview of how briefing was assessed in empirical studies so far and continue with outlining the briefing items as proposed by Flohrer (2014).

Measures in extant literature

Briefing as an intervention to mobilize employees for their work (Flohrer, 2014) was addressed by researchers in experiments and in quantitative studies. First, in *experiments* scholars compared the performance of teams who had been briefed at the beginning of teamwork with those who had not been briefed at all or had been briefed at a later stage (e.g., Mathieu & Rapp, 2009; Woolley, 1998). For example, Mathieu and Rapp (2009) found that teams which dedicated time to define objectives, allocate roles, or develop plans at the start of teamwork outperformed those teams which had not taken their time. However, briefing in experiments was not measured explicitly and hence, those studies hardly do provide appropriate measurements for this chapter.

Second, *quantitative studies* examining briefing interventions (e.g., Woolley, 2009; Yu, Shen, Kelly & Hunter, 2007) are limited and provide few scales to measure briefing. For example, Woolley (2009) examined the content of early team discussions in her survey based study. However, as she considered project processes and objectives, but not roles and responsibilities which are an integral part of briefings (Vashdi et al., 2007), she measured the briefing construct only partly. In contrast, Yu, Shen, Kelly and Hunter (2007) proposed a briefing scale consisting of 13 dimensions and covering various topics such as team or stakeholder management. However, their scale aims at briefings in the construction industry and the items are worded accordingly (Yu et al., 2007). Thus, this scale is difficult to apply for entrepreneurial projects.

Taken together, since extant literature does not provide a briefing scale which is fully appropriate to measure briefings at the start of entrepreneurial projects, Flohrer (2014) recently proposed a new briefing scale and I build on his work for this chapter.

Foundation in theory and interviews

Flohrer (2014) developed items while drawing on the case study of Harborne and Johne (2003) which help understand the *content of briefing sessions.* In their work, Harborne and Johne (2003) found that explaining the nature of a project task is conducive to employee empowerment in entrepreneurial projects and, consequently, project success. This result is supported in studies conducted by other authors (e.g., Hoegl & Schulze, 2005; Mathieu & Rapp,

2009). For example, Mathieu and Rapp (2009) found that providing a team with information on a team's objectives, roles and responsibilities, early promotes performance. Further, Hoegl and Schulze (2005) emphasized that the effectiveness within entrepreneurial projects increases if team members get access to relevant project information in briefings, e.g., through knowledge sharing among experienced and less experienced team members.

In addition, the items of Flohrer's (2014) briefing scale represent insights generated from *interviews*. For example, the leader of an entrepreneurial project in the industrial electronics industry described the project start routines in his organization as follows:

> *"[My previous] projects have started in the majority of cases with a kickoff [= briefing] meeting, to which the project leader invited the team members and in which he presented the project for the first time, including the project's scope. First, the team gets to know each other and, second, tasks are assigned."*

Further, a project team member of the same organization emphasized the importance of documents to prepare oneself at the start of a new entrepreneurial project:

> *"When a project has been started and the [file] folder has been created, all information is put into this folder. All project members have access to this folder. Since the [folder] structure is given, everyone usually finds what they are searching for. [...]. In my opinion this works very well."*

Item overview

Flohrer (2014) proposed 13 briefing items which he reduced within an item refinement process to five. The items reflect the typical content of briefing interventions as described earlier (Harborne & Johne, 2003; Hoegl & Schulze, 2005; Mathieu & Rapp, 2009), specifically the role of team members within the entrepreneurial project and the nature of project tasks. In addition, the items mirror the insights generated from interviews with employees in entrepreneurial projects. I summarize the final item set in Table 13 of which each item is anchored in a range from 1 "strongly disagree" to 7 "strongly agree".

Item number	Items	Foundation
B1*	I had all important information to prepare myself for the new project.	– Type of information which is provided to employees at the start of the new project (Harborne & Johne, 2003), consistent with Mathieu and Rapp (2009) and Hoegl and Schulze (2005) – Interviews with project team member and leader in organization which is active in the industrial electronics industry
B2*	I feel that managers told me all I needed to know about my role in the new project.	
B3*	I felt that there was clear communication about the nature of the tasks required of me by the new project.	
B4*	After an exchange of ideas about the project with management, I felt I knew what was expected of me.	
B5*	Management has given me a good overview about the environment of the new project.	

* Item belongs to final scale; (R) Item reversed
Note: All items introduced with "How has the 'entry' into your (current) project been?"

Table 13: Items of the briefing scale as proposed by Flohrer (2014)

4.3.1.4 Items for team relatedness

Next, I briefly summarize how team relatedness, i.e., employees' feelings of being emotionally connected to their team members (Deci & Ryan, 2000; Flohrer, 2014), has been measured in extant research. In addition, I give further details on the team relatedness items generated by Flohrer (2014) whose work I build on in this chapter.

Measures in extant literature

Although several studies assessed team relatedness quantitatively (e.g., Arthur, Edwards, Bell, Villado & Bennett, 2005; Flohrer, 2014; Reinboth & Duda, 2006; Schepers, Falk, De Ruyter, De Jong & Hammerschmidt, 2012) the established psychometric scales diverge – with the exception of Flohrer (2014) – from the focus of team relatedness in this chapter. First, Schepers et al. (2012) developed a new scale for team relatedness (based on Baard et al.'s scale, 2004) which measures the fit between the specific team task and other tasks across the organization rather than measuring the fit between different team members (see also Flohrer, 2014). Second, Arthur et al. (2005) measured team relatedness to identify the "extent to which tasks cannot be performed by any one individual alone" (Arthur et al., 2005, p. 655) while the authors were not explicitly interested in employees' emotional relatedness (see also Flohrer, 2014). Third, Vlachopoulos and Michailidou (2006) developed a relatedness scale to measure individuals' relatedness perceptions which is hardly applicable to my research since the authors focused on sport rather than entrepreneurial project teams. Finally, Flohrer (2014) proposed a new scale for team relatedness in his thesis which reflects the conceptualization of team relatedness in this chapter and I use his items for the transition performance scale.

Foundation in theory and interviews

Flohrer (2014) generated items for his team relatedness scale drawing on the *theory of self determination* (Deci & Ryan, 2000) and on the notion that a fulfilled need for relatedness promotes individual well-being and motivation (Deci et al., 2001). He focused on the conditions under which employees feel connected to their team members and thus, are able to fulfill their need for relatedness at the project start (Baumeister & Leary, 1995). For example, employees feel related when they experience social support (Fernet et al., 2013), i.e., when they ask for help and their team members respond by helping to get things done (Van den Broeck et al., 2010). Further, Vlachopoulos and Michailidou (2006) demonstrated that open channels of communication within a team facilitate perceptions of relatedness. In contrast, negative behaviors of team members such as unpleasant communication (Trépanier et al., 2013) may frustrate individuals' need fulfillment. Finally, Kovjanic et al. (2013) stressed the role of leaders. They found that transformational leaders who provide visions, challenge employees, and take different perspectives into account, help employees fulfill their relatedness need (Kovjanic et al., 2013).

In addition, Flohrer's (2014) items reflect the insights from an *interview* with an entrepreneurial project member in the automotive industry:

> *"I knew one team member [of the new project] already because I had worked with him before. Thus, the transition was less difficult for me."*

Item overview

In total, Flohrer (2014) phrased 15 team relatedness items which he refined in a rigorous process to a set of four items. All four items refer to the project start and directly reflect the concept of the relatedness need as proposed by Deci et al. (2001) and as described in the interview. Further, the opening question is worded to account for the important role of leaders for individual need fulfillment (Kovjanic et al., 2013). I give an overview of the items with anchors ranging from 1 "strongly disagree" to 7 "strongly agree" in Table 14.

Item number	Items	Foundation
TR1*	that there will be open channels of communication between team members.	– Self determination theory (Deci & Ryan, 2000) and need for relatedness (Deci et al., 2001) – Relations to team members important for fulfillment of need for relatedness (e.g., Trépanier et al., 2013; Van den Broeck et al., 2010; Vlachopoulos & Michailidou, 2006) – Interview with project member in automotive industry
TR2*	that I will be very much at ease with the other team members.	
TR3*	that I will become connected to the project team.	
TR4*	that I will become very comfortable with the other members of the project team.	

* Item belongs to final scale
Note: All items introduced with "During the transition from your last project to the current one, which impressions did your organization (including managers, processes, culture) give you about the current project? My organization has given me the impression, …" (referring to Kovjanic et al., 2013)

Table 14: Items of the team relatedness scale as proposed by Flohrer (2014)

4.3.1.5 Items for team competence

In the following section, I review measures of team competence – employees' perception that the team will successfully master the project task (Flohrer, 2014) – which are used in extant literature. Further, I outline Flohrer's (2014) newly developed items which I use in this chapter.

Measures in extant literature

The notion of team competence was investigated in several quantitative studies and accordingly, several measures have been proposed (e.g., Flohrer, 2014; Gully et al., 2002; Kor, 2003; Schepers et al., 2012). For example, team competence was measured with the years of team members' work experience (Kor, 2003). Since general work experience may be of little help for a specific project task, this measure is difficult to apply in this chapter (see also Flohrer, 2014). Further, Schepers et al. (2012) operationalized team competence using a psychometric scale which includes items like "Most days, our team feels a sense of accomplishment from working" (Schepers et al., 2012, p. 14). Even though this measure addresses the perceptions of mastery, it establishes no link to the project start (see also Flohrer, 2014).

Moreover, there are scales intended to measure team potency, i.e., "generalized beliefs about the capabilities of the team across tasks and contexts" (Gully et al., 2002, p. 820), and collective efficacy, i.e., "shared beliefs in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainment" (Bandura, 1997, p. 477). These two measures capture a team's competence and thus, are similar to team competence as de-

fined in this chapter (see also Flohrer, 2014). However, they are only partly appropriate for this chapter as both constructs are team level constructs (Chan, 1998; Gully et al., 2002; Stajkovic, Lee & Nyberg, 2009) while team competence in this chapter is an individual level construct which refers to the team (Chan, 1998). In addition, team potency and collective efficacy neither refer to a specific project task nor to the project start (see also Flohrer, 2014).

Taken together, existing scales are hardly appropriate to address the team competence construct in this chapter as they lack specificity, a link to the project start, or the appropriate level of analysis. As Flohrer (2014) recently developed items for a new team competence scale based on the conceptualization of team competence which I use in this chapter, I further draw on his work.

Foundation in theory and interviews

The items of Flohrer's (2014) team competence scale comply with the self determination theory (Deci & Ryan, 2000) which describes employees desire to fulfill their need for competence and its effect on individual well-being and motivation (Deci et al., 2001). Specifically, the items reflect the conditions at the project start which help mastering a challenging project task (Van den Broeck et al., 2010) and thus, may contribute to a fulfilled need for competence (Deci et al., 2001). For example, studies found that employees' experiences (Dragoni, Tesluk, Russell & Oh, 2009; Kor, 2003), skills (Kauffeld, 2006; Ozkaya, 2010), and knowledge (Du Chatenier, Verstegen, Biemans, Mulder & Omta, 2010; Le Deist & Winterton, 2005) are relevant for a team's competence. Further, employees being led by transformational leaders are more likely able to fulfill their need for competence (Kovjanic et al., 2013).

In addition, Flohrer's (2014) item set reflects the situation at the project start which an entrepreneurial project member working for a supplier to the pharmaceutical industry has experienced and described in an *interview*:

> *"They told me that I will get support in this project from more experienced coworkers. They will be in charge of project tasks in which they are more experienced."*

Item overview

Taken together, Flohrer (2014) developed a set of 13 items which he reduced within a refinement process to four items. The final item set covers the conditions necessary to fulfill the competence need (Deci et al., 2001) at the entrepreneurial project's start as suggested by extant literature and interview partners. In addition, the opening question considers the im-

portant role of managers for individuals' need fulfillment (Kovjanic et al., 2013). Table 15 gives an overview of the items which are anchored in a range from 1 "strongly disagree" to 7 "strongly agree".

