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Innovator Resilience Potential: An Investigation of the Human Side of Innovation Project Terminations

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Extended Summary

Any innovation process naturally goes hand in hand with a strong potential for failure. Up to as many as 90% of all innovation projects fall to termination before their successful completion, with even higher termination rates in the pharmaceutical industry. Such terminations can have detrimental effects on the project members involved. Yet, surprisingly, as project members make up the most important reason for the success of innovations, research has hitherto scarcely noted the human side of innovation project terminations. Consequently, this study aims to analyze how to retain the innovative functioning of project members after such setbacks.

This dissertation develops a framework to study the processes involved and analyze the influence of termination characteristics on project members. Resilience, or positive adaptation despite adversity, serves as the dissertation's underlying framework and is adapted to the innovation context. To measure the resilience of project members after termination and to analyze the influence of termination characteristics on resilience, this dissertation develops the resilience construct innovator resilience potential (IRP), embedded in the innovator resilience (IR) framework. Herein, IRP stands for the potential in individuals for future innovative functioning and coping with future setbacks. The IRP construct consists of six malleable facets: self-efficacy, outcome expectancy, hope, optimism, self-esteem, and risk propensity.

This dissertation theoretically develops and tests this definition and operationalization of IRP in a qualitative and a quantitative study. The qualitative study was conducted in a world-wide operating hospitality company that underwent a large-scale innovation project termination. The quantitative field study took place as an online questionnaire that 238 innovators completed entirely (180 innovators had experienced an innovation project termination). A total of 326 innovators completed the first part of the questionnaire regarding

IRP. After developing IRP in the qualitative study, it became operationalized, tested, and validated in the quantitative study. Furthermore, the quantitative field study tested the relationship of IRP with future innovative functioning, which has great importance for the success of future innovation projects. A second step identifies factors influencing IRP.

The outcomes of the quantitative field study show that IRP strongly relates to project commitment, which represents future innovative functioning of project members, as project commitment is important for the success of innovation projects. The strong relationship hinges on having experienced a termination beforehand. Therefore, IRP is important in the ongoing work of innovators following an innovation project termination. It is thus important to strengthen IRP after a termination, as this has a strong relationship with project commitment and as such future innovative functioning. Furthermore, this dissertation identifies social support as an influencing factor on IRP. More precisely, emotional support of the leader and organizational support provided through a climate of psychological safety strongly relate to IRP. In contrast, the support from family and friends does not relate to IRP. The dissertation found only work-related social support to strongly influence IRP. These findings result in theoretical and practical implications on how best to support project members during and after an innovation project termination.

In addition, the general practical discussion of this dissertation presents five steps leading to IRP and guidelines for a post termination debriefing to provide leaders with practical advice. The theoretical findings suggest that IRP can be used to measure the influence of innovation project terminations on project members and that IRP is important for future innovative functioning and for future coping of project members. The findings build the basis for future research in this nascent research field.

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Abbreviations and acronyms

AER	After-event review
IRP	Innovator resilience potential
IR	Innovator resilience
OBSE	Organization-based self-esteem
OD	Operational debriefing
PD	Psychological debriefing
PTD	Post-termination debriefing

1 Introduction

1.1 Relevance of the thesis

Innovations have always decisively driven development and success (Drucker, 1998). Today the desire and the need to innovate remain strong, according to a survey of the Battelle Memorial Institute, which expects research and development spending to increase globally by 5.6% in 2012 (Grueber & Studt, 2011). Nevertheless, inherent in the innovation process lies the potential for failure (Corbett, Neck, & DeTienne, 2007; Shepherd, Covin, & Kuratko, 2009a; Shepherd, Patzelt, & Wolfe, 2011), especially when they aim at radical innovations (Bessant, 2008). The failure rate of innovation projects ranges between 40% and 90%, depending on the industry and product categories (Gourville, 2006; McGrath, Keil, & Tukiainen, 2006). In the IT industry, approximately 80% of all projects fail (Oaks, 2006), whereas in the pharmaceutical industry, only one out of 10,000 products qualifies for a debut on the market (Gassmann & Reepmeyer, 2005). For the members of terminated innovation projects such setback experiences can especially evoke negative emotions (Shepherd et al., 2011) and cause detrimental outcomes (Välikangas, Hoegl, & Gibbert, 2009). This becomes significant when considering the strong likelihood that these individuals will work in subsequent innovation projects and that research has identified individuals as the most important source for the success of innovation (Shepherd et al., 2011). Moreover, individuals render innovations possible (Amabile, Schatzel, Moneta, & Kramer, 2004) and, as mentioned, represent the most important resource for successful innovation (Verona, 1999), with Steve Jobs having led the way as an outstanding example of an extremely influential innovator. Notwithstanding these crucial findings, researchers have hardly regarded the human side of innovation project terminations (Välikangas et al., 2009).

Prior research on project terminations considered aspects like escalating commitment to underperforming projects (Sivanathan, Molden, Galinsky, & Ku, 2008), reasons for terminations (e.g., Balachandra & Brockhoff, 1995), champions and antagonists (e.g., Markham, 2000), as well as success (e.g., Ernst, 2002; Ernst, Hoyer, & Rübbsaamen, 2010), and failure factors leading to innovation project terminations (e.g., Shenkar & Yan, 2002). Recently however, a group of researchers started to consider human aspects of innovation project terminations. Shepherd and colleagues focus on failed entrepreneurial projects studying the grief process, the role of negative emotions, coping self-efficacy (Shepherd & Kuratko, 2009), and the effects of innovation failure on individual learning and affective commitment (Shepherd & Cardon, 2009; Shepherd et al., 2011). While these studies provide valuable and significant early insight on specific and single aspects of innovation failures, they present only the tip of the iceberg.

When looking at research on other setbacks in the organization – inherent in organizational work (Sutcliffe & Vogus, 2003) – it becomes apparent that in contrast to the scarce research on the human side of innovation project terminations, studies have thoroughly examined the human side of other organizational setbacks. Researchers have examined most extensively human aspects of mergers and acquisitions, downsizing, layoffs, and change (e.g., Cohen & Foerst, 1968; DeShon & Gillespie, 2005; Grzeda & Prince, 1997; Gutknecht & Keys, 1993; Kalimo, Taris, & Schaufeli, 2003; Moore, Grunberg, & Greenberg, 2004). Studies on organizational change investigate for example effects of change on coping, attitudes of survivors (Armstrong-Stassen, 2004), intention to quit, health, job satisfaction (Begley & Czajka, 1993), the effects of change commitment (Herold, Fedor, & Caldwell, 2007; Herscovitch & Meyer, 2002), and cynicism about organizational change (Reichers, Wanous, & Austin, 1997). Furthermore, studies have also focused on effects of layoffs and downsizing on well-being, work outcomes (Moore et al., 2004; Parker, Chmiel, & Wall,

1997), and creativity (Amabile & Conti, 1999). This brief overview shows that researchers have covered a variety of aspects in these contexts, and the results of these studies show that setbacks can have a strong influence on the individuals involved (Sutcliffe & Vogus, 2003). It is thus worthwhile to examine the human side of organizational setbacks and to expect that the termination of an innovation project has the potential to negatively affect project members.

Taking these prior findings together it becomes apparent that a variety of human aspects arise in regard to organizational setbacks and ubiquitously occurring terminations of innovation projects. To more thoroughly study the scarcely examined human side of innovation project terminations it seems beneficial to develop a framework that provides a basic structure to examine the various processes involved. This requires a measurable construct embedded in the framework that can also serve as an outcome variable after the termination. This construct needs to be malleable to study the effects the characteristics of an innovation project termination have on the individuals involved. Identifying such characteristics and their influence on project members future innovative functioning allows examining how such terminations affect project members.

Research on resilience can provide a basic framework that underlies the processes involved. Resilience can be defined as “positive adaptation within the context of significant adversity” (Luthar, Cicchetti, & Becker, 2000: 543), such as the termination of an innovation project. Resilience and the ongoing positive adaptation can be seen as a continuing process (Sutcliffe & Vogus, 2003) with personal, behavioral, and environmental factors influencing each other bi-directionally (Bandura, 1986, 1988) over time and even over a series of setbacks (e.g., terminations). Therefore this doctoral thesis aims to develop: a) a resilience framework that permits studying various processes involved, as well as b) a resilience construct that enables measuring and testing the relationships thereof, even after the innovation project

termination has occurred. Such a measurable construct forms the basis for investigating preliminary effects of innovation project terminations on project members. Identifying factors that influence the project members after an innovation project termination is essential, as this reveals ways to support project members during this difficult event and to maintain or even strengthen their positive future functioning.