Item number	Items	Foundation
TC1*	Management have assigned the "right" team members to the project to allow it perform well.	– Self determination theory (Deci & Ryan, 2000) and need for competence (Deci et al., 2001) – Experiences, skills, and knowledge of team members important for fulfillment of need for competence (e.g., Du Chatenier et al., 2010; Kauffeld, 2006; Kor, 2003) – Interview with project member working for a supplier to the pharmaceutical industry
TC2*	I feel that we have a team with the necessary skills to perform well at this project.	
TC3*	I feel that we have a team with the necessary experience to perform well at this project.	
TC4*	I feel that we have a team with the necessary knowledge to perform well at this project.	

* Item belongs to final scale
Note: All items introduced with "During the transition from your last project to the current one, has the organization (including managers, processes, culture) provided you the resources that you need for the current project?" (referring to Kovjanic et al., 2013)

Table 15: Items of the team competence scale as proposed by Flohrer (2014)

4.3.1.6 Items for efficiency management

Finally, I generate items to measure the construct capturing the quality of resource management, efficiency management, in the period in between the end of the previous entrepreneurial project and the start of the upcoming entrepreneurial project. This period in between two projects is determined by a continuity (i.e., previous project is directly followed by upcoming project), a break (i.e., break between previous and upcoming project), or an overlap (i.e., previous and upcoming projects overlap to some extent). Prior to phrasing items based on theory and interviews, I give a brief overview of efficiency measures used in extant literature.

Measures in extant literature

Researchers proposed various management or organization related efficiency measures (e.g., Beal et al., 2003; Davis & Peri, 2002; Lin & Chen, 2005; Shenhar, Dvir, Levy & Maltz, 2001; Sivasubramaniam et al., 2012). For example, scholars assessed an organization's efficiency using performance indicators like number of patents divided by R&D expenses (Lin & Chen, 2005), after tax return on sales (Davis & Peri, 2002), or return on assets (Davis & Peri, 2002). Other scholars measured efficiency while examining if the project had met budget or time objectives (Shenhar et al., 2001; Sivasubramaniam et al., 2012). However, all extant efficien-

cy measures fall short when it comes to measuring efficiency management as defined in this chapter because they are limited to the specific resource categories such as financial capital or time and do not explicitly include employees. In addition, none of the extant measures refers to the period in between two projects. Therefore, I develop a new scale.

Foundation in theory and interviews

I phrase items with respect to *three types of entrepreneurial resources* (Cooper et al., 1999) which increase organizational performance if they are efficiently managed. First, *employees* are the most important resource in entrepreneurially acting organizations as employees develop innovative ideas (Crossan et al., 1999). An efficient management of the employee resource in between two projects includes, in many cases, a rapid assignment to new projects to avoid idle periods (Shepherd et al., 2014) and a balanced workload if projects overlap to avoid work overload (Kuprenas, Jung, Fakhouri & Jreij, 2000; Patanakul et al., 2007). Second, *financial capital* is an important resource since it is included in the major metrics used to calculate the performance of organizations (Davis & Peri, 2002; Lin & Chen, 2005). The resource financial capital is efficiently managed in the period in between two projects as long as it is invested in the productive phases of the transition (Cohen et al., 1996). Third, *time* has been stressed as a crucial resource for organizations in entrepreneurial contexts as speed to market increasingly determines the success on a new market (Cankurtaran et al., 2013; Chen, Reilly & Lynn, 2012). Time is efficiently managed in the period in between two projects when there are no delays on the one hand and no time pressure provoking errors on the other hand (Chen et al., 2012).

In addition, I on the *role of managers* for item generation because managers decide on the start and end dates of entrepreneurial projects (Behrens & Ernst, 2014; Kester et al., 2011) and on the allocation of entrepreneurial resources (Lin & Chen, 2005; Phillips & Bana e Costa, 2007). Thus, managers determine the period in between two projects to a large extent and influence the efficiency outcomes (Verona, 1999).

Finally, I generate items based on the insights from *interviews*. For example, an entrepreneurial project member in a research based, engineering organization described her last project transition as follows:

> *"I transitioned to the new project out of necessity. [...] At that time, there was no personnel [in the organization] available for the new project. Therefore, the management just assigned me to the project. My boss had asked me though whether I could imagine*

working for the new project. However, there was just a need for personnel. I asked for a training period and started to work immediately."

Item overview

In sum, I phrased 16 efficiency management items which account for the three resource categories (Cooper et al., 1999), managers' role for efficiency outcomes (Verona, 1999), and interview insights. Table 16 depicts the full list of items of which each item has an anchor ranging from 1 "strongly disagree" to 7 "strongly agree".

Item number	Items	Foundation
EM1*	The transition has been wasteful (R).	– Three synthesized arguments below
EM5+	I felt torn between my responsibilities for finishing up the old project and my responsibilities for starting up the new project (R).	– Employees as one of three entrepreneurial project resources (Cooper et al., 1999)
EM6+	I did not feel prepared for my role with the new project (R).	– Employees contribute to entrepreneurial success while developing ideas (Crossan et al., 1999)
EM7+	I feel that not all the team members are yet on the same page (R).	
EM8+	It was taking a long time for the team to coordinate in a way necessary to advance the project (R).	
EM9+	There are costs that could have been avoided had the transition process been better managed (R).	– Financial capital as one of three entrepreneurial project resources (Cooper et al., 1999)
EM10	Money has been wasted during the transition (R).	– Financial resources central for performance measures (Lin & Chen, 2005)
EM11+	I feel that time has been wasted in transitioning from the previous project to the new one (R).	– Time as one of three entrepreneurial project resources (Cooper et al., 1999)
EM12+	There have been unnecessary delays in the transition process (R).	– Higher new product success due to faster development process (Cankurtaran et al., 2013)
EM13+	The transition felt rushed (R).	
EM14+	The new project is taking a long time to get up and running (R).	
EM2*	Management has given little thought about how to effectively manage the transition (R).	– Managers' decision making drives efficiency outcomes (Verona, 1999)
EM3*	The transition process has been unorganized (R).	– Interview with project member in research based, engineering organization
EM4*	This was a very haphazard transition (R).	
EM15+	I feel that my involvement with the last project ended on a “wrong note” (R).	
EM16	I feel that the new project has taken off with a "bad" start (R).	

* Item belongs to final scale; + Item eliminated after pretest; (R) Item reversed
Note: All items introduced with "Which impression did you have during the transition between your last and the current project?"

Table 16: Items of the efficiency management scale

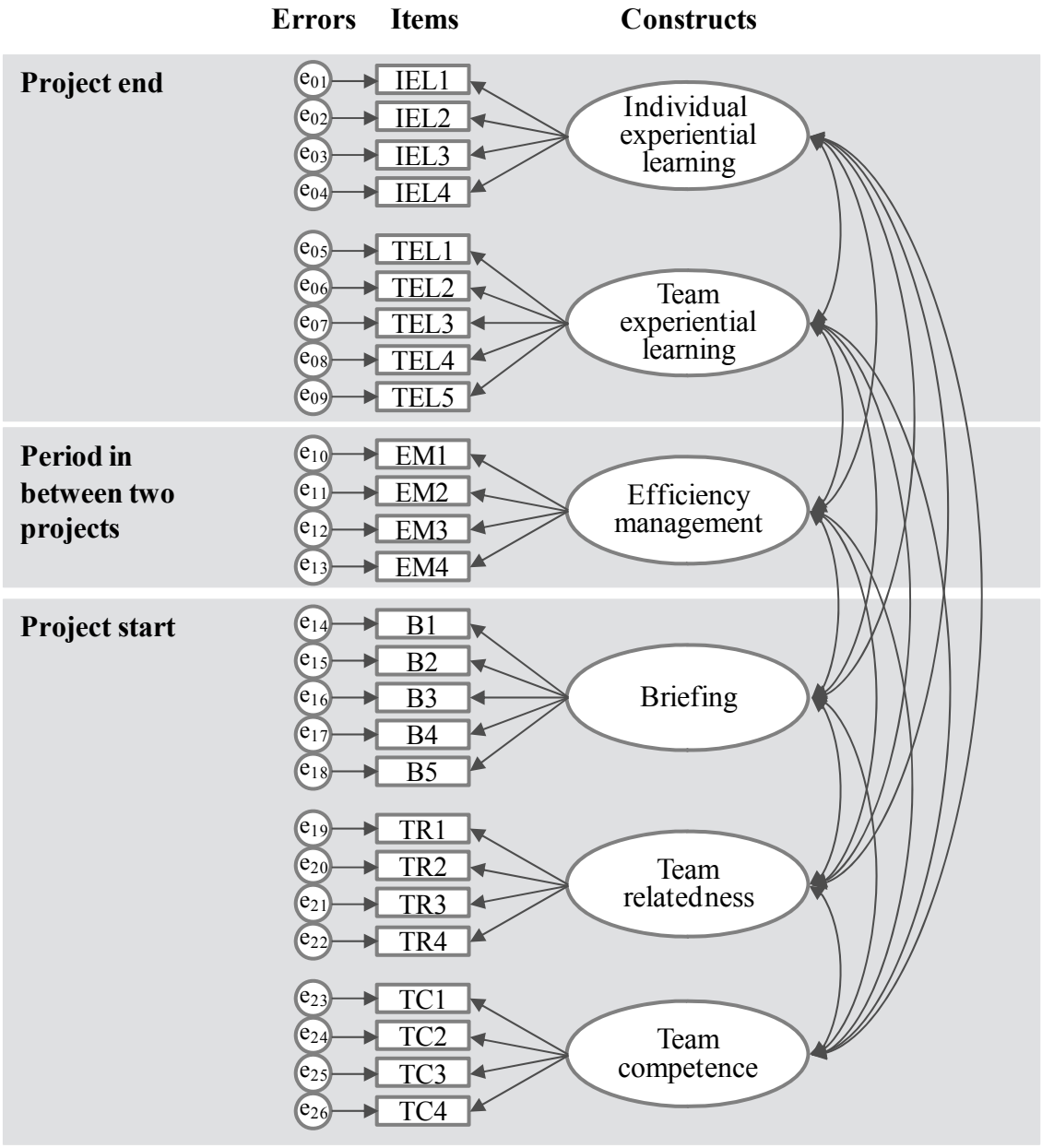
Taken together, I presented 51 items (79 items including items already eliminated by Flohrer, 2014) to measure two constructs representing the end of the previous project (individual experiential learning, team experiential learning), three constructs representing the start of the upcoming project (briefing, team relatedness, and team competence), and one construct for the period in between two projects (efficiency management).

4.3.2 Measurement model specification

In this section, I specify the measurement model of the new transition performance measurement (MacKenzie et al., 2011) to describe the expected relationship between the six transition performance constructs and the 51 items and thus, define the conditions for a statistical assessment of the measurement model. The measurement model of transition performance is illustrated in Figure 9.

The transition performance measurement model comprises *six latent factors* (Bollen, 1989), representing the six constructs or six opportunities to increase organizational performance while an employee moves from one project to the next. Since all constructs refer to the transition process, I allow for correlation among those six constructs (cf. Haynie & Shepherd, 2009; Ruvio, Shoham, Vigoda-Gadot & Schwabsky, 2013).

In addition, the measurement model contains items, i.e., observed variables (Bollen, 1989), which describe how a specific construct is measured. Therefore, it is important to specify whether a construct is *reflective or formative* (MacKenzie, Podsakoff & Jarvis, 2005). Reflective constructs are present when each item is an "imperfect reflection" (MacKenzie et al., 2011, p. 295) of the underlying concept (MacKenzie et al., 2011) while constructs need to be specified as formative when the combination of items (rather than each single item) represents the underlying concept (MacKenzie et al., 2011). All six constructs in this chapter are reflective and have reflective relationships with their items. To identify the model, I constrained the factor loadings of one item per construct to 1 and the corresponding intercept to 0 (consistent with Shepherd, Kuskova & Patzelt, 2009). Further, all items are measured on a 7-point Likert scale from 1 "totally disagree" to 7 "totally agree". Finally, each item is associated with an error of measurement (Bollen, 1989).



Note: Measurement model after item refinement; thus, 26 items instead of 51 items

Figure 9: Measurement model of transition performance

4.3.3 Samples

Following Hinkin (1998), I expose the new measurement of transition performance to multiple independent samples. Specifically, I employ two different samples to refine the initial item set of 51 items and develop the new scales. With the pretest sample of 274 university researchers and scientists, I refine the item pool in a first step. The industry sample of 438 R&D employees is utilized in a second step to further refine the item set and validate the

scales. Both samples were gathered jointly by members of the research project "Project Success Panel"[18]. The data collection process and sample properties are described in the following sections.

4.3.3.1 Pretest sample: University researchers and scientists

Data collection

A pretest sample of fellow researchers and scientists at the Technical University of Munich was collected, as this allowed for fast access to a substantial number of entrepreneurially minded individuals and hence, is appropriate for initial item refinement. To assemble a sample which is close to the industry sample used for the second step of item refinement, the focus was put on researchers and scientists in technology oriented faculties. Thus, data collection of the pretest sample concentrated on the Faculty of Civil, Geo and Environmental Engineering (34 chairs), Faculty of Chemistry (23 chairs), Faculty of Electrical Engineering and Information Technology (33 chairs), Faculty of Informatics (16 chairs), Faculty of Mechanical Engineering (35 chairs) and Faculty of Physics (21 chairs). In sum, the target population consisted of 6 faculties, 162 chairs and 2,158 researchers whose contact information was accessible via the internal university webpage.

Two trained students in the German diploma program approached the researchers and scientists from October to December 2011, either by phone or by email and asked for their participation in the pretest. Full anonymity and confidentiality was guaranteed to all participants, which was possible by administrating the questionnaire with the help of Unipark, an online tool to support academic surveys. 661 researchers and scientists agreed to participate and were invited to the pretest, yielding a response rate of 30.6 percent relative to the target population. They produced 274 complete and usable answers, yielding a response rate of 41.4 percent. For a more detailed description of the data collection procedure and the sample in the pretest see Flohrer (2014).

The survey was administered in German. Since the questionnaire was initially developed in English, a fellow researcher who is a native German, translated it into German. The back translation procedure (Brislin, 1970; Craig & Douglas, 2006) was followed to ensure accuracy. First, the German proposal was translated back into English by five PhD candidates from my research chair. Second, a post doctorate researcher compared the original and back trans-

[18] See chapter 2 for further details.

lated versions of the questionnaire. They were found to be categorically, functionally and conceptually equivalent and no further changes were necessary.

Description of sample

The pretest sample consists of 274 university researchers and scientists of which 84.6 percent are German and 75.5 percent are male (see Table 17). The respondents were on average 31.4 years old (s.d. = 5.8) and had a mean work experience of 5.5 years (s.d. = 5.3) of which they spent a mean time of 3.7 years (s.d. = 4.1) at the Technical University of Munich. The mean number of projects they had worked for was 5.6 projects (s.d. = 16.0) with an average of 4.9 employees (s.d. = 6.6) working together in one project team. 12.3 percent of the respondents worked as project leaders.

With respect to their current academic position, 1.5 percent of the respondents stated that they were professors and 3.6 percent were assistant professors; 8.4 percent were post doctorate researchers, 82.4 percent PhD students and 3.3 percent technical assistants. The educational backgrounds of the respondents were as diverse as the chairs contacted for data collection. 15.3 percent held a degree in mechanical engineering, 14.2 percent in physics, 11.7 percent in general engineering, 10.2 percent in electrical engineering, 9.5 percent in chemistry, 8.8 percent civil engineering, and 4.4 percent in computer science; the remaining graduated in biology, industrial or aerospace engineering. Less than 1 percent of the respondents failed to answer the question regarding their academic position and 5.8 percent regarding their educational background. Since the pattern of missing data appeared to be random and the share of missing data was below ten percent (Hair, 2010), I kept the remaining observations of these respondents in the data.

In sum, the pretest respondents cover a variety of positions, disciplines and years of work and project experience. Thus, the sample of university scientists makes an adequate sample for the pretest.

4.3.3.2 Industry sample in two waves: R&D employees

Data collection

For scale development and scale validation, a sample of employees involved in entrepreneurial projects in large organizations (> 500 employees, Rosenbusch et al., 2011) based in Germany was used. This is due to the fact that large organizations more often engage in radical

and risky entrepreneurial projects (Corbett et al., 2007), are more likely to have higher project failure rates and consequently, more project transitions. Further, Germany is a leading country with respect to the number of entrepreneurial initiatives as benchmarks on research and development expenses suggest (Görlitz & Hull, 2013).

The data was collected in two waves. One fellow researcher administrated the first wave from March to October 2012 (for a detailed description of the wave 1 sample see Flohrer, 2014), I completed the industry sample with the second wave from October 2012 to June 2013. Both researchers followed the same steps for data collection. A database[19] comprising all 1,050 large Germany based corporate organizations served as starting point. Since this study required substantial personnel and time from the participating organizations (several highly salaried R&D employees per organization, 1.5 working hours each for answering questionnaires), the research team's personal networks were used to get in contact with organizations listed in the database. This led to 137 organizations approached. In addition, organizations from the list were randomly approached within a predefined time frame of 16 months. In order to identify the most relevant organizations for this chapter, a focus was put on organizations which employed one manager on the executive level dedicated to research and development, indicating a high entrepreneurial orientation of this organization. This approach led to additional 183 organizations contacted. In sum, both approaches added up to 320 contacts to organizations pursuing entrepreneurial projects.

More precisely, the organizations were contacted by phone and asked only for participation if their entrepreneurial projects lasted less than five years on average to ensure that employees transition across projects somewhat frequently. To encourage participation, the importance of this study, i.e., getting a better understanding of project transition dynamics, was stressed. If asked for, further information (e.g., brief booklet) was disclosed per email directly after the phone call. The organizations which decided to participate named participants of their entrepreneurial departments: project members or project leaders who were currently working on an entrepreneurial project. The time between decision on participation and naming employees varied across organizations. Some organizations already decided on participation in the first phone call while other organizations first discussed internally due to the high effort associated with participating in the research project and decided up to four months after the first phone call. In a similar vein, some organizations named the participating employees within one day

[19] Provided by Hoppenstedt Firmeninformationen GmbH in February 2012.

after their decision to participate; others after three months. The participating employees were invited to the online questionnaire directly after being named and full anonymity and confidentiality were assured which was technically supported by using the online tool Unipark for survey administration. The participants received up to three email reminders at three week intervals. Two incentives were provided to encourage organizations and employees to participate in the study. First, an organization specific feedback package was offered at the end of the study "Project Success Panel". Second, in each wave three Amazon vouchers (50 euros) were distributed after a lottery to respondents having completed the questionnaire.

In total, 10.0 percent of the 230 approached organizations in wave 1 and 33.3 percent of the 90 organizations in wave 2 decided on participating. 237 employees in wave 1 and 321 employees in wave 2 were invited to the online questionnaire, which allowed for 152 complete and usable answers in wave 1 (response rate: 64.1 percent) and 286 in wave 2 (response rate: 89.1 percent).

Even though the sample includes only organizations which are based in Germany, not all participants were fluent in German. 14.5 percent of the participants in wave 1 and 12.9 percent in wave 2 answered the English version of the questionnaire, which was tested for accuracy with the back translation procedure (Brislin, 1970; Craig & Douglas, 2006).

In addition to survey data, together with two undergraduate students I collected organization specific information from the annual reports or the organizations' websites of the years 2010, 2011, and 2012. As proxies for an organization's size, we collected employee and revenue figures. Further, we extracted R&D expenditure and R&D intensity – the ratio between R&D expenditure and revenue – to assess the importance of research and development in organizations and to estimate their entrepreneurial orientation. However, three organizations did not provide any public information and two others did not report their R&D expenditures. In order to balance variations in the financial and employee data I averaged the figures for each organization across the years 2010 to 2012.

Description of sample

In wave 1, Flohrer (2014) collected 152 usable responses from employees of 23 organizations, which are active in different sectors: industrial goods (6 organizations), automotive (3 organizations), chemicals and materials (3 organizations), logistics (3 organizations), telecommunication, information technology and related services (3 organizations), utilities

(2 organizations), and other sectors (3 organizations). A similarly broad spectrum could be achieved in terms of the organizations' size (see Table 17). The participating organizations employed from 500 to 440,000 employees between 2010 and 2012, at a mean across all participants of 70.3 thousand employees (s.d. = 85.6); on average across all participants, they had revenues of 19.6 billion euros (s.d. = 25.6). With an average R&D intensity across all participants of 2.8 percent (s.d. = 2.3 percent), organizations with a substantial R&D activity are represented in the sample of wave 1.

In wave 2, the 30 organizations[20] and 286 usable responses likewise represent a varied structure. The organizations were active in industrial goods (14 organizations), chemicals and materials (6 organizations), automotive (4 organizations), consumer and electronics (3 organizations), and other sectors (3 organizations). With an average organization size (see Table 17) across all participants of 42.5 thousand employees (s.d. = 71.5; min. 500; max. 270,000) and 14.6 bn euro revenues (s.d. = 24.5), the wave 2 sample includes participants working in smaller organizations than wave 1. On the contrary, the mean R&D intensity across all participants of 5.6 percent (s.d. = 3.5 percent) lies well above the value of wave 1.

In both waves (see Table 17), the vast majority of participants were male (87.5 percent in wave 1 and 84.6 percent in wave 2) and German (78.3 percent in wave 1 and 80.8 percent in wave 2; other EU Europeans were 9.9 percent in wave 1 and 12.6 percent in wave 2; the remaining 11.8 percent of wave 1 and 6.6 percent of wave 2 were non European). Further, respondents represented a diverse group of project employees. More precisely, the average age was 41.0 years in wave 1 (s.d. = 10.0) and 41.5 years in wave 2 (s.d. = 9.3); the mean time of industry experience was 11.8 years (s.d. = 9.8) in wave 1 and with 13.1 years (s.d = 8.9) slightly more in wave 2 while the participants have spent most of this time in their current organization (mean time in the current organization 9.7 years in wave 1 and 10.4 years in wave 2). In the wave 1 sample, 56.6 percent reported to have graduated from the university (bachelor, master or German diploma) and 22.4 percent reported to hold a PhD; the remaining 21.0 percent had a lower degree or did not provide any information. For the wave 2 sample, the educational split is 69.9 percent university graduates, 18.2 percent PhD, and 11.9 percent other. Moreover, the respondents covered a broad range in terms of project experience. Wave 1 respondents worked on average on 10.9 projects (s.d. = 19.6), wave 2 respondents on

[20] Four companies, but different departments, are included in wave 1 and wave 2. Hence, the total number of participating companies is 49.

16.9 projects (s.d. = 28.4); the mean team size was 16.5 employees in wave 1 (s.d. = 13.8) and 14.3 employees in wave 2 (s.d. = 28.7). The share of project leaders is with somewhat more than half of the respondents, almost equal in both samples (55.3 percent in wave 1 and 57.9 percent in wave 2).

	Pretest sample (N=274)		**Industry sample** Wave 1 (N=152)		Wave 2 (N=286)		t-test (wave 1 vs. 2)
	Mean (s.d.)	# valid entries	Mean (s.d.)	# valid entries	Mean (s.d.)	# valid entries	p-value
Individual							
Age (in years)	31.4 (5.8)	269	41.0 (10.0)	135	41.5 (9.3)	276	.630
Share of males (in %)	75.5	274	87.5	152	84.6	286	.413
Work or industry experience (in years)	5.5 (5.3)	268	11.8 (9.8)	152	13.1 (8.9)	286	.176
Organization tenure (in years)	3.7 (4.1)	269	9.7 (9.2)	152	10.4 (8.5)	286	.422
Project/team							
Team size (in number of employees)	4.9 (6.6)	268	16.5 (13.8)	152	14.3 (28.7)	284	.272
Project experience (in number of projects)	5.6 (16.0)	268	10.9 (19.6)	152	16.9 (28.4)	286	.010
Share of project leaders[1] (in %)	12.3	268	55.3	150	57.9	285	.608
Organization							
Avg. employees 2010-12 (in thousands)	--	--	70.3 (85.6)	147	42.5 (71.5)	279	.001
Avg. revenues 2010-12 (in bn €)	--	--	19.6 (25.6)	147	14.6 (24.5)	279	.053
Avg. R&D expenditure 2010-12 (in ban €)	--	--	.545 (1.0)	134	.771 (1.3)	265	.056
Avg. R&D intensity 2010-12 (R&D expenditure / revenue)	--	--	.028 (.023)	134	.056 (.035)	265	.000

Note: Standard deviation in brackets if item non categorical; # valid entries for some items lower than total sample size due to missing or inconclusive data, no concern as its pattern is random and share of missing data below 10 percent (Hair, 2010)
1) Share relative to # valid entries

Table 17: Descriptives of pretest sample and industry sample with t-test results

I tested the two waves of the industry sample for equality using a two sample t-test as two equivalent samples are required to assess the new scales' cross-sample validity with the measurement invariance test (Marsh, 1994; Netemeyer, Bearden & Sharma, 2003). The results are illustrated in the right column of Table 17. I found that there is no statistically significant difference ($p > .10$) in the respondents' age, work experience, and organization tenure. However, the average project experience of wave 2 is significantly higher ($p < .01$) than in wave 1. The same holds true on the organizational level, where the mean differences in employees employed and R&D intensity are significant ($p < .001$). Nevertheless, the sample differences pose little threat to the scale validation process since they are limited to the organizational level.