This dissertation uses the following definitions. Innovation projects are defined as projects for the adaptation or development of new products, services, or processes (Woodman, Sawyer, & Griffin, 1993). Innovation project termination means the deliberate decision to terminate or substantially change an innovation project prior to its completion (Kumar, Persaud, & Kumar, 1996). In this context, an innovator is defined as a person who, in a professional capacity, works on or incites innovative tasks.

1.2 Research gap and contributions

This dissertation sets out to close existing research gaps, to provide significant contributions toward building a basis for future investigations in this nascent research field and to provide the following three key contributions. First, the human side of innovation project terminations is regarded in an integrated way for the first time in the development of a process-oriented resilience framework. Second, development, definition, and operationalization of a measureable resilience construct in the innovation context will enable studying and measuring the processes involved. Finally, this dissertation uncovers relationships with the newly developed resilience construct and identifies influencing as well as outcome factors. Throughout, this study considers different research streams and integrates research on organizational setbacks, innovation, project terminations, and resilience that serve as the dissertation's basis. Furthermore, social cognitive theory will explain the underlying interaction between personal factors, behavior, and the environment (Bandura, 1988; Wood &

Bandura, 1989). The broaden-and-build theory (Fredrickson, 1998, 2001) will serve as a base to consider key relationships of the newly developed resilience construct.

1.2.1 Research framework – the process perspective of resilience

The variety of studies regarding the human side of organizational setbacks and the few studies regarding the human side of innovation project terminations mostly examine special aspects of such a setback, including influence on well-being, work outcomes, learning, or commitment (e.g., Moore et al., 2004; Parker et al., 1997; Shepherd et al., 2011). When aiming at a more thorough investigation of the human side of innovation project terminations, applying existing measures proves difficult. Hence, this study creates a framework that allows a more thorough investigation of the effects of an innovation project termination on project members and the relationships involved. I regard the resilience of project members as such a framework to depict a multitude of processes involved. More precisely positive adaptation despite significant adversity (resilience) represents an ongoing process (Luthar et al., 2000; Sutcliffe & Vogus, 2003), and this process becomes the resilience framework of this doctoral thesis.

Seeing resilience as a process offers a rather new approach to understanding phenomena involved in setback situations (Richardson, 2002). In the first wave of resilience research, studies focused on “phenomenological descriptions of resilient qualities of individuals and support systems that predict social and personal success” (Richardson, 2002: 308). These researchers focus on personal traits that influence the outcomes of setback situations. The focus thereafter changes from this rather static view to “understanding the underlying protective processes” (Luthar et al., 2000: 44) such as the acquisition of those resilient qualities studied in the first wave (Richardson, 2002). Regardless of the progression from trait to process resilience in general resilience research, the studies in the organizational context still measure trait resilience mainly to study how it influences outcomes of different

organizational setbacks (e.g., Grzeda & Prince, 1997; Wanberg & Banas, 2000) and mostly neglects the process perspective and the possible influence of the setback on resilience. Luthans and colleagues acknowledge the malleability of resilience and thus also the process perspective, but use and operationalize resilience in a rather trait-like manner (e.g., Youssef & Luthans, 2007). Sutcliffe and Vogus (2003) more generally consider the process perspective of resilience in the organizational context. Yet, their research tends toward the conceptual and lacks an operationalization and a measure of resilience.

As a first contribution this doctoral thesis will therefore shed light on the human side of an innovation project termination by establishing a suitable resilience framework in the organizational context. The process perspective of resilience is as such defined as this research framework. The questions what human aspects are affected and how they influence the innovative capacities of individuals need to be answered for that. It is thereafter possible to determine, which characteristics of the termination have an influence on the project members. For that the established process-based resilience framework needs to incorporate a suitable resilience construct that can be measured and tested accordingly.

1.2.2 The resilience construct

To uncover and examine the processes involved it is necessary to develop a resilience construct that can be measured before and after an innovation project termination occurs. The measureable resilience constructs that have been developed as predecessors of the process perspective of resilience (Richardson, 2002) and those within the organizational context are rather trait-based. Here the influence on outcomes of a setback are measured (e.g., London, 1983; Wanberg & Banas, 2000), but the constructs have not been used to measure resilience after a setback. This lacks an adequate outcome-related measure of resilience in the organizational context, which would allow examining the influence of a setback on resilience

(Harland, Harrison, Jones, & Reiter-Palmon, 2005). Neither does a global resilience construct and an operationalization for use within and across fields exist (Sutcliffe & Vogus, 2003). Thus, neither an adequate definition, nor an operationalization, nor a measure of a resilience construct is available in the organizational context that enables measuring the relationships involved at various points in the process. It seems further necessary to take into account that the innovation context differs due to peculiarities in the innovation process (Drucker, 1985). The elevated degree of unpredictability and risk (Drucker, 1985; Seligman, 1998), for example, differentiates innovation project terminations from other setbacks. Therefore, it seems necessary to develop an innovation-specific resilience construct to depict resilience within this particular context. For that it is essential to find out what resilience means in the context of innovation. The definition and operationalization of this innovation-related resilience construct need to be properly deduced and justified in order to comply with scientific requirements (Luthar et al., 2000), which this doctoral thesis will do.

This dissertation, then, as its secondary contribution, develops a resilience construct that can be measured at any point in the resilience process, as the construct is defined, operationalized, and validated in the innovation context. Bandura's social cognitive theory (Bandura, 1986) serves as a theoretical basis, necessary to justify the developed construct (Luthar et al., 2000). Furthermore, to provide conceptual justifications, this dissertation will define, operationalize, and use the resilience construct in a qualitative case and a quantitative field study (Luthar et al., 2000).

1.2.3 Interrelations of the resilience construct and other factors

To thoroughly understand the human side of innovation project terminations it is crucial to see how the measurable resilience construct relates to other factors. To investigate how an innovation project termination influences the resilience of project members requires malleability of the newly developed construct. Without such an attribute, it would prove

impossible to investigate the relationship of innovation project termination characteristics and project members' resilience. I will review characteristics of the innovation project termination that possibly influence the resilience of the project members so as to give recommend how to best support project members during and after innovation project termination. Factors that positively influence the resilience of project members are therefore investigated. Earlier resilience research has identified several possible positive influencing factors on general resilience, often called protective factors or assets (Bonanno, 2004; Phillips & Gully, 1997; Richardson, 2002; Werner, 1995), of which I will test some factors in this dissertation.

Besides the influence of protective factors, such as the characteristics of the innovation project termination, it is pivotal to examine the relationship of the new resilience construct with future innovative functioning, as it emphasizes this construct's importance for project members' positive functioning in the innovation context. To test the construct's relationship with future innovative functioning, an adequate variable needs to be chosen that represents such future innovative functioning. Only then it is possible to test the appropriateness of the newly developed measureable resilience construct for the innovation context. All in all, this dissertation examines important outcomes and influencing factors of the resilience construct. Studying those relationships follows contemporary resilience research and, moreover, the demand of current researchers to focus especially on the processes involved (Luthar et al., 2000).

Therefore, this doctoral thesis further contributes toward the identification of important relationships of the innovation-related resilience construct with other factors, as the examination of those relationships validates the new resilience construct and exemplifies the process perspective of resilience. It also enables recommendations on how to handle termination of an innovation project to make it as positive as possible for all parties involved.

1.3 Thesis outline

This dissertation, with its targeted three contributions and its aim to study the human side of innovation project terminations, unfolds in six chapters. Chapter 2 outlines the empirical approach and follows a two-step process. First, a qualitative case study is conducted to gain first insights into the complex social processes involved and to elaborate existing theory in this nascent research field (Eisenhardt & Graebner, 2007). Thereafter, this dissertation carries out a quantitative field study to develop an appropriate measure and to test proposed hypotheses. This second chapter includes more detail on the approach and the design of the qualitative and quantitative studies. Chapters 3 – 5 conceptually and empirically investigate the human side of innovation project terminations and comprise the development of an appropriate resilience framework, a measureable resilience construct, and the exploration of the relationships involved.

Chapter 3 conceptually and qualitatively develops the resilience framework for investigating the human side of innovation project terminations. Herein establishes the process view of resilience, taking into account prior findings of resilience research and the peculiarities of the innovation process. A six-faceted integrated outcome-oriented resilience construct is defined and conceptualized. Bandura's social cognitive theory (Bandura, 1986) serves here as the theoretical basis. Further, the conceptually derived findings are applied involving an in-depth case study in a large hospitality company.