4.3.4 Item refinement

In this section, I turn to item refinement and describe the process of eliminating items from the broad item pool of 51 items across the six transition performance scales. Since the items to measure the project start related constructs (briefing, team relatedness, team competence) have already been refined in the thesis of Flohrer (2014), I concentrate the refinement process on the remaining three constructs individual experiential learning, team experiential learning, and efficiency management.

To measure how well a construct is reflected by its items, I used the Structural Equation Modeling (SEM) tool Confirmatory Factor Analysis (CFA) (Hair, 2010). Since SEM requires data to be normally distributed, I performed respective tests. First, I tested for *univariate normality*. Table 18 includes the test results and displays skewness and kurtosis[21] for all items across the pretest sample and both waves of the industry sample. Skewness from -2 to 2 and kurtosis from 1 to 5 (thresholds[22] used for example by Shepherd et al., 2011) indicated that the data is approximately normal.

[21] Kurtosis results for project start constructs (briefing, team relatedness, team competence) diverges from those calculated by Flohrer (2014) because he conducted the analyses with the software package SPSS using a different kurtosis formula (Statistical Consulting Group, 2013) than STATA 13.

[22] Kurtosis calculated in STATA 13 with optimal value of 3 according to D'Agostino, Belanger and D'Agostino Jr. (1990); thus, adaption of threshold for kurtosis of -2 to 2.

Construct	Item	Pretest (N=274)		Wave 1 sample (N=152)		Wave 2 sample (N=286)	
	* Final scale + elim. after pretest	Skewness	Kurtosis	Skewness	Kurtosis	Skewness	Kurtosis
Individual experiential learning	IEL1*	.25	1.99	.22	2.34	.18	1.99
	IEL2*	-.27	2.09	-.47	2.83	-.09	1.90
	IEL3*	.15	2.00	.25	2.31	.14	2.02
	IEL4*	.12	2.13	.29	2.41	.22	2.20
	IEL5+	.12	2.12	-	-	-	-
	IEL6	-.01	2.31	.27	2.96	.10	2.24
	IEL7	-.16	2.31	.15	2.40	.09	2.03
Team experiential learning	TEL1*	.11	1.98	.43	1.93	.17	1.66
	TEL2*	-.09	2.23	.64	2.12	.23	1.89
	TEL3*	-.06	2.20	.22	1.96	.07	1.85
	TEL4*	.10	2.03	.15	1.67	-.02	1.80
	TEL5*	.26	2.28	.58	2.04	.41	1.98
	TEL6+	.06	2.12	-	-	-	-
	TEL7+	-.31	2.28	-	-	-	-
	TEL8+	-.30	2.58	-	-	-	-
	TEL9+	.00	1.93	-	-	-	-
	TEL10+	-.13	2.38	-	-	-	-
	TEL11+	-.25	2.54	-	-	-	-
	TEL12+	-.43	2.73	-	-	-	-
	TEL13+	.04	2.53	-	-	-	-
	TEL14	.29	2.14	.26	1.76	.19	1.69
	TEL15+	.18	1.82	-	-	-	-
Efficiency management	EM1*	-.88	2.87	-.69	2.76	-.84	2.92
	EM2*	.06	1.91	-.04	2.10	-.05	1.96
	EM3*	-.17	2.00	-.35	2.18	-.26	1.89
	EM4*	-.68	2.44	-.50	2.35	-.45	2.14
	EM5+	-.30	1.79	-	-	-	-
	EM6+	-.48	2.11	-	-	-	-
	EM7+	-.16	1.92	-	-	-	-
	EM8+	-.04	1.95	-	-	-	-
	EM9+	-.32	2.06	-	-	-	-
	EM10	-.72	2.54	-.52	2.40	-.75	2.58
	EM11+	-.27	2.09	-	-	-	-
	EM12+	-.16	1.93	-	-	-	-
	EM13+	-.15	1.91	-	-	-	-
	EM14+	.46	2.44	-	-	-	-
	EM15+	-.91	2.62	-	-	-	-
	EM16	-.57	2.38	-.50	2.32	-.42	2.03
Briefing	B1*	-.46	2.29	-.40	2.70	-.22	2.14
	B2*	-.55	2.40	-.68	2.82	-.46	2.44
	B3*	-.34	2.05	-.47	2.41	-.50	2.49
	B4*	-.68	2.88	-.82	3.49	-.73	2.99
	B5*	-.53	2.36	-.59	2.64	-.43	2.46
Team relatedness	TR1*	-.90	3.19	-1.24	4.43	-.88	3.50
	TR2*	-1.11	4.20	-.95	3.55	-.67	3.08
	TR3*	-.80	3.38	-.75	2.84	-.85	3.71
	TR4*	-.61	3.27	-.78	3.28	-.49	2.90
Team competence	TC1*	-.78	3.41	-1.06	4.09	-.72	3.02
	TC2*	-.84	3.47	-.98	3.61	-.91	3.48
	TC3*	-.60	2.89	-1.16	4.20	-.79	3.19
	TC4*	-.86	3.59	-1.28	4.27	-1.09	3.95

Table 18: Results of tests for univariate normality

Second, I tested for *multivariate normality*. Table 19 contains the results across all three samples and provides an overview of Mardia's kurtosis coefficients and kurtosis p-values (Bentler, 1995; Mardia & Zemroch, 1975) for the start and final item set. Since the tests are (with one exception) significant ($p < .001$), multivariate – in contrast to univariate – normality cannot be assumed (Bentler, 1995). To nevertheless produce robust results from SEM analyses, I applied maximum likelihood estimation techniques (Bagozzi & Yi, 2012). All analyses were conducted with STATA 13.

Construct	Status of item refinement	Pretest (N=274)		Wave 1 sample (N=152)		Wave 2 sample (N=286)	
		Kurtosis coefficient	Kurtosis p-value	Kurtosis coefficient	Kurtosis p-value	Kurtosis coefficient	Kurtosis p-value
Transition performance (all six constructs)	Start[a]	3,017.4	.000	1,146.3	.000	1,200.5	.000
	Final[b]	828.6	.000	822.3	.000	858.1	.000
Individual experiential learning	Start	78.3	.000	55.4	.000	63.6	.000
	Final	29.0	.000	26.0	.071	29.9	.000
Team experiential learning	Start	318.4	.000	7.2	.000	62.9	.000
	Final	41.4	.000	51.0	.000	44.4	.000
Efficiency management	Start	338.6	.000	63.7	.000	64.0	.000
	Final	25.3	.114	3.3	.000	28.7	.000
Briefing	Start	47.8	.000	48.6	.000	54.6	.000
	Final	47.8	.000	48.6	.000	54.6	.000
Team relatedness	Start	31.0	.000	33.9	.000	33.2	.000
	Final	31.0	.000	33.9	.000	33.2	.000
Team competence	Start	31.3	.000	4.8	.000	33.1	.000
	Final	31.3	.000	4.8	.000	33.1	.000

a) Total item set of 51 items; b) Total item set of 26 items

Table 19: Results of tests for multivariate normality

Item refinement is a crucial step in the scale development process since items, which reflect the intended construct best, will be retained and items with low reliability, low validity or cross loadings to other constructs will be omitted (MacKenzie et al., 2011). Hence, I applied a stringent purification process. (1) In the first step, I used the pretest sample to eliminate items with the lowest reliability indicated by their factor loading (MacKenzie et al., 2011). I retained six items per construct, a good tradeoff between reliability (Netemeyer et al., 2003) and survey length for further analyses with the industry sample. (2) In the second step, I used the

first wave of the industry sample to further refine the item pool. Consistent with MacKenzie et al. (2011), problematic items were removed (2a) if their squared completely standardized loadings fell below .5 – equivalent to recommendation of factor loadings < .7 (Bagozzi & Yi, 2012; Shepherd et al., 2011), (2b) if they cross loaded with other than the intended construct (Hornsby, Kuratko, Holt & Wales, 2013), or (2c) if they showed large measurement error covariances (Anderson & Gerbing, 1988). (3) Further, since Clark and Watson (1995) consider four to five items as an appropriate number (for narrowly defined constructs) to cope with the tradeoff between survey length and construct reliability, I removed the item with the weakest reliability within the team experiential learning scale (TEL14) even though all six items had fulfilled the cutoff criteria described above. (4) In addition, I retained one item within the item set of individual experiential learning whose factor loading fell beyond the threshold (IEL2) as it taps the core of the construct's definition (Clark & Watson, 1995).

In sum, I refined the initial item pool of 51 items by eliminating 25 items. Consequently, the final transition performance measurement consists of 26 items, which reflect the six different transition performance constructs and collectively are able to measure transition performance (see Table 20). All items load significantly on their intended construct in each of the three samples. While the item reliabilities are overall considerable, few items fail to reach the widely accepted cutoff value for factor loadings (.7), however mainly in the pretest sample. This finding suggests that team experiential learning (TEL4, TEL5) is not as relevant for university researchers or scientists as it is for employees in entrepreneurially acting organizations. In addition, individual experiential learning appears to be less strongly enforced by universities (IEL1, IEL2). This is reasonable because universities do not benefit from individual experiential learning in upcoming projects as many PhD students leave the organization with the end of their research project. Moreover, transitions in universities appear to be more wasteful than in some organizations (EM1).

Finally, I completed the item refinement procedure with a varimax rotation (Hair, 2010). For each of the three samples the assumed six factors were confirmed and no cross loadings were apparent (i.e., all loadings on intended factor > .4).

Construct	Item	Description	Pre-test[b,e]	Wave 1[c,e]	Wave 2[d]
Individual experiential learning	IEL1	If I had more time to reflect about the past then I could improve the chance that future projects will be more successful (R).	.59	.71	.78
	IEL2	I still have not had time to think about the last project in order to learn from it (R).	.67	.60	.71
	IEL3	I wish I had time to document the mistakes that we made with the last project (R).	.94	.89	.90
	IEL4	I wish I had time to document the things that we did well with the last project (R).	.93	.90	.85
Team experiential learning	TEL1	Managers requested that I provide them feedback on the last project.	.75	.85	.79
	TEL2	The managers sought my opinion about how to improve a project's chance of success.	.73	.85	.83
	TEL3	The management was interested in the "lessons learned" from my experience with the previous project.	.80	.75	.83
	TEL4	There was an open discussion about what had happened with the last project.	.67	.78	.70
	TEL5	The organization took formal steps to debrief me.	.62	.79	.79
Efficiency management	EM1	The transition has been wasteful (R).	.67	.72	.62
	EM2	Management has given little thought about how to effectively manage the transition (R).	.75	.83	.71
	EM3	The transition process has been unorganized (R).	.84	.87	.89
	EM4	This was a very haphazard transition (R).	.84	.84	.83
Briefing	B1	I had all important information to prepare myself for the new project.	.81	.75	.77
	B2	I feel that managers told me all I needed to know about my role in the new project.	.87	.87	.84
	B3	I felt that there was clear communication about the nature of the tasks required of me by the new project.	.85	.88	.87
	B4	After an exchange of ideas about the project with management, I felt I knew what was expected of me.	.77	.87	.75
	B5	Management has given me a good overview about the environment of the new project.	.74	.78	.81
Team relatedness[a]	TR1	… that there will be open channels of communication between team members.	.74	.77	.83
	TR2	… that I will be very much at ease with the other team members.	.74	.84	.83
	TR3	… that I will become connected to the project team.	.71	.84	.80
	TR4	… that I will become very comfortable with the other members of the project team.	.81	.86	.80
Team competence	TC1	Management have assigned the "right" team members to the project to allow it perform well.	.75	.81	.80
	TC2	I feel that we have a team with the necessary skills to perform well at this project.	.85	.77	.82
	TC3	I feel that we have a team with the necessary experience to perform well at this project.	.85	.96	.85
	TC4	I feel that we have a team with the necessary knowledge to perform well at this project.	.89	.90	.87

[a] Item prefix is: "Management makes me feel. …; [b] N=274; [c] N=152; [d] N=286; [e] Different to Flohrer (2014, p. 66), where all scales were calculated in separate measurement models, whereas here all scales were calculated within one measurement model (measurement model of transition performance); (R) = reverse coded

Table 20: Final items for transition performance measurement and their factor loadings

Taken together, I described in this section the method of developing a new measurement of transition performance. Specifically, I generated an item pool to measure each of the six transition performance constructs, described the samples, specified the measurement model and refined the item set. In the following sections, I present the results of the transition performance measurement developed.