Chapter 4 introduces major aspects of the empirical quantitative study. It develops and verifies a quantitative measure of the new resilience construct. Here it employs a confirmatory factor analysis using the pertinent facets derived in Chapter 3. Further, Chapter 4 uncovers the relationship of the resilience construct with the ability of individuals to commit themselves fully to innovation projects. The contingency of whether an innovator has previously experienced an innovation project termination receives further study. I use multivariate

regression analysis to investigate the relationships, and I conduct a moderation analysis. To control for possible influences on these relationships, I include some control variables in all models such as time since the innovation project termination, organizational tenure, age, gender, and commitment to the terminated innovation project.

After having established a measure of the resilience construct, Chapter 5 investigates the relationship of this construct with social support during and after an innovation project termination. I regard several sources of support: the leader, the organization, and family and friends. The findings lead to possible ways to support project members during and after an innovation project termination. I use multivariate regression to study the relationships as well as to identify and test involved mediation. I further include demographic variables (age, gender, and organizational tenure) to control for potential influences on relationships.

The concluding chapter, Chapter 6, starts with summarizing the findings of Chapters 3 – 5. Subsequently, I discuss theoretical and managerial implications, explicate limitations, and finally offer an outlook on future research. Figure 1-1 illustrates the outline of this doctoral thesis. Chapters 3-5, organized as individual empirical research papers, each includes its own abstract, introduction, hypotheses derivation, methods, results, and discussion sections. Notwithstanding efforts taken to avoid redundancies, especially in regard to defining and explaining resilience in the innovation context, some overlap exists.

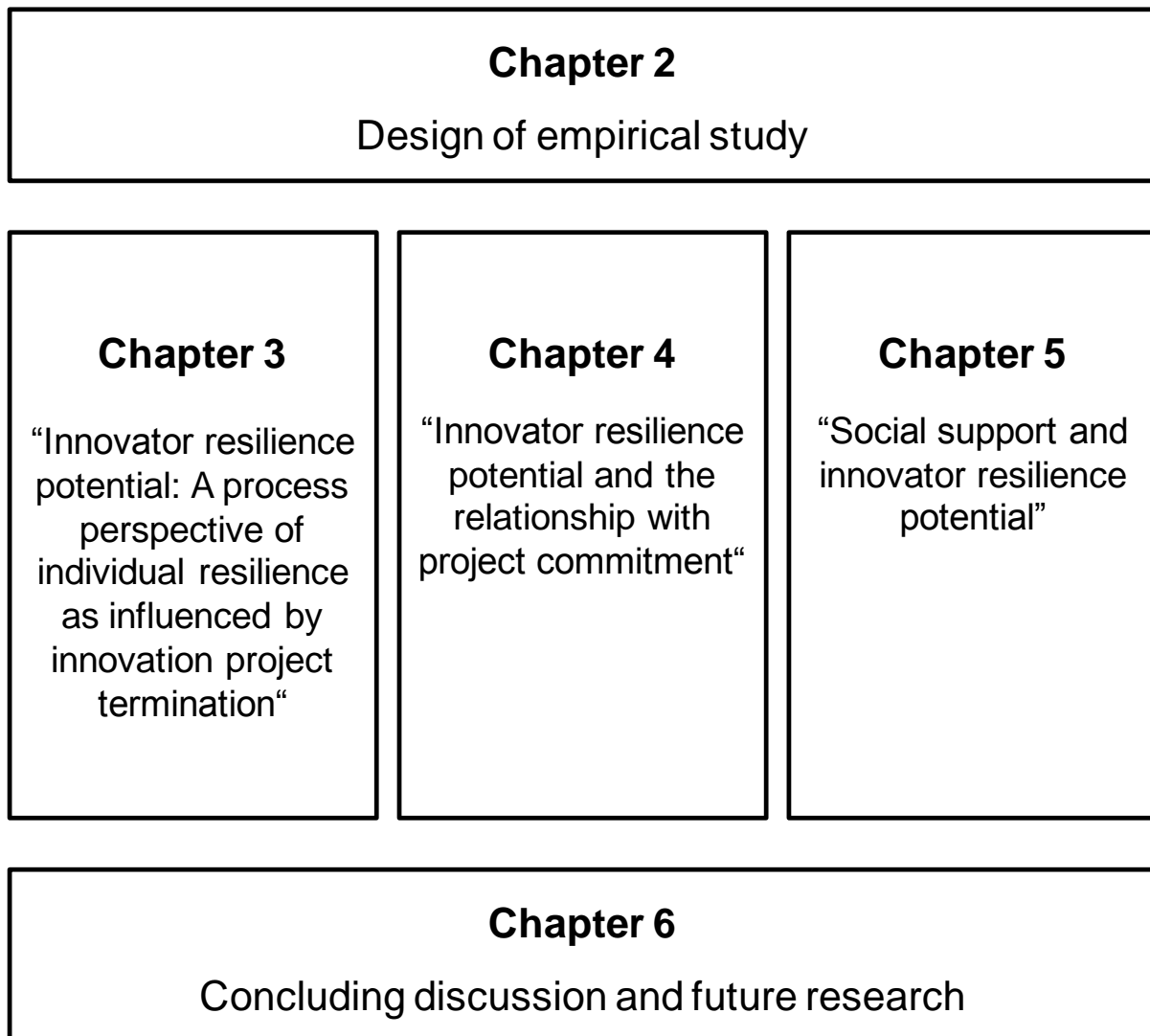


Figure 1-1: *Outline of the thesis.*

2 Design of empirical study

To elaborate on the proposed research questions, the empirical design of this doctoral thesis consists of a qualitative and quantitative study. This two-step approach results from the paucity of research in this field (Välikangas et al., 2009) and a lack of any resilience framework incorporating a suitable resilience construct that enables studying the human side of innovation project terminations. The qualitative step seemed necessary to first extend and elaborate existing theory (Eisenhardt & Graebner, 2007; Glaser & Strauss, 1967; Silverman, 2000). Chapter 3 then theoretically develops and supplements this resilience framework and the resilience construct. Furthermore, this case study allows insights into the complex social processes involved (Eisenhardt & Graebner, 2007). In a second step it was possible to quantitatively test the newly developed innovation-related resilience construct and the proposed framework in a quantitative field study. Chapter 4 establishes a quantitative measure of the resilience construct and Chapter 4 and 5 test relationships with other factors.

2.1 Qualitative case study

The case study was conducted in a multinational hospitality company that underwent the termination of a large-scale innovation project. The innovation project included several subprojects of which one was successfully finished before the termination of the overall innovation project occurred. It was possible to interview seven key persons involved in this innovation project from all hierarchical levels and of different subprojects after the termination took place. These interviews were reported, transcribed, and analyzed. Chapter 3 introduces the case study and describes the case setting, the data collection, the analysis, and the content in depth.

2.2 Quantitative field study

The quantitative study aims at establishing a measure of the new resilience construct and testing proposed relationships. In the qualitative study external factors like the industry and the company were held constant as the study was limited to one company. To get a more general picture, to avoid industry bias, and as project terminations can be found in every industry, the quantitative field survey was not limited to a specific industry or company.

2.2.1 Data collection

To collect the data, I developed and administered a questionnaire in German language and used validated German translations of standardized measures when available. In other cases, independent bilingual speakers translated and then back-translated items and anchors (Brislin, 1986; Szabo, Orley, & Saxena, 1997). I relied on existing measures in the literature when possible. A pretest was conducted in an innovative research setting at a university to test the items and their understanding; the wording was refined after the pretest. If not stated otherwise, five-point Likert-scales with anchors ranging from strongly disagree (1) to strongly agree (5) were used for the items in this study. Table 2-1 shows the English versions of the items used in the quantitative study.

Variable	Items
Project commitment	I feel fully responsible for achieving the common project goals. This project has my strong commitment I am proud to be part of the project. I value to be part of the project. I feel a very high degree of personal ownership for this project.
Innovator Resilience Potential	Self-efficacy: I have confidence in my ability to do my job. I am very proud of my job skills and abilities. I have all the skills needed to perform my job well. <hr/> Outcome expectancy: In this organization I am well-rewarded for my good work. In this organization doing good work is worth the effort. In this organization I must do a good job in order to get what I want.

	<p>Optimism: In uncertain times, I usually expect the best at work. I expect more good things to happen to me than bad at work. I am optimistic about my future regarding my work.</p> <p>Organization-based self-esteem: I count at work. I can make a difference at work. I am important at work.</p> <p>Risk propensity: I have to take the risk of failing in order to achieve something at work. I rather take the risk of failing, than to do nothing at work. To get on with my work, I gladly put up with things that can go wrong.</p> <p>Hope: At the present time, I am energetically pursuing my work goals. If I should find myself in a jam at work, I could think of many ways to get out of it. At this time, I am meeting my work goals.</p>
Emotional leader support	<p>My leadertreated me as an individual. ...gave me encouragement and recognition. ...instilled pride and respect in me.</p>
Climate of psychological safety	<p>In my company: When someone makes a mistake it is (later) not held against him. No one would deliberately act in a way that undermines others' efforts. It is not difficult to ask someone for help. One is free to take risks. As an employee one is able to bring up problems and tough issues.</p>
Support from family and friends	<p>I had the support I needed from my friends. I had the support I needed from my spouse/family.</p>
Leader feedback	<p>My leaderprovided me with specific feedback after the termination about my performance during the project. ...provided me with timely feedback after the termination about my performance during the project. ...presented this feedback in a helpful manner with a workable plan for improvement if required.</p>

Table 2-1: *Questionnaire of the quantitative study.*

The questionnaire was directed at so-called “innovators” – individuals who, in a professional capacity, work on or incite innovative tasks, i.e., they work on the adaptation or development of new products, services, or processes (Luthans & Church, 2002), thus individuals formed the unit of analysis. As a data base, this study used a large, business-related social networking site targeting the German-speaking business environment to identify and contact possible participants. Due to the high popularity and professionalism of the social

business network, the approach ensured reaching a large number of participants of the target group. The social network had 10.8 million registered members at the time of data collection (November 2010-September 2011). Members of the social network include employees from small to large companies across all industries and professions (XING.com, 2010). About 40% of all members work in companies with more than 500 employees. Approximately 50% of all members are business professionals, meaning that they are university graduates or have a monthly wage of at least 3,500 Euro. More than 35% have higher management positions, and more than 80% work full time. Most major German companies (e.g., Audi AG, Deutsche Telekom AG, Commerzbank AB, EADS, Daimler AG, BAFS SE, MAN) use the networking site for recruitment and/or advertising.

Besides the possible access to a multitude of suitable participants, the approach to contact participants via this website proved further valuable as this secured more anonymity. The survey took place separate completely from the companies the participants work for, which reduced any fear that the individual data would be publicized and/or used by management. It was not possible to trace the questionnaire back to the individuals. Participants were contacted via the website's e-mail system, whereas the survey was conducted on an external platform independent from the social network. As participants had to disclose personal information, the contact e-mail as well as the cover page of the questionnaire emphasized that the data were treated completely confidentially and anonymously to avoid response bias (Paulhus, 1991).

2.2.2 Sample

The targeted audience for the questionnaire were innovators, therefore search words included 'innovation', '(product) development engineer', 'new product development', or 'project manager' entered in the network's database. A total of 326 innovators filled out the first part of the questionnaire related to the newly developed resilience construct and 238 (180

of whom had experienced an innovation project termination) filled out the complete questionnaire. E-mail invitations went out to 7,102 innovators and 612 innovators confirmedly received the e-mail as they accessed the attached link to the study's website or sent an e-mail response. As it was not possible to trace the questionnaire back to the individuals, it was not possible to send reminder e-mails. The following figures show more information about the sample such as age distribution, highest educational level, organizational tenure, functions in their organizations, industry, and size of the company.

The mean age of participants was 35.5 years and ranged from 23 to 61 years. Median age was 34 years; standard deviation was 7.4. Figure 2-1 shows the distribution of the participants' age in more detail.

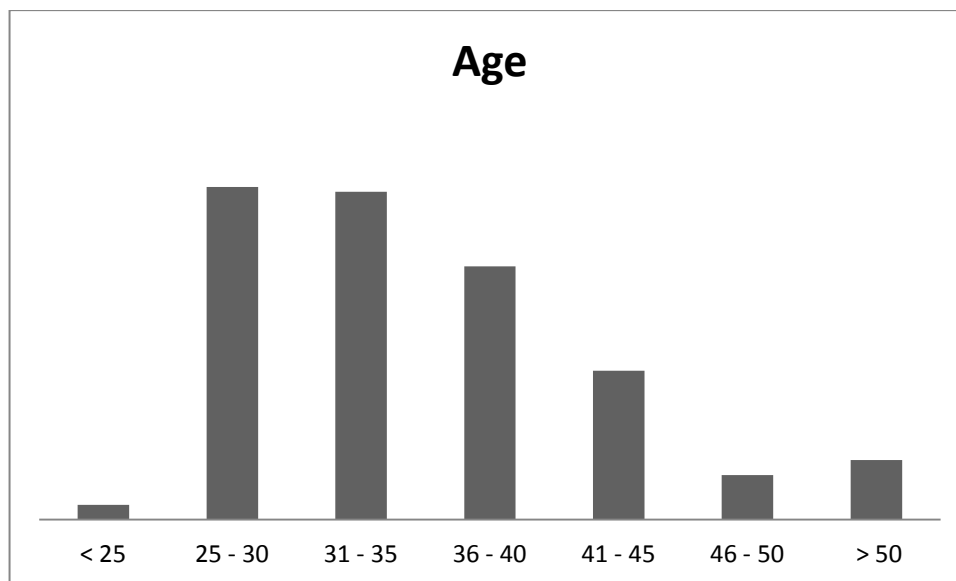


Figure 2-1: Age of participants ($N = 238$).

In regard to the highest level of education of participants, only one professor participated in the study. The majority of participants had received a master's degree or equivalent. Figure 2-2 shows the allocation of degrees held by participants.

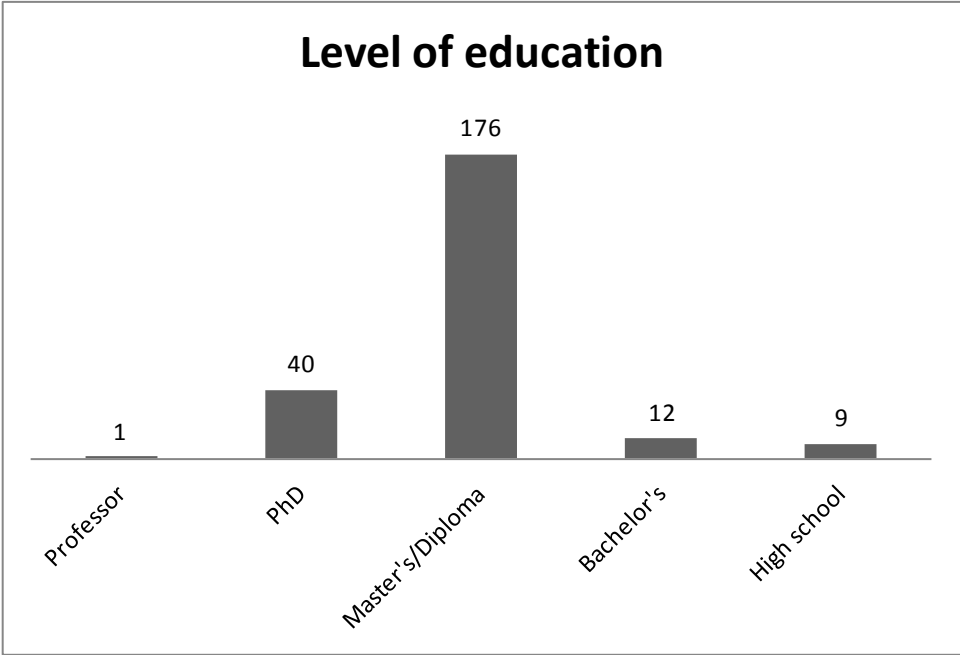


Figure 2-2: Highest level of education of participants (N = 238).

Mean organizational tenure of the participants is 6.4 years, ranging from 1 to 42 years. The median is 4.0 and the standard deviation is 6.2. Figure 2-3 shows a clustered distribution of participants' organizational tenure.