4.4 Results

4.4.1 Measurement model fit

Table 21 demonstrates the measurement model fit and displays results of the assessment of the transition performance measurement model across all three samples, i.e., pretest sample and both waves of the industry sample. Further, the table shows the assessment results for all six constructs combined in one measurement model and for each transition performance construct (e.g., individual experiential learning) in one separate measurement model.

The *chi-square test* is to date the only statistical test for the assessment of structural equation models (Bagozzi & Yi, 2012) and Table 21 displays the values for χ^2 and the associated degrees of freedom (df). The chi-square tests here are all significant whereas a nonsignificant test indicates good model fit. However, researchers do not suggest to rely exclusively on chi-square tests results since they are highly affected by sample size (Hu & Bentler, 1999). Hence, I additionally calculated the frequently used *goodness of fit indices* (MacKenzie et al., 2011) and illustrated the results Table 21: A comparative fit index (CFI) and a Trucker Lewis index (TLI) above .9 (Steenkamp & Baumgartner, 1998) or .95 (Hu & Bentler, 1999) are acceptable. Root mean square error of approximation (RMSEA) and standardized root mean square residual (SRMR) need to range below .08 or .06 (Steenkamp & Baumgartner, 1998; Hu & Bentler, 1999). The vast majority of goodness of fit findings here reaches or even exceeds the stricter thresholds. However, the RMSEA values are for four scales (individual experiential learning, team experiential learning, efficiency management, and team competence) in the pretest and/ or wave 1 sample somewhat higher than desirable. Nevertheless, this does not confound the overall picture as RMSEA tends to overreject models for smaller sample sizes (Hu & Bentler, 1999) and RMSEA figures are acceptable in the larger wave 2 sample.

	χ^2	df	RMSEA	CFI	TLI	SRMR
Thresholds			<.06/<.08	>.95/>.90	>.95/>.90	<.06/<.08
Transition performance (all six constructs in one measurement model)						
Pretest (N=274)	458.54	284	.05	.96	.95	.05
Wave 1 (N=152)	431.83	284	.06	.95	.94	.06
Wave 2 (N=286)	381.31	284	.04	.98	.98	.04
Individual experiential learning						
Pretest (N=274)	17.40	2	.17	.98	.93	.04
Wave 1 (N=152)	5.34	2	.11	.99	.97	.02
Wave 2 (N=286)	5.73	2	.08	.99	.98	.02
Team experiential learning						
Pretest (N=274)	18.74	5	.10	.97	.95	.03
Wave 1 (N=152)	3.96	5	.00	1.00	1.01	.01
Wave 2 (N=286)	14.79	5	.08	.99	.98	.02
Efficiency management						
Pretest (N=274)	9.08	2	.11	.99	.96	.02
Wave 1 (N=152)	5.37	2	.11	.99	.97	.02
Wave 2 (N=286)	.73	2	.00	1.00	1.01	.01
Briefing						
Pretest (N=274)	8.66	5	.05	1.00	.99	.01
Wave 1 (N=152)	5.31	5	.02	1.00	1.00	.01
Wave 2 (N=286)	11.10	5	.07	.99	.99	.02
Team relatedness						
Pretest (N=274)	.92	2	.00	1.00	1.01	.01
Wave 1 (N=152)	3.91	2	.08	1.00	.98	.01
Wave 2 (N=286)	4.84	2	.07	1.00	.99	.01
Team competence						
Pretest (N=274)	13.05	2	.14	.99	.95	.02
Wave 1 (N=152)	12.25	2	.18	.98	.94	.03
Wave 2 (N=286)	2.84	2	.04	1.00	1.00	.01

Note: See further goodness of fit indices for briefing, team relatedness and team competence in Flohrer (2014)

Table 21: Summary of chi-square tests and goodness of fit statistics

Generally speaking, the measurement model of the transition performance measurement (transition performance scale aggregated across the six subscales and each subscale separately) is a good reflection of the utilized samples.

4.4.2 Evidence of scale reliability

In this section, I give an overview of the scale reliability results. A high reliability value describes that a set of items measures the intended construct consistently (Hair, 2010). Since social sciences mainly assess internal consistency as one type of reliability (Haynie & Shepherd, 2009) which is very frequently tested with Cronbach's alpha for first order, reflective constructs such as here (Cronbach, 1951; MacKenzie et al., 2011), I assessed scale reliability in this chapter using Cronbach's alpha.

Table 22 illustrates Cronbach's alpha of the transition performance scale for the three samples, pretest and both waves of the industry sample (columns). Further, it shows the results for the transition performance measurement aggregated across the six subscales as well as for each of the six transition performance subscales separately, e.g., individual experiential learning scale (rows). The cutoff value for Cronbach's alpha of .7 as a standard of many (Hair, 2010) or the stricter .8 for newly developed scales (Clark & Watson, 1995) is reached for the aggregated transition performance scale as well as for each of the six scales in each of the three samples.

	Pretest (N=274)	**Wave 1 (N=152)**	**Wave 2 (N=286)**
Transition performance (all six constructs aggregated)	.91	.93	.91
Individual experiential learning	.87	.86	.88
Team experiential learning	.84	.90	.89
Efficiency management	.86	.89	.85
Briefing	.90[a]	.92[a]	.90
Team relatedness	.83[a]	.90[a]	.89
Team competence	.90[a]	.92[a]	.90

a) see also Flohrer (2014)

Table 22: Summary of Cronbach's alpha

Albeit, researchers need to be cautious when interpreting Cronbach's alpha without considering the number of items per scale because there is a positive correlation between the two as Cortina (1993) demonstrated. Since each of the six transition performance subscales consists

of four to five items there is no evidence that the scale lengths inflate the internal consistency values here. Hence, this internal consistency assessment indicates that all developed items of one construct measure the same construct and the reliability of the six scales is acceptable.

4.4.3 Measurement and structural invariance

Consistent with literature suggesting to perform invariance tests to assess whether the newly developed scales are valid across samples and generalizability is ensured (e.g., Byrne, 2010; Marsh, 1994; Vandenberg & Lance, 2000), I present in this section the results for measurement and structural invariance tests. Following the recommendation of MacKenzie et al. (2011) to validate the scale with an additional sample different from the one of the refinement process, I performed the invariance tests with both waves of the industry sample. These samples are appropriate for a cross-sample validity assessment because they are drawn from the same population (Marsh, 1994), i.e., large organizations based in Germany which pursue entrepreneurial projects, but are independent from each other (Browne & Cudeck, 1989; Lei & Wu, 2007).

I conducted the invariance tests with Multigroup Confirmatory Factor Analysis (MGCFA) – the standard method for this type of analysis (Wicherts & Dolan, 2010) – which requires fixing of parameters to identify the multigroup measurement model (Acock, 2013). First, I selected, for each transition performance subscale, the item with the smallest deviation in factor loadings across both industry samples and constrained the factor loading of this item to 1. Second, I set the means of each latent construct to 0 (Acock, 2013) which is reasonable as means are of no interest for scale development. Further, I applied the maximum likelihood estimator to account for deviations in normality (Bagozzi & Yi, 2012).

An initial test for equivalent variance covariance matrices across both samples, as recommended by Jöreskog (1971) to whom the invariance tests in general go back, suggested further equivalence analyses. Hence, I followed Steenkamp and Baumgartner (1998) who proposed a powerful approach to assess the equivalence of measures across two samples applying multigroup analyses (consistent with Shepherd, Kuskova & Patzelt, 2009). More precisely, I compared pair wise nested, increasingly restricted models of transition performance (as the aggregate of its six constructs) which are displayed in the rows of Table 23. I started with the assessment of the *measurement invariance* (Byrne, Shavelson & Muthén, 1989; Vandenberg & Lance, 2000). First, I assessed the configural invariance model (model 1) (Vandenberg

& Lance, 2000) which serves as baseline for subsequent models because no constraints are applied and all parameters are free (Steenkamp & Baumgartner, 1998). Further, item loadings were equated in the measurement model of both samples and a model for invariance of factor loadings was assessed (model 2) (Steenkamp & Baumgartner, 1998). Moreover, I tested for a model of intercept invariance (model 3) (Steenkamp & Baumgartner, 1998). Further, I tested for invariance of error covariances consistent with Byrne (1994) (model 4). Finally, I added additional constraints in order to test the *structural invariance* (Byrne et al., 1989; Vandenberg & Lance, 2000) such as equated construct covariances (model 5) and equated construct variances (model 6), of which the first are considered more important (Byrne, 2010). Authors sometimes additionally assessed latent mean equivalence and examined thereby the mean structures instead of the covariance structures (Byrne, 2010; Vandenberg & Lance, 2000). Analyses of this kind are often performed in order to understand differences between two groups represented by two samples which is not my intention in this chapter.

Model	**Parameters equated**	**χ^2**	**df**	**RMSEA**	**CFI**	**TLI**	**SRMR**	**Model comp.**	**Comp. test**
Thresholds				*<.06/<.08*	*>.95/>.90*	*>.95/>.90*	*<.06/<.08*		*Not signif.*
Model 1: Configural invariance	none	813.14	568	.044	.967	.962	.054	-	-
Model 2: Invariance of factor loadings	item loadings	842.36	588	.044	.965	.962	.056	2 vs. 1	.08
Model 3: Intercept invariance	item loadings, item intercepts	876.07	614	.044	.964	.962	.061	3 vs. 2	.14
(Model 4: Invariance of error covariances)	(item loadings, item intercepts, error cov.)	(924.97)	(640)	(.045)	(.961)	(.961)	(.059)	(4 vs. 3)	(.00)
Model 5: Invariance of factor covariances	item loadings, item intercepts, factor cov.	897.08	629	.044	.963	.962	.071	5 vs. 3	.14
Model 6: Invariance of factor variances	item loadings, item intercepts, factor cov. & factor variances	908.31	635	.044	.963	.962	.071	6 vs. 5	.08

Note: No evidence of invariance of error covariances, therefore model 4 in brackets and not used as basis for further comparisons; underlying measurement model: measurement model of transition performance aggregated across its six constructs (see Figure 9)

Table 23: Summary of results of measurement and structural invariance tests

To assess whether the transition performance scale is likely to be invariant regarding the respective restriction I calculated goodness of fit indices (RMSEA, CFI, TLI, SRMR) and performed chi-square difference tests (Bentler & Bonett, 1980; Jöreskog, 1971) whose results are illustrated in the columns of Table 23. The results demonstrate that the transition performance scale does not have any invariance problems. More precisely, across the *measurement invariance* tests of model 1 to model 3, all goodness of fit indices (RMSEA, CFI, TLI, SRMR) reach or exceed the strict thresholds (see Table 23). In addition, the differences between the models are not significant ($p > .05$); hence, the scale is most likely invariant against the respective constraint. In other words, the data of both industry samples is reflected by an equivalent measurement model form (model 1). Moreover, the item loadings for all scales (model 2) as well as their intercepts (model 3) can be assumed as being equal across both samples. Error covariances (model 4), however, do not appear to be invariant which is not much of an issue as invariant error covariances are not required (Meredith, 1993). Considering the *structural invariance,* similarly good parameter estimates can be achieved for the restrictions of equal factor covariances (model 5) and equal factor variances (model 6). However, SRMR is slightly deteriorated but still remains below the acceptable level of .08.