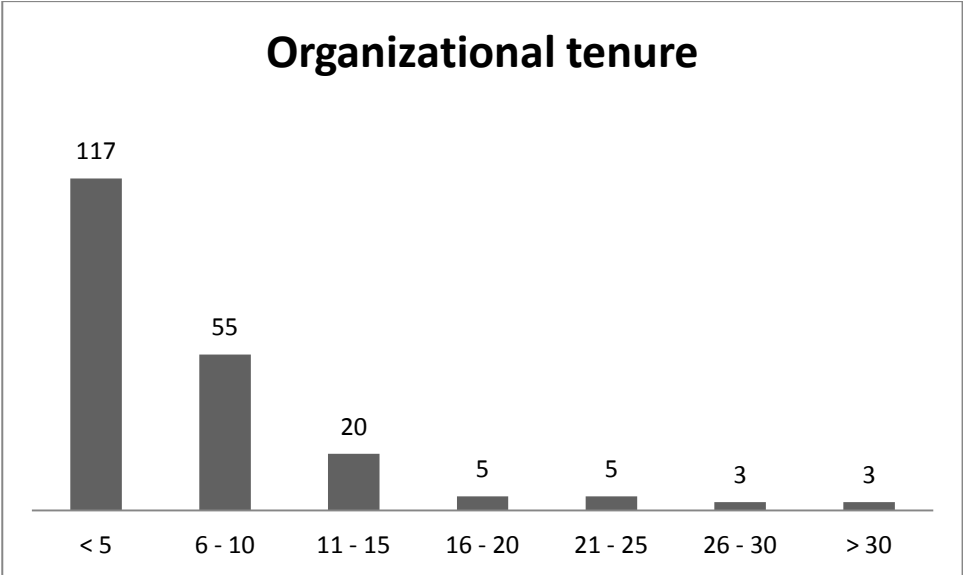


Figure 2-3: Organizational tenure of participants (N=238).

The majority of participants worked as scientists or developmental engineers, while 27% served as managers and 3% worked as assistant managers or consultants (see Figure 2-4).

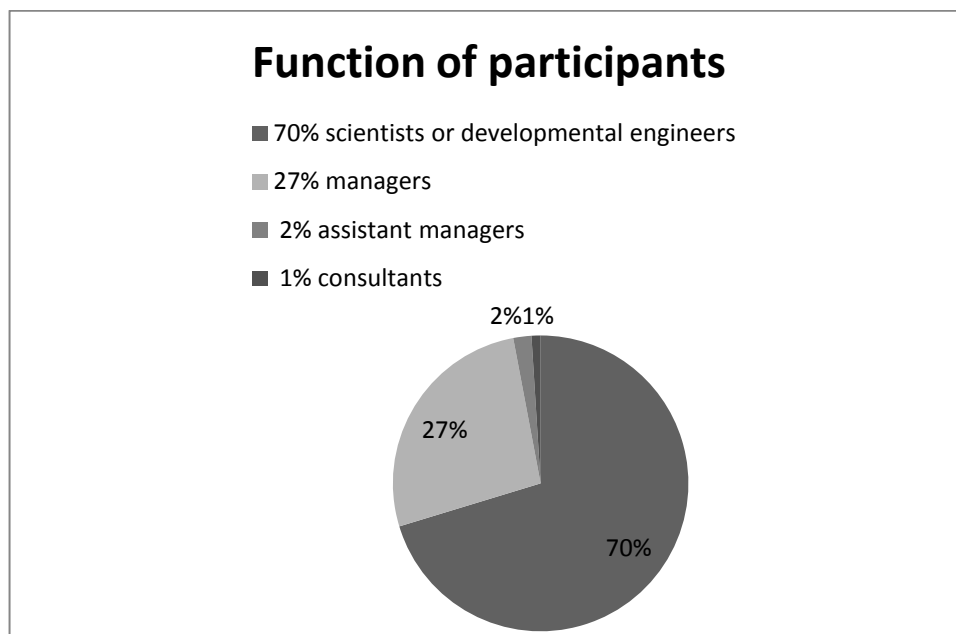


Figure 2-4: *Organizational functions of participants (N = 238).*

Participants worked in various industries, with approximately three quarters of participants employed in manufacturing. Figure 2-5 shows a more detailed distribution of participants' industries.

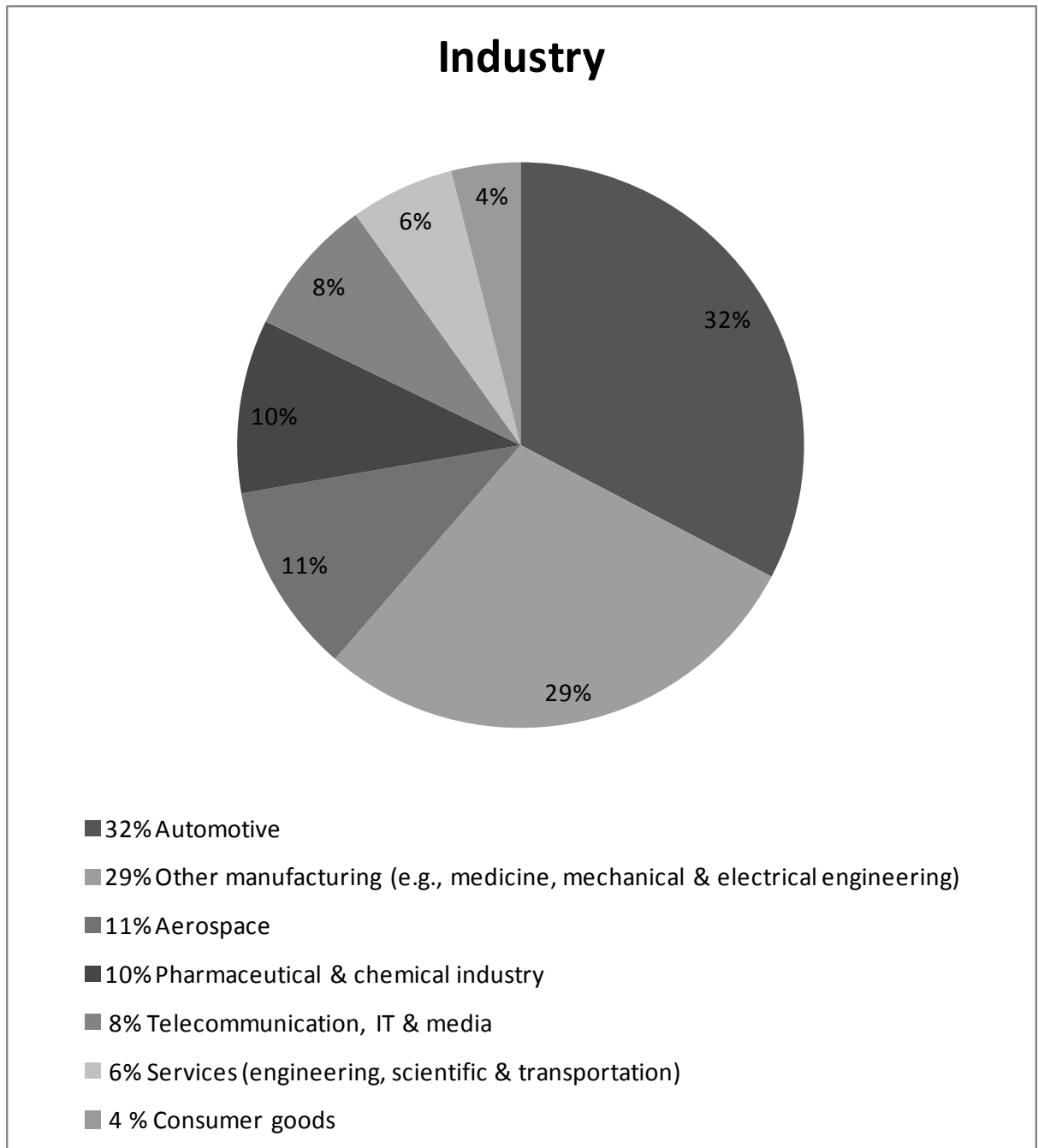


Figure 2-5: *Industries participants were working in (N = 238).*

Figure 2-6 shows the size of the participants' company.