Meredith (1993) proposed a *classification* to assess which level of invariance is acceptable. Accordingly, the invariance of factor loadings is weak and not sufficient to ensure cross-sample validity (Meredith, 1993). The equivalence of item loadings and item intercepts is deemed to be acceptable and is called strong invariance (Meredith, 1993). Though desirable but not necessary is the so called strict invariance of equal construct variances and covariances (Meredith, 1993). Consequently, the results of the invariance tests here indicate a strong, albeit not a strict, measurement invariance (Meredith, 1993) which provides evidence that the new transition performance measurement is most likely valid across different samples.

4.4.4 Evidence of convergent and discriminant validity

In this section, I present the results for convergent and discriminant validity tests which both indicate whether the new scales measure exactly what they are supposed to measure (Hair, 2010). *Convergent validity* tests assess whether scales correlate with alternative measurements of the same construct (MacKenzie et al., 2011). Since the transition performance concept with its constructs is new to literature, alternative measures which qualify for correlation

tests do not exist. However, I find evidence for convergent validity from two alternative sources.

First, convergent validity may be assumed if theoretically derived relationships between constructs in a nomological network hold in empirical tests (consistent with Shepherd et al., 2011). Using the first wave of the industry sample, Flohrer (2014) hypothesized and found that the three project start constructs – briefing, team relatedness, and team competence – influence access to resources and finally psychological empowerment. Hence, convergent validity may be assumed for the three project start related scales.

Second, MacKenzie et al. (2011) recommended to test for convergent validity using the average variance extracted (AVE) across the items of a specific construct. AVE is the amount of variance that is accountable to a specific construct and is measured with the average of the squared completely standardized item loadings (MacKenzie et al., 2011). Table 24 depicts AVE across all six transition performance subscales and across both waves of the industry sample. The results, displayed in bold in diagonal cells, suggest that convergent validity is most likely not an issue for any for the six scales since AVE values above .5 indicate that each construct "accounts for a majority of the variance in its indicators on average" (MacKenzie et al., 2011, p. 313).

	Individual exp. learning (IEL)		**Team exp. learning (TEL)**		**Efficiency management (EM)**		**Briefing (B)**		**Team relatedness (TR)**		**Team competence (TC)**		**Perf. goal orientation (PGO)**	
Wave	1	2	1	2	1	2	1	2	1	2	1	2	1	2
IEL	**.61**	**.66**												
TEL	.13***	.00	**.65**	**.62**										
EM	.15***	.06***	.25***	.13***	**.67**	**.60**								
B	.09***	.05***	.20***	.16***	.28***	.33***	**.69**	**.65**						
TR	.03	.02	.11***	.07***	.05**	.18***	.22***	.26***	**.69**	**.66**				
TC	.01	.05***	.06**	.06***	.17***	.22***	.24***	.28***	.22***	.42***	**.74**	**.70**		
PGO	.01	.01	.01	.00	.04*	.00	.01	.00	.01	.00	.01	.00	**.44**	**.56**

Note: Average variance extracted in diagonal cells (bold); squared correlations between constructs in off diagonal elements calculated with pair wise and standardized structural equation models
*** p < .001 ** p < .01 *p < .05

Table 24: Average variance extracted and correlations between transition performance scales

In addition, *discriminant validity* tests measure whether scales are distinguishable from scales which measure similar constructs (MacKenzie et al., 2011). Discriminant validity is supported if the squared pair wise correlation between two constructs (values in Table 24) is smaller than each AVE (bold values in diagonal cells of Table 24) of the two corresponding constructs (Fornell & Larcker, 1981). First, I compared each of the six transition performance scales with the scale to measure *performance goal orientation (PGO)* (Button, Mathieu & Zajac, 1996) – *employees striving "either to demonstrate, and thereby gain favorable judgments of, their competence via task performance or to avoid negative judgments of their competence"* (Button et al., 1996, p. 67) – which is illustrated in the bottom of Table 24. This construct is similar to all six constructs as it covers employees' attitude at work, though unrelated from a theoretical perspective and thus, qualifies for discriminant validity tests (Bagozzi et al., 1991; Shepherd et al., 2011).

Second, I compared the six transition performance scales among each other because they are similar with respect to the transition process they all cover (consistent, e.g., with Haynie & Shepherd, 2009). Table 24 indicates that the squared pair wise correlations between constructs are smaller than the AVE of the respective constructs which provides evidence for discriminant validity.

4.4.5 Social desirability

In what follows, I outline the findings related to a social desirability bias which "reflects tendencies to provide favorable responses with respect to norms and practices" (Netemeyer et al., 2003, p. 83) and may be a threat to the validity of the newly developed scales. Consequently, social desirability issues may raise problems in construct measurement and assessment of relationships between constructs (Mick, 1996). Nederhof (1985) proposed two methods of dealing with social desirability which are both applied to the surveys here.

(1) One method of dealing with socially desirable responding is to *prevent* respondents from answering in a socially desirable manner through an adequate questionnaire design (Nederhof, 1985). In this chapter, I considered this recommendation by using the online tool Unipark which allows for self administrated responding. Moreover, full anonymity was guaranteed to all survey participants.

(2) Another method of dealing with social desirability is to *detect* social desirability bias. This refers to assessing the degree to which a sample is contaminated by socially desirable re-

sponding (Nederhof, 1985). To measure the extent of the bias in this chapter, the frequently used (Netemeyer et al., 2003; Vispoel & Tao, 2013) Paulhus deception scale (Paulhus, 1984) was included in the questionnaire and measured on a 7-point Likert scale ranging from 1 "not true" to 7 "very true" (see Appendix 2). More precisely, only one of Paulhus's (1984) two scales, impression management scale and not self deception scale, was applied due to questionnaire length considerations and due to its more serious threat to scale validity (Vispoel & Tao, 2013). Moreover, to avoid problems with employee representatives during the data collection process, two items were eliminated for surveying the industry sample.

Table 25 depicts the pair wise correlation coefficients between this adjusted impression management scale (Paulhus, 1984) and the six transition performance scales for both waves of the industry sample. Since four correlations are positive and significant in at least one wave ($p < .01$), the results indicate that the transition performance scales might slightly be affected by socially desirable responding and an overestimation of the transition performance seems to be likely. This is consistent with the findings of Fisher and Katz (2000) according to which self reported values and self reported behaviors influence response bias. However, the impact of bias is low as the adjusted R-squares do not exceed .028 in both samples. Further, it is important to note that the Cronbach's alphas of the shortened social desirability measurement of .43 in wave 1 and .44 in wave 2 are below the cutoff of .7 (Hair, 2010) and range at the lower end of Li and Bagger's study (2007) of social desirability reliabilities (for possible reasons see Flohrer, 2014).

	Wave 1 sample (N=152)			**Wave 2 sample (N=286)**		
	Coeff.	R^2	adj. R^2	Coeff.	R^2	adj. R^2
Individual experiential learning	-.038	.001	-.005	.042	.002	-.002
Team experiential learning	-.074	.005	-.001	.058	.003	.000
Efficiency management	.104	.011	.004	.154**	.024	.020
Briefing	.002	.000	-.007	.133*	.018	.014
Team relatedness	.048	.002	-.004	.140*	.020	.016
Team competence	.185*	.034	.028	.151*	.023	.019

Note: Standardized regression coefficients are displayed (pair wise)
*** $p < .001$ ** $p < .01$ *$p < .05$

Table 25: Correlations of transition performance scales with adjusted impression management scale

Taken together, the threat to the newly developed scales by social desirability remains relatively low as socially desirable responding was prevented and the detected effects are small.

4.5 Discussion

4.5.1 Summary of results

Since entrepreneurial projects are temporary (Svejvig & Andersen, 2015), their assigned employees move after the end of one project to the next project and undergo a transition process. Studies from the fields of corporate entrepreneurship, project management, organizational psychology, and organizational learning provide evidence that experiential learning is an important aspect for the project end (e.g., Goffin & Koners, 2011; Shepherd et al., 2011; Williams, 2008), motivation for the project start (e.g., Flohrer, 2014; Hackman & Wageman, 2005), and resource management for the period in between two projects (e.g., Cohen et al., 1996; Patanakul, 2013). Each of those aspects provides an opportunity during the transition process to increase organizational performance. Even though organizations which pursue entrepreneurial initiatives deal with the challenge that their success is constantly at risk (Lin & Chen, 2005; York & Venkataraman, 2010) and, therefore, need to exploit available performance opportunities, the opportunities provided by a mounting number of project transitions have been largely overlooked by researchers so far.

Since there is a notable absence of work focused on systematically capturing and quantifying the transition process, I introduced in this chapter a concept of transition performance that combines multiple opportunities for performance increase and, further, developed and validated a measure. Specifically, I proposed new scales for two opportunities of the project end (individual experiential learning, team experiential learning), three for the project start (briefing, team relatedness, team competence), and one for the period in between two projects (efficiency management) which collectively allow for measuring transition performance.

Results across a pretest and an industry sample, totaling 712 respondents, provided good support for the psychometric properties of the transition performance scale. First, goodness of fit indices indicated that the specified measurement model fits the data very well. Second, the transition performance scale demonstrated good reliability. Third, the cross-sample validity test indicated strong measurement invariance while the threat for the transition performance scale posed by socially desirable responding is low. Finally, the tests for convergent and discriminant validity yielded good results. Consequently, I hope that the development of this

new measurement for transition performance will motivate future research and I propose promising avenues next.

4.5.2 Avenues for further research and limitations

Research on transition as performance driver

By proposing a concept and measurement of transition performance, this chapter may be the starting point to identify transition performance as an additional performance driver for entrepreneurially active organizations and may add to known drivers such as new product development speed (Chen et al., 2012), an organization's size (Tsai & Wang, 2005), or R&D budget (Lin & Chen, 2005). Investigating drivers for performance in those organizations is an important research question since organizations which pursue risky projects frequently struggle to meet their performance expectations (Lin & Chen, 2005). Specifically, I hope that research will advance the transition concept proposed in this chapter by empirically demonstrating that transition performance indeed influences organizational performance. In addition, I hope that future empirical studies will bring clarity to the relative value of the periods involved in the transition process – the project start, the project end and the period in between. This insight will help managers who are responsible for entrepreneurially acting organizations and are equipped with scarce resources (Van Oorschot et al., 2010) concentrate their efforts on the most promising activities.

Research on conditions for high transition performance

Further, my newly developed scales may facilitate research on the conditions in entrepreneurially acting organizations in which successful project transitions are achievable. Future research could address in particular four questions and help understand the transition process in greater detail:

(1) How does the performance of project transitions depend on the industry in which organizations operate? Organizations operate in industries which differ in their degree of uncertainty (Milliken, 1987), hostility (Covin & Slevin, 1989), and creativity (Bissola et al., 2014). It has been found that the industry determines an organization's project failure rate to a considerable extent (Shepherd et al., 2013). For example, organizations in the pharmaceutical industry more often bring projects to an early end due to low performance than organizations in other industries (Cannon & Edmondson, 2005). Since those project failures are associated with negative emotions which might hinder learning from experiences during the transition

process (Shepherd et al., 2011), the measurement for the construct individual experiential learning may be affected. In addition, industry characteristics likely influence internal organizational processes (Jiménez-Jiménez & Sanz-Valle, 2011). For example, more creative industries might encourage personal relationships (Cacciatori et al., 2012) and influence employees' perceptions on team relatedness. Taken together, industry characteristics most likely have an impact on transition performance.

(2) What is the difference in transition performance between organizations with shorter project life cycles and organizations with longer project life cycles? The length of an entrepreneurial project's life cycle is – among other aspects (Griffin, 2002) – determined by the development time of a new product, new service or new process and thus, by the industry (Griffin, 2002; Havila, Medlin & Salmi, 2013; Jugdev & Müller, 2005). For example, entrepreneurial projects in the consumer industry tend to be shorter than those in business-to-business industries (Griffin, 2002). Since the project length defines the frequency of project transitions within an organization, it could be that organizations with shorter development times are more experienced in project transitions and have established routines for successful transitions. Thus, they might have developed a "transition capability" which is why transition performance in organizations with short project life cycles might be higher than in organizations with longer project life cycles.