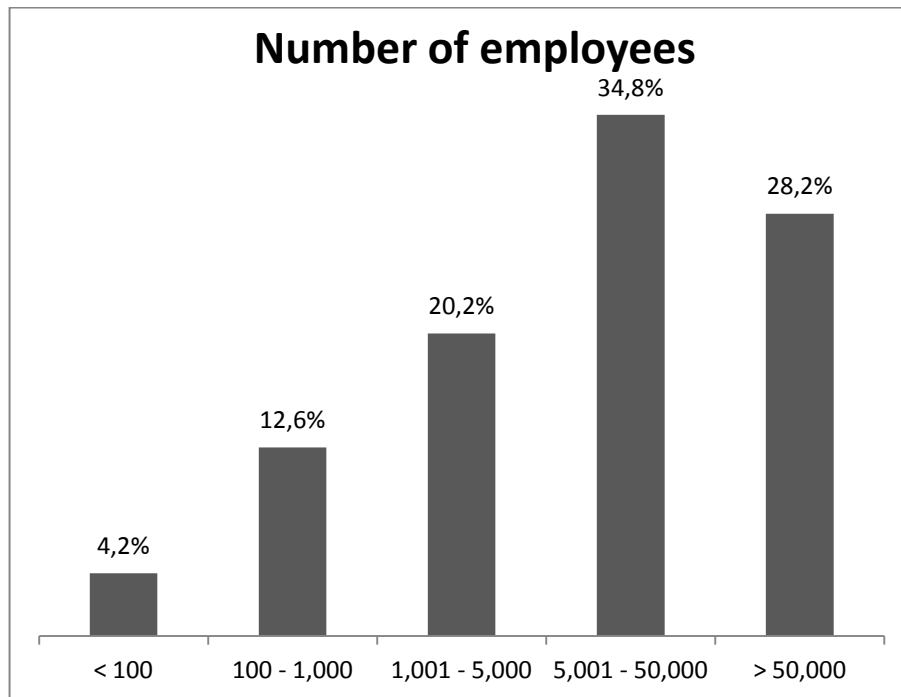


Figure 2-6: *Size of the participants' companies (N=238).*

2.2.3 Further sample analyses

To check for possible biases I administered a variety of tests. To test for a non-response bias I compared the gender ratio in the sample to the individuals invited and the population of engineers in Germany. I drew the population information from the German census bureau using data on engineers, chemical engineers, and physicists. Females made up 16.8% of respondents, 14.3% of all invitations went to females, and 14% of all engineers, chemical engineers, and physicians in Germany are female. T-tests show no significant differences between the means of these populations. This suggests that non-response and sampling biases do not pose a problem.

The quantitative study set out to analyze individual perceptions and experiences of an innovation project termination. Therefore, the questionnaire aimed at single informants being involved in innovation projects. Relying on single informants entails possible biases. In

innovation projects for example, the organizational role – and individual’s functional background and the hierarchical status – can lead to an informant bias (Ernst, 2003; Ernst & Teichert, 1998). Therefore the questionnaire was open to all hierarchical levels and functional backgrounds. Collecting data from single respondents brings about some further possible biases; therefore, several tests were conducted to check for those biases. First, to check for a possible common source and common method bias that might affect the results (Podsakoff, MacKenzie, Jeong-Yeon, & Podsakoff, 2003; Podsakoff & Organ, 1986), I conducted Harman’s one-factor test, a procedure recommended by Podsakoff et al. (2003). Here, no single or general factor emerged in an exploratory factor analysis of all factors used in the analyses. This reduced the likelihood of an undetected common method bias (Podsakoff et al., 2003). I also applied a further test to check for a potential common method bias, the marker variable technique recommended by Lindell and Whitney (2001). A variable theoretically unrelated to at least one of the focal variables is included. I used the big five variable agreeableness (“I see myself as critical and quarrelsome”) from Gosling, Rentfrow, and Swann Jr (2003) as a marker variable, which is assumed to be theoretically not relevant to the individual level variables in the models in Chapter 4 and 5. Non-significant and low correlations of this variable with the focal variables in the models in Chapter 4 and 5 were found and lend further confidence to assuming a negligible presence of common method bias in the data.

3 Innovator resilience potential: A process perspective of individual resilience as influenced by innovation project termination¹

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ABSTRACT

Innovation projects fail at an astonishing rate. Yet, the negative effects of innovation project failures on the team members of these projects have been largely neglected in research streams that deal with innovation project failures. After such setbacks, it is vital to maintain or even strengthen project members' innovative capabilities for subsequent innovation projects. For this, the concept of resilience, i.e. project members' potential to positively adjust (or even grow) after a setback such as an innovation project failure, is fundamental. We develop the second-order construct of innovator resilience potential, which consists of six components – self-efficacy, outcome expectancy, optimism, hope, self-esteem, and risk propensity – that are important for project members' potential of innovative functioning in innovation projects subsequent to a failure. We illustrate our theoretical findings by means of a qualitative study of a terminated large-scale innovation project, and derive implications for research and management.

Keywords: individual resilience, innovation failure, innovation projects, organizational behavior project termination

3.1 Introduction

Innovation projects, i.e. projects that target the adaptation or development of new products, services, or processes (Woodman et al., 1993), are often terminated prior to completion (Shepherd & Cardon, 2009), especially when aimed at radical or discontinuous innovations (Bessant, 2008). Such project terminations are natural and often necessary as the innovation process involves high degrees of uncertainty and complexity (Clegg, Vieira da Cunha, & Pina e Cunha, 2002; Van de Ven & Polley, 1992). Prior research has looked at such aspects as the reasons for terminations (e.g., Balachandra & Brockhoff, 1995), success and failure factors (e.g., Shenkar & Yan, 2002), or escalating commitment to underperforming innovation projects (e.g., Sivanathan et al., 2008). These studies focus mainly on the consequences of managerial decisions regarding the immediate effects of innovation project terminations on profitability and organizational performance (Kester, Hultink, & Lauche, 2009).

However, what has been largely neglected in extant literature is that innovation project terminations potentially have strong and detrimental effects on the members of terminated projects (Välrikangas et al., 2009). Prior research thus seems to quietly assume that project members simply ‘function’ as before, with possible consequences on the people involved excluded from most research on innovation project terminations (e.g., De Reyck & Leus, 2008; Schmidt & Calantone, 1998). This is particularly noteworthy concerning future innovative activities, which must be executed by the very individuals who experienced the termination of an innovation project to which they may have dedicated much time, effort, and passion. One exception to this is Shepherd and colleagues (2009a), who look at failed entrepreneurial projects, thus shedding light on the role of negative emotions and coping self-efficacy after entrepreneurial failure, as well as on the inevitable grief process and its outcomes, which makes them pioneers in this research field. We complement their research

by considering this topic from a different angle – the resilience of individuals after an innovation project termination – and thus go one step further.

The resilience of project members, i.e. the ‘positive adaptation within the context of significant adversity’ (Luthar et al., 2000: 543), such as an innovation project termination, is essential to prepare the ground for future innovative endeavors (Powley, 2009), as the project members, along with their motivation and capabilities, are surely among a company’s most valuable resources for innovation (Verona, 1999). While resilience research largely investigated individual resilience generally, and mostly in a clinical context (Richardson, 2002), research on individual resilience in an organizational context is still at a very early stage (Avey, Luthans, & Youssef, 2010b; Luthans & Youssef, 2007; Stajkovic, 2006) and has, to date, focused mainly on resilience’s influence on organizational change and layoffs (Grzeda & Prince, 1997; Rush, Schoel, & Barnard, 1995; Wanberg & Banas, 2000). Owing to the peculiarities inherent in innovative tasks (Drucker, 1985), we argue that, in the context of innovation, it is not possible to understand resilience by applying (existing) general resilience concepts and measures (e.g., Avey, Luthans, Smith, & Palmer, 2010a; Ong, Bergeman, Bisconti, & Wallace, 2006; Wanberg & Banas, 2000). Rather, a resilience construct aligned to the unique setting of innovation, i.e. the elevated degree of unpredictability, complexity, and risk in this environment (Drucker, 1985; Van de Ven, 1986), appears necessary. It is important that such a context-specific resilience construct not only incorporates the recovery from an adverse event, but also the potential for maintaining personal innovativeness after a setback and the strength to cope with future setbacks, as a future project failure is likely in the innovation context.

In this study, we develop the construct of innovator resilience potential (IRP), which captures the potential for innovative functioning after a termination and for coping with future setbacks. To operationalize IRP, we identify a set of constituting components that meet three

conditions: they are important for future innovative functioning (innovation), concern coping with future setbacks (consecutive resilience), and are malleable.

As a first step towards integrating the research streams on project terminations, individual resilience and innovation this article offers two main contributions. First, we contribute to the literature on innovation project termination and resilience by theoretically developing the second-order construct IRP, which is important for project members' innovative functioning in future projects after a termination. Drawing on Bandura's (1986) social cognitive theory (SCT), research on general resilience, and literature on innovation management, we theoretically identify six components that constitute IRP. By conducting a case study of a failed large-scale innovation project, we illustrate IRP's relevance as a multidimensional construct in the reality of an innovation project termination. This empirical study suggests that the IRP construct is not only theoretically coherent, but also practically relevant.

Second, we develop a process perspective of individual resilience in organizations by conceptualizing IRP also as an outcome variable that is influenced by situational and environmental factors. Much of the literature on resilience in organizations operationalizes resilience as a trait or a resource, suggesting a rather static view of individual resilience in organizations (e.g., Masten & Reed, 2002; Ong et al., 2006; Tugade & Fredrickson, 2004). We expect that not only personal resilience will influence the outcomes of a challenging situation – in our case, the termination of an innovation project – but also that the setback situation itself will influence personal resilience. This underlines the assumption that resilience should be seen as a process rather than as a stable trait (Luthar et al., 2000; Richardson, 2002; Sutcliffe & Vogus, 2003). This process perspective of IRP offers an alternative, more dynamic approach that allows for specifying antecedents of resilience (rather than its effects) in future studies, thus paving the way for the thorough investigation of

the human side of innovation project terminations, and the development of actionable recommendations on how to minimize the human cost of innovation failure. Surprisingly, these aspects have been widely neglected in research on innovation project terminations to date, even though in the innovation context failure is rather the rule than an exception (Corbett et al., 2007).

This article is organized as follows. In a first step, we review existing literature and subsequently derive the IRP construct and its components theoretically. We then present our case study, setting out to illustrate IRP's components and how they are influenced by a project termination. The article closes with a discussion of this study's main theoretical and practical implications, along with limitations and an outlook.

3.2 Theory

The concept of resilience was introduced in the 1970s. After focusing on resilience in children and adolescents, it was expanded to adult research, which initially was mainly conducted in the field of psychiatry (Masten, 2001). Most researchers set out to explain positive adjustment in the face of traumatic experiences (Luthar et al., 2000), often measured by the absence of post traumatic stress disorder or depression (Bonanno, 2004). The concept of resilience has been introduced to the context of organizational research during the past decade. Since then, research on individual resilience in organizations has developed mainly into three different research streams. Representing a central construct in positive psychology (Seligman & Csikszentmihalyi, 2000; Youssef & Luthans, 2007), Luthans and colleagues embed resilience into positive psychology's application to the workplace, with resilience as one of the four parts of their positive construct, termed psychological capital (PsyCap), which they describe as 'positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement' (Luthans & Church, 2002: 59). The second path, as taken by Wanberg and Banas (2000),

examines resilience as a predictor of employee openness towards workplace changes. They measure resilience as a composite of individual-difference variables (self-esteem, perceived control, and optimism) derived from cognitive adaptation theory (Taylor, 1983), suggesting that individuals with high levels of well-being during stressful life events exhibit high levels of these variables (Wanberg & Banas, 2000). The third organizationally embedded research stream deals with the construct of career motivation of which career resilience is one component (London, 1983; Noe, Noe, & Bachhuber, 1990); career resilience is defined as the ‘ability to bounce back after a career setback’ (Grzeda & Prince, 1997: 172).

3.2.1 Resilience as a process

The studies in the organizational context predominantly treat resilience as a factor that influences a setback’s impact on individuals (Richardson, 2002), thereby neglecting this setback’s potential influence on resilience. For example, Ong et al. (2006) consider resilience as a stable trait-like construct that alters responses to daily stress. By contrast, Luthans and colleagues acknowledge resilience’s malleability. Still, they mainly conceptualize it as an influencing factor on workplace outcomes (Avey et al., 2010b; Luthans, Youssef, & Avolio, 2007b). However, this view of resilience as a malleable construct implies that resilience may also be conceptualized as a successful process (Luthar et al., 2000; Richardson, 2002; Sutcliffe & Vogus, 2003). In this regard, Bandura’s (1986) social cognitive theory (SCT) suggests that a professional setback has the potential to influence individual resilience. According to SCT, personal factors (e.g. resilience components) may be altered by the environment (Akgün, Lynn, & Byrne, 2003). In SCT, psychosocial functioning is explained in terms of triadic reciprocal causation (Bandura, 1986), meaning that ‘behavior, cognitive and other personal factors, and environmental events all operate as interacting determinants that influence each other bidirectionally’ (Bandura, 1988: 276). Thus, employees are both products and producers of their personality, behavior, and environment (Stajkovic, Luthans,

& Slocum Jr, 1998). Individual resilience may therefore be seen on the one hand as an antecedent of how a future setback affects an individual, and on the other hand as an outcome of a setback situation.

The termination of an innovation project represents such a setback, which may affect the project member's individual resilience in the innovation context. In turn, this resilience influences the potential of future innovative functioning and of dealing with future setbacks after having experienced an innovation project termination. This is in line with the view of resilience as a process (Richardson, 2002), which holds that, as a result of disruptions, resilience may be weakened or strengthened, thereby implying additional or decreased protection for future disruptions (Dougall, Herberman, Delahanty, Inslicht, & Baum, 2000; Moore et al., 2004). Further, we underline that 'early experience shapes later experience' (Sutcliffe & Vogus, 2003: 96), such that the development of resilience depends on an individual's history of prior experience, and that a mix of prior success and failure is required for this development. This part of the resilience process, in which resilience is influenced by an adverse event and is therefore seen as an outcome variable, has largely been disregarded in organizational research on resilience to date. This presents a stark contrast to research on resilience in clinical psychology, where the process perspective of resilience and the measurement of resilience as an outcome has found broad application (Luthar et al., 2000; Masten, 2001; Richardson, 2002). Therefore, even though stressing the process view of resilience, we focus in this study on that part of the resilience process where the setback influences IRP as illustrated in Figure 3-1. This will also form the conceptual domain of our case study. The gray shaded area indicates the ongoing process, the setback situation influences IRP, which, in turn, influences the potential of future innovative functioning and future coping.

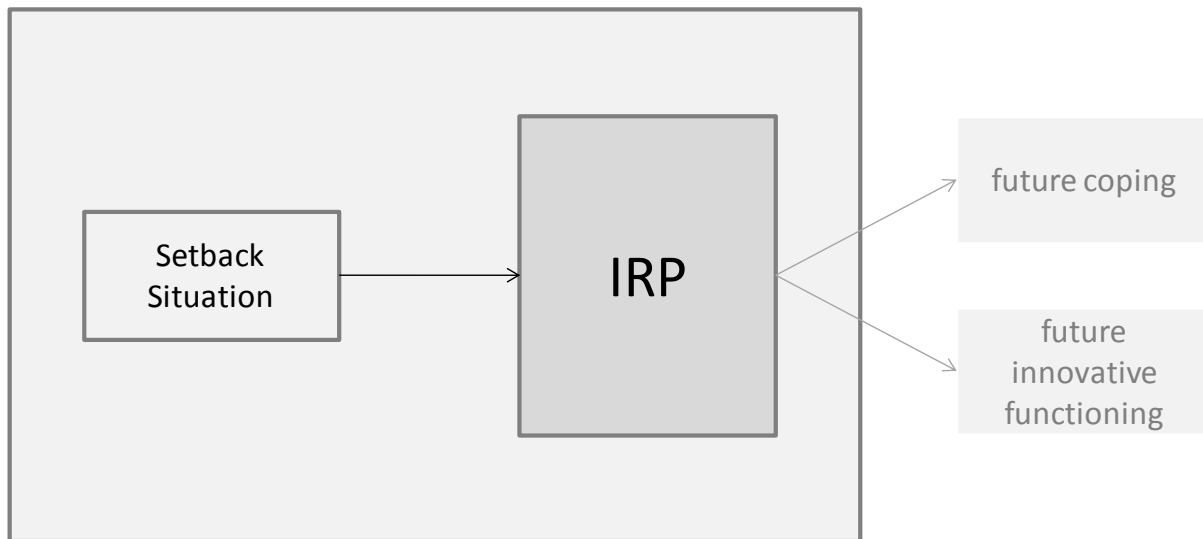


Figure 3-1: *The resilience process.*

In one of the rare empirical studies to examine resilience as an outcome variable in the workplace, Harland et al. (2005) used a student sample of part-time MBAs to examine which aspects are perceived as helpful in dealing with difficult or challenging past work experiences. They found that leader behavior may strengthen individual resilience when dealing with stressful events. Another example of empirical research on resilience as influenced by stressful events is provided by Moore et al. (2004), who examine the influence of layoff contact on employee reactions to subsequent layoffs. They found that people who had experienced contact with layoffs in the past (either by being laid off themselves or by seeing colleagues being laid off) reported lower job security and higher levels of role ambiguity, intent to quit, depression, and health problems after a subsequent layoff situation, thereby suggesting a reduced level of resilience after the setbacks had occurred. An opposing view, which nonetheless also supports the process perspective of resilience, derives from the literature on post-traumatic growth or thriving. This literature describes situations in which an individual's level of functioning after an adverse event exceeds the individual's level of functioning before the adverse event (Carver, 1998), suggesting that people may learn from

setbacks how to deal effectively with such situations (Corbett et al., 2007), thereby developing a higher degree of resilience (Dougall et al., 2000).