(3) How does transition performance differ across different types of entrepreneurial projects? Organizations differ in the types of entrepreneurial projects they pursue, for example, product vs. process innovation projects (Cacciatori et al., 2012), radical vs. incremental innovation projects (Schmidt, Sarangee & Montoya, 2009), or more technologically complex vs. less complex projects (Carbonell & Rodriguez, 2006). For example, for technologically complex entrepreneurial projects, it could be more important to learn from previous project experiences in the transition process and generate knowledge (Unger, Rauch, Frese & Rosenbusch, 2011) and managers who are responsible for those complex projects might intensively promote experiential learning at the project end. Further, it could be difficult for managers of those projects to assemble a highly competent team (Carbonell & Rodriguez, 2006) during the transition process and conduct project start briefing as demands and uncertainty in those projects are likely to be high (Unger et al., 2011). In contrast in entrepreneurial projects conducting incremental product innovations, it might be easier to achieve high values for the transition

performance constructs team competence and briefing. In sum, the type of project most likely impacts several transition performance constructs.

(4) How does transition performance depend on the size of an employee's previous and prospective project team? Academic studies indicate that larger project teams tend to assemble more expertise than smaller teams (Hill, 1982; Stewart, 2006) which is why employees might benefit from a larger number of team members while engaging in team experiential learning – one of the six transition performance constructs – during their transition process. However, it might also be more complicated for employees to learn from the experiences of others in large teams because learning opportunities, e.g., post project reviews, might less often be provided at the project end due to coordination issues which increase with the number of team members (Stewart, 2006). Further, research suggests that project team size influences communication processes (Ancona & Caldwell, 1992; Mathieu & Rapp, 2009; Stewart, 2006; Woolley, 2009) which is why it could be more difficult for transitioning employees to connect with their prospective team members and experience high levels of team relatedness – one of the six transition performance constructs – if their prospective project team is large. In addition, as a higher number of team members brings more competencies to the team (Hill, 1982; Stewart, 2006), it is more likely for employees transitioning into larger teams to develop high levels of team competence perceptions – one of the six transition performance constructs. Taken together, transition performance is most likely affected by the size of a transitioning employee's previous and prospective project team while the form of influence differs across transition performance constructs.

With raising those four questions I also intend to reinforce the claims of others. Specifically, other researchers have called for more research on the environmental conditions in which employees in entrepreneurial contexts learn from previous experiences (Cacciatori et al., 2012; Cope, 2005; Goffin & Koners, 2011) or in which project start interventions are most effective (Mathieu & Rapp, 2009; Woolley, 2009).

Research on project management

Finally, by examining the three constituting transition elements, project end, project start, and period in between two projects, and by conceptualizing them as periods, this chapter might provide project management researchers with a deeper understanding of those elements. For example, researchers conducting simulation studies on project scheduling (Kolisch & Padman, 2001; Leus & Herroelen, 2004) could benefit from embedding the end and the start

of a project as period rather than point in time as they do in many cases so far. In addition, since this chapter applied a broader view on project management in organizations by including the transition phase as additional, essential phase, a noteworthy contribution may relate to the developing research area of "rethinking project management" (Svejvig & Andersen, 2015). Researchers from this field increasingly challenge the classic view (Winter, Smith, Morris & Cicmil, 2006) according to which projects run from the project start to the project end through specific life cycle stages (Pinto & Prescott, 1988). They argue that the current organizational practice appears to be too complex to fit in this rigid framework (Winter et al., 2006). This chapter provides support for their view. It is my hope that future researchers who examine the transition process empirically demonstrate the value of the transition process and show its superiority to the classical project management which ignores the phases after the end of a project. These future research efforts will help increase the awareness of managers in entrepreneurial settings and may be the starting point for managers to consider transition performance in everyday project management (Svejvig & Andersen, 2015).

Limitations

Further fruitful lines of future research may yield from the limitations of this study with respect to the *conceptualization* of transition performance. First, I took an employee focus and I limited this chapter mainly to employees' roles in the transition process. However, there might be opportunities in the transition process which I did not cover with the employee perspective. For example, an examination of the role of managers might reveal further opportunities to increase organizational performance during project transitions since managers may determine the timing of a project end (Green et al., 2003) and, thus, influence potentially sunk cost in the transition process. Thus, future studies could build on the transition performance measurement in this chapter and propose measurements for the transition process which focus on managers. Second, I emphasized major opportunities to increase performance in the transition process and argued that the opportunities at the project end are determined by experiential learning, those at the project start by motivation, and those in the period in between two projects by resource management. However, further constructs might be relevant as they provide additional opportunities for performance increase. For example, learning interventions such as training or coaching could be also relevant at the project start (Ericksen & Dyer, 2004; Hackman & Wageman, 2005). Including additional constructs into an extended concept of transition performance is worth investigating. Finally, since I concentrated on entrepreneurship research in the literature reviews of this chapter and used a sample of employees working on

entrepreneurial projects, it is unclear whether the transition performance scales are also applicable to other project types like joint venture projects (Shepherd et al., 2014). Future research could address this issue and add to the generalizability of the new scales.

Other limitations of my study are related to the applied *methodology* and might also provide important avenues for further research. First, although my findings suggest convergent and discriminant validity, I have not tested the validity of the new scales using a hypothesized nomological network (MacKenzie et al., 2011). I am confident that future research will address this issue while using the new transition performance scales in empirical studies. Second, developing norms on the new scales to interpret scores was not part of this study (MacKenzie et al., 2011) – as in most studies dedicated to new scale development (MacKenzie et al., 2011). Being an important step, I hope future researchers will continue with scale development, collect data on representative samples (e.g., for industries, for project types, or for organization size) and establish norms on transition performance (MacKenzie et al., 2011). Finally, the measurement of transition performance relies on employees' self reports since I focus in this study on employees' perspective. Although the results in this chapter indicated that the measurement is most likely not biased by socially desirable responding, future studies might have to deal with this issue like all studies using self reported scales (Fisher & Katz, 2000). Further, researchers could also try to enhance the transition performance scales by developing an objective measurement.

4.5.3 Conclusions

In this chapter, I introduced the concept of transition performance which is the extent to which organizations exploit their opportunities to increase performance while employees move after the end of one entrepreneurial project to the next one. Drawing on interviews and existing research on the project end, project start and the period in between two projects, I developed a 26 item transition performance measurement, composed of six scales. I found that the new measurement has good psychometric properties as goodness of fit indices, reliability measures and validity tests suggest. Further, the scales are valid across samples. Therefore, I believe that the new transition performance measurement is a good start for various empirical studies to advance literature in the fields of corporate entrepreneurship and project management.

5 DISCUSSION AND CONCLUSIONS

5.1 Summary

In chapter 1 of this thesis I emphasized the importance of individuals in corporate entrepreneurship literature (Corbett et al., 2013; Shane & Venkataraman, 2000) and highlighted the shortage of skilled employees as a major challenge for attracting and retaining employees to conduct entrepreneurial initiatives (Bienzeisler & Bernecker, 2008; Klarner et al., 2013; Schumann et al., 2012). I outlined that, consequently, there is a need for research which helps organizations understand how the potential of entrepreneurial project employees can be more effectively used (Corbett et al., 2013). This is the objective of this thesis which is integrated into the research project "Project Success Panel" as described in chapter 2.

Chapter 3 drew attention to employees' engagement in entrepreneurial projects. Previous studies found that highly engaged employees generate innovative ideas (Bakker & Xanthopoulou, 2013; Hakanen et al., 2008), successfully implement ideas (Bhatnagar, 2012; Hahn et al., 2012), and drive venture growth (Gorgievski et al., 2014) while our understanding of the facilitators of work engagement is limited. By demonstrating that employees' level of work engagement is determined by project team aspects such as team satisfaction and team diversity as well as by the frequency of project failures within organizations, this chapter added to the overall question raised in this thesis, i.e., what helps organizations use the potential of their employees more effectively. Further contributions of this chapter arise for important fields of the corporate entrepreneurship literature such as the motivation of employees in entrepreneurial contexts (Monsen et al., 2010), the role of emotions (Cardon et al., 2012), the formation of teams in entrepreneurially active environments (Knockaert et al., 2011), and entrepreneurial project failures (Shepherd et al., 2013).

Chapter 4 accentuated the transition of employees from one entrepreneurial project to the next which spans across the end of a previous project, the start of an upcoming project, and the phase in between two projects. Since this transition process appears to provide multiple opportunities to increase the propensity for successfully exploiting future entrepreneurial initiatives through experiential learning and motivation (Cacciatori et al., 2012; Flohrer, 2014; Hackman & Wageman, 2005; Jiménez-Jiménez & Sanz-Valle, 2011) which finally improve organizations' performance, this chapter presented further insights to answer the leading question in this thesis, the effective use of an organization's employees' potential. In addition, by

developing and validating a new scale of transition performance, this chapter set the stage for future research in the field of corporate entrepreneurship and project management including the empirical investigation of the transitions' performance effects (Lin & Chen, 2005), an examination of the organizational environment for successful transitions, and an analysis of current project management practices (Svejvig & Andersen, 2015).

5.2 Implications for future research

Beyond its previously described contributions to literature, this thesis may help answer research calls posed in additional literature areas and I outline important research questions in what follows.

First, *corporate entrepreneurship literature* may benefit – apart from the aspects described in the previous section – from this thesis. For example, scholars from this area identified a need for research on how *human capital* – knowledge, skills, and abilities within an organizations' resource base (Buller & McEvoy, 2012) – develops in entrepreneurially acting organizations (Corbett et al., 2013) which is important since human capital is the foundation of corporate entrepreneurship activities (Corbett et al., 2013). Future research could use the transition performance scale in this thesis which proposes that transitioning employees may generate knowledge from previous project experience and conduct empirical studies to increase our understanding of human capital development. The theoretical framework of Dess et al. (2003) who linked corporate entrepreneurship activities (e.g., entrepreneurial projects) with knowledge generation could serve as a starting point for those studies. Further, by drawing on motivational and experiential learning aspects, the transition performance scale in this thesis could also set the stage for future scholars who intend to follow Marvel et al.'s (in press) call to conduct human capital related studies in entrepreneurship by integrating "cognitive, learning, network tie, and motivational perspectives" (Marvel et al., in press, p. 13). In addition, while responding to the call for increased research on *structures and processes* which facilitate corporate entrepreneurship activities (Dess et al., 2003; Phan et al., 2009) studies could build on this thesis as it provides insights on the influence of project transition processes and team structures (team diversity) on employees' motivation in entrepreneurially oriented work.

Second, this thesis may provide insights for *human resource management (HRM)* by advancing research on *talent management* which comprises, for example, research on the development of a talent pool of high potentials to fill key positions within an organization (Collings &

Mellahi, 2009). More precisely, this thesis suggests levers to bind talents (Dries, 2013) by finding predictors of employees' work engagement which has been found in previous research to influence the likelihood to stay with an organization (Saks, 2006; Schaufeli & Bakker, 2004), i.e., project team aspects and project failure aspects. Further benefits from the study on work engagement in this thesis may arise when researchers intend to follow Dries's (2013) research agenda for talent management; accordingly, increased research examining the interaction of variables related to individuals (e.g., engagement), teams (e.g., team diversity and team satisfaction), and organizations (e.g., climate of frequent project failure) is needed. In addition, talent management research could gain from the transition performance scale suggested in this thesis while studying job rotation as a frequently employed talent development practice according to which employees transition across jobs (Campion, Cheraskin & Stevens, 1994). Researchers could apply the transition performance scale, for example, to a sample of trainees or apprentices and analyze their job rotation performance. Beyond talent management, human resource management researchers might profit from the findings in this thesis in their studies on *human resource management in project based organizations.* Since our understanding of HRM in those organizations is still limited (Huemann et al., 2007), this thesis could offer fruitful insights for the development of this still young field of literature by linking characteristics of project based organizations (e.g., project team, project transitions) with important HRM issues (e.g., motivation, learning, and well-being) (Huemann et al., 2007). This thesis might further help answer questions raised by Söderlund and Bredin (2006): What challenges are associated with HRM in project based organizations? How to adjust HRM practices to the processes in those organizations?

Finally, insights from this thesis might also be fruitful for non business research areas. For example, *sport management researchers* could, based on the findings of a team-engagement relationship in this thesis, examine whether the engagement in team sport activities is similarly affected by team aspects like team satisfaction and team diversity. Promising research avenues could also arise from the integration of failure issues in those studies, e.g., failure in team sport tournaments. Moreover, *studies in the health domain* might gain from the findings on engagement (Deci & Ryan, 2012) provided in this thesis. It could be interesting to analyze health promotion programs which entail a high likelihood of failure such as curing patients from alcoholism through alcoholics anonymous. Scholars might assess patients' engagement in those programs and its relationship with failure aspects, i.e., suffering a relapse, and team aspects, i.e., team satisfaction and team diversity within group of alcoholics anonymous. Fi-

nally, *research on education* might benefit from the transition performance scale proposed in this thesis. Since transitions also occur frequently during schooling when pupils move annually from one class to the next or from one school to the next, researchers could, for example, examine the impact of transition performance on pupils' grades in the more advanced class.

5.3 Implications for managerial practice

While this thesis contributes to the corporate entrepreneurship literature and allows for promising research in additional areas, it also provides important implications for managers who are responsible for conducting entrepreneurial initiatives in their organizations.

(1) This thesis emphasized the *importance of employees* for entrepreneurially active organizations as it suggested that team aspects influence employees' engagement level in entrepreneurial projects (chapter 3) and employees transitioning from project to project entail great opportunities for organizational performance increase (chapter 4). Several other authors argued in a similar direction and indicated that employees may distinguish highly innovative companies from less innovative ones (Martin, McNally & Kay, 2013; Marvel et al., in press; Schmelter et al., 2010). In a similar vein, two leaders of entrepreneurial projects interviewed within the "Project Success Panel" underlined that individual employees are important as their inherent motivation and knowledge largely contribute to the success of entrepreneurial projects:

> *"Employee motivation is crucial for a project's success. Only when I have motivated employees available, there will be progress. […] When I am not motivated I do not perform as expected. I suppose that this is true for everybody."* (Project leader of an organization in the aerospace industry)
>
> *"Project employees carry the knowledge with them and use it in the next project."* (Project leader of an automotive supplier)

These insights may remind managers of being more sensitive to their employees while conducting innovative business activities. Managers could, for example, engage more often in personal discussions with their employees to get to know their suggestions for improvement while signaling that employees' perspectives are highly appreciated. Further, they could participate in training to learn to be more sensitive to their employees' needs, skills, and knowledge.

(2) Moreover, this thesis provided evidence that the *perceptions of project failures* within organizations influence employees' work engagement levels (chapter 3). It is likely that this

perception may be influenced by the organization and managers' way of addressing failures as previous studies argued (Cannon & Edmondson, 2001, 2005). Similarly, the influence of managers on employees' failure perception was stressed by members of innovative departments in interviews. For example, the research and development manager of an organization in the industrial goods segment described his positive view on failures and the way of coping with them as follows:

> *"Nine out of ten projects in research fail. It is important to learn from these failures and to document it. Failure connotes something negative. I do not associate it with something negative. When I know that something does not work: great! In most cases we ask ourselves, what can be taken from this story? A publication or a contribution to a conference? […] Our assumption is that things fail. […] Mistakes may be made. This is no problem. We celebrate it and there are even some people who get an award for it."*

In contrast, the leader of an entrepreneurial project in an airline organization emphasized the tremendous effects which may occur when failures are not accepted by the senior management:

> *"When managers postulate a zero error culture and mistakes are simply not accepted, people who have worked for a [failed] project are admonished and punished. This leads to employees who think about leaving."*

Possible suggestions coming from these notions may be twofold. (i) Managers need to acknowledge that failures in entrepreneurially active departments are common and important since a successful entrepreneurial orientation entails risk taking (Dess & Lumpkin, 2005). Further, they need to allow for a failure culture in those departments which may, however, be different from the culture in other departments (Garvin & Levesque, 2006). Managers could try to reinforce this understanding through vision statements or policies (Cannon & Edmondson, 2001, 2005). (ii) In addition, managers need to be aware of their role in how failures are perceived and their responsibility for establishing a "failure culture" in the organization. They could, for example, invite their employees who worked for entrepreneurial initiatives to share their failure experiences and grant awards for the most valuable failure. Further, they could offer "failure coaching" to their employees (Cannon & Edmondson, 2001).

(3) In addition, while conceptually addressing experiential learning processes toward the end of an entrepreneurial project (chapter 4) this thesis stressed the importance of *knowledge generation and transfer* for entrepreneurial initiatives. Corporate entrepreneurship researchers argued in their studies for the great value of knowledge (Cacciatori et al., 2012; Goffin &

Koners, 2011) and suggested several means to generate and transfer knowledge such as informal events, experience workshops, databases, or best practice cases (Hoegl & Schulze, 2005). Further means were mentioned in interviews with employees assigned to entrepreneurial projects. For example, a project member of an industrial electronics organization accentuated the value of personal networks (e.g., also stressed by Beckman & Haunschild, 2002):

> *"A personal network is more important than a database [for knowledge generation]. In my case, my coworkers call me daily and say 'You did that once. How was it?' This is highly prevalent in our department. I think that is great."*

Similarly, the leader of an entrepreneurial project in the same organization acknowledged the value of networks and perceives trainings (e.g., also stressed by Leiponen, 2006) as an additional means for increasing one's knowledge base:

> *"Very important is the feedback on technological developments. We regularly organize training, increasingly external and subject specific trainings, to augment the individual competencies of our employees. We also have an expert circle in our organization and I am part of it. The next step will be to form networks within our organization. And I will be the expert in the field of drive technology. Next year, we will be invited to a workshop or symposium together with other departments in our organization which deal with drive technology."*

Thus, it might be helpful for managers to consider the suggested means for knowledge generation and transfer to be able to successfully pursue future entrepreneurial initiatives. Managers could assess, for example, which means are already effective in their organizations and potentially install additional ones to further increase the available knowledge.

(4) Finally, this thesis argued that *communication* between managers and other stakeholders of an entrepreneurial project is highly relevant for employee motivation, specifically at the project start (chapter 4). Likewise, scholars argued in their studies that manager-employee-communication or non-communication may have important effects (Balachandra et al., 1996; Castrogiovanni, Urbano & Loras, 2011; Monge, Cozzens & Contractor, 1992), e.g., when it comes to terminating an entrepreneurial project which may hamper employees' morale (Balachandra et al., 1996). The importance of communication is supported by interview statements in which project members and leaders expressed the need for being informed about the circumstances they are working in:

"I believe this [= communication] is very important for employees' motivation. When I do not inform my team about what is happening and we do not find the solutions together, the motivation immediately declines. It is not only 'Do this, this, and this, and I only want to see your results and nothing else'. It is different when you explain from which person a certain request came from and for which product this task needs to be fulfilled and when you explain the whole picture." (Project leader of an organization in the industrial goods segment)

"For the motivation of employees it is different when they know that we have lost against a competitor who has made a better offer. This is easier to understand than putting five months' effort into a project until the decision is made that it [= the project] will not be continued." (Project member of an organization in the industrial goods segment)

These insights can illustrate to managers that they may influence their employees' attitudes and behaviors while communicating or most importantly not communicating (Balachandra et al., 1996; Castrogiovanni et al., 2011). To fulfill their employees' need for being informed, they could, for example, introduce routines like "communication circles" in which they frequently talk about the recent developments within the organization, customer base, or project situation (Monge et al., 1992).

5.4 Conclusions

In conclusion, this thesis explored ways to make better use of employees' potential when assigned to entrepreneurial projects. This is an important issue in research and managerial practice because those employees develop innovative ideas, make decisions and overcome barriers to bring innovations into place and, therefore, are crucial for entrepreneurially acting organizations.

More precisely, since engaged employees have been found in previous research to promote corporate entrepreneurship activities this thesis intended to provide insights on how work engagement among employees in entrepreneurial projects may be facilitated. The findings suggested that team aspects such as team satisfaction and team diversity play an important role. Further, this thesis provided evidence that employees in organizations with frequent project failures may find it difficult to translate those team aspects into high levels of work engagement. In addition, this thesis addressed employees transitioning after the end of one entrepreneurial project to the next because organizations which are able to successfully manage this

transition process are provided with multiple opportunities to increase their performance. Project transitions have been mostly overlooked by researches so far which is why this thesis attempted to set the stage for an advance in this area by proposing a concept of transition performance and developing a transition performance scale.

In sum, this thesis contributes mainly to the literature of corporate entrepreneurship and, further, to the literatures on work engagement, failure, teams, and project management. I hope that future researchers may draw insights from thesis to further advance research on individual employees in entrepreneurially acting organizations which continues to be a promising research area.

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APPENDIX

Appendix 1: Items of measures

Work engagement: Vigor

- When I get up in the morning, I feel like going to work*.
- At my work, I feel bursting with energy*.
- At my work I always persevere, even when things do not go well.
- I can continue working for very long periods at a time.
- At my job, I am very resilient, mentally.
- At my job I feel strong and vigorous*.

Work engagement: Dedication

- To me, my job is challenging.
- My job inspires me*.
- I am enthusiastic about my job*.
- I am proud on the work that I do.
- I find the work that I do full of meaning and purpose*.

Work engagement: Absorption

- When I am working, I forget everything else around me.
- Time flies when I am working.
- I get carried away when I am working*.
- It is difficult to detach myself from my job.
- I am immersed in my work*.
- I feel happy when I am working intensely*.

(*) Item belongs to short version of the Utrecht work engagement scale with nine items (Schaufeli et al., 2006)

Team satisfaction

- All in all, I am satisfied with my team.
- In general, I don't like my team (reverse coded).
- I am satisfied with the way I was treated by my team members.
- I am satisfied with the friendliness of my team members.

Team diversity

- My work group contains members with widely varying backgrounds (Cammann et al., 1983). *Excluded after CFA.*
- Members of my work group vary widely in their skills and abilities (Cammann et al., 1983).
- Members of my work group vary widely in their level of experience (adapted from Campion et al., 1993; Hayton, 2005; Talke et al., 2011).
- Members of my work group vary widely in their seniority (adapted from Ferriani et al., 2009; Perretti & Negro, 2007; Talke et al., 2010)

Project failure frequency

- How frequently do projects fail at your organization?

Positive affect (PANAS)

During the last two weeks I have felt...

- Interested.
- Excited.
- Strong.
- Enthusiastic.
- Proud.
- Alert.
- Inspired.
- Determined.
- Attentive.
- Active.

Negative affect (PANAS)

During the last two weeks I have felt...

- Distressed.
- Upset.
- Guilty.
- Scared.
- Hostile.
- Irritable.
- Ashamed.
- Nervous.
- Jittery.
- Afraid.

Team identification

- When someone criticizes this team, it feels like a personal insult.
- I am very interested in what others think about this team.
- When I talk about this team, I usually say ‘we’ rather than ‘they’.
- This team's successes are my successes.
- When someone praises this team, it feels like a personal compliment.
- If a story in the media criticized the team, I would feel embarrassed.

Affective commitment

- I enjoy discussing my organization with people outside it.
- This organization has a great deal of personal meaning for me.
- I think that I could easily become as attached to another organization as I am to this one (R).
- I do not feel like 'part of the family' at my organization (R).
- I would be very happy to spend the rest of my career with this organization.
- I do not feel a strong sense of belonging to my organization (R).
- I do not feel 'emotionally attached' to this organization (R).
- I really feel as if this organization's problems are my own.

Appendix 2: Items to assess social desirability bias

- I tell the truth.
- When I take sick leave from work or school, I am as sick as I say I am*.
- I am always courteous, even to people who are disagreeable.
- Once in a while I laugh at a dirty joke.
- I sometimes try to get even rather than forgive and forget.
- I always apologize to others for my mistakes.
- I would declare everything at customs, even if I knew that it could never be found out.
- I never attend a sexy show if I can avoid it*.
- Sometimes at elections I vote for candidates I know little about.
- I am sometimes irritated by people who ask favors of me.

Note: Items belong to impression management scale (Paulhus, 1984); Items marked with * were eliminated after pretest to avoid problems with employee representatives when collecting data for the industry sample.