3.2.2 Innovator resilience potential (IRP)

Throughout this article we define our focal construct IRP by adapting the definition of resilience by Sutcliffe and Vogus (2003) to the innovation context: IRP is the potential for future innovative functioning and coping with future setbacks after having experienced a professional setback. In the innovation context, such a setback commonly refers to an innovation project failure, i.e. the deliberate decision to terminate or substantially change an innovation project prior to its completion (Kumar et al., 1996). In this context, we define an innovator as a person who, in a professional capacity, works on or incites innovative tasks.

As resilience has not yet been considered in the context of innovation, it was necessary to develop a definition and an operationalization specific to this setting. Luthar et al. (2000) recommend that ‘the term ‘resilience’ should always be used when referring to the process or phenomenon of competence despite adversity’ (p. 554). Yet, for each context, it is necessary to define what competence means in the specific research setting. We will do this by identifying six components that operationalize (the context-specific concept of) IRP. These six components indicate the degree to which an individual has the potential to perform again in future innovative tasks (i.e. future innovative functioning) and to cope with future setbacks (i.e. future coping). It is important to note that we see IRP as a necessary but not sufficient condition for future innovative functioning and future coping. Situational aspects of such a future setback, such as leader support during a setback episode, are also likely to affect the degree of actual future innovative functioning and future coping after such a future setback. Therefore, we assume that IRP is a prerequisite for future innovative functioning and coping with future setbacks, but does not equal it.

As a latent second-order construct, IRP comprises six first-order components. The premise for identifying the constituting components has been that they relate to resilience (better coping with future setbacks) as well as to innovation (future innovative functioning) and that they are malleable in nature (being possibly influenced by the setback), which corresponds to our process conceptualization of resilience as explained above. As such, IRP incorporates state-like qualities that are essential prerequisites for innovative functioning after professional setbacks such as innovation project terminations, thus representing fundamental prerequisites for accomplishing subsequent innovative tasks (Amabile, 1988).

Resilience research at the organizational level already acknowledges the close connection of resilience and innovation, in contrast with research at the individual level. Diamond (1996: 221), for example, sees organizational resilience as ‘the ideal context for innovation.’ Hamel and Välikangas (2003: 55) even consider resilience as one of three essential forms of innovation: ‘Resilience refers to a capacity for continuous reconstruction.’ They emphasize that success usually doesn’t breed success, but rather follows failure in the innovation process (Hamel & Välikangas, 2003). This underlines how closely interlinked the two concepts are. In addition to this, for each component of IRP there are research findings reported in the literature providing evidence for facilitating positive adaptation. Specifically, each component of IRP must enable future innovative functioning as well as the ability to deal with future setbacks. Hence, qualities to be included in IRP must be part of the interface of malleable innovation and resilience qualities, as depicted in Figure 3-2.

Figure 3-2 depicts ‘resilience qualities’ as well as ‘innovation qualities’ which, taken together, represent the personal qualities necessary for resilience and innovation. Regarding the identification of personal qualities supportive of innovation, which are depicted by the left circle in Figure 3-2, there exists a vast body of research that broadly distinguishes two categories of qualities (Miron, Erez, & Naveh, 2004). One category contains creativity and

other qualities that are assumed to facilitate creative thinking and thus idea generation, such as expertise (Amabile, 1988) and cognitive style (Witkin & Goodenough, 1981). The second category includes qualities that are assumed to foster the implementation of novel ideas, such as self-confidence (Mumford & Gustafson, 1988) and the ability to promote innovations (Hauschildt & Kirchmann, 2001). Resilience qualities refer to a person's 'selective strengths or assets to help them survive adversity' (Richardson, 2002: 309). They are represented by the circle on the right hand side of Figure 3-2. In this context, a large list of qualities supposed to help individuals recover from adverse events like, for example, self-control (Baumeister & Exline, 2000) and happiness (Buss, 2000) can be found in the literature.

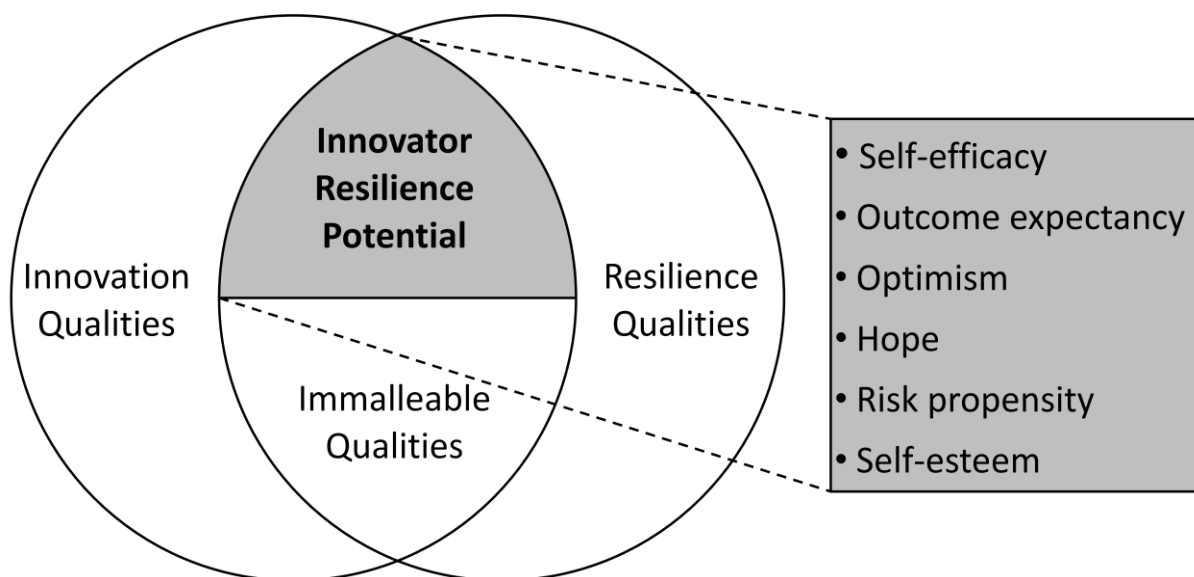


Figure 3-2: *Innovator resilience potential.*

There are many overlapping qualities, represented by the intersection of the two circles in 3-2, as innovation is highly related to setbacks and resilience. Some of these qualities situated at the intersection of resilience and innovation qualities, and thus fulfilling this necessary condition to constitute IRP, however, are relatively stable over time and thus not malleable as required, such as employees' need for achievement (Phillips & Gully, 1997), or personality (McCrae & John, 1992). These make up the lower half of the circles' intersection

in Figure 3-2. For example, in the literature, the need for achievement strength is generally seen as a stable attitudinal variable of individuals unlikely to be affected by situational aspects (Begley & Boyd, 1987; Mannheim, Baruch, & Tal, 1997), and personality has repeatedly been shown to be fairly stable in adult individuals (Hampson & Goldberg, 2006; McCrae & Costa Jr, 1982). Hence, constructs that are suggested in the literature on individual resilience and innovation to represent a trait (rather than being state-like) are not included in IRP, as they are assumed to be unaffected by a setback such as an innovation project termination and would therefore not fit the process view of resilience. Applying these premises, we identified six components that represent both innovation and resilience state-like qualities, thus positively affecting innovative functioning in future innovative endeavors after professional setbacks (which, in turn, are likely to be affected by such setbacks): outcome expectancy, self-efficacy, optimism, hope, self-esteem, and risk propensity. They are represented by the upper half of the circles' intersection in Figure 3-2, which is shaded grey. Together, these components constitute IRP and thus build the potential for future innovative functioning and coping; in the following section we will present these components in detail. Importantly, while IRP is assumed to facilitate innovative functioning and coping with future setbacks in subsequent innovation projects, it is not considered equal to them. In innovation projects, there are many environmental factors that might exert considerable influence on an individual's innovative functioning and coping with setbacks in the future, such as team processes (Hoegl & Gemuenden, 2001) or leadership aspects (Hung, 2004).

3.2.2.1 Outcome expectancy and self-efficacy

Self-efficacy and the related construct of outcome expectancy can be ascribed to Bandura's work, the underlying social learning theory (Bandura, 1982) and SCT (Bandura, 1986). Self-efficacy is concerned with self-judgments of how successfully one can perform one's job (Riggs & Knight, 1994). Efficacy expectations determine how much task-related

effort will be expended and how long that effort will be sustained despite disconfirming evidence (Bandura, 1977). Outcome expectancy refers to ‘a judgment of the likely consequence such performances will produce’ (Bandura, 1977: 211). In the present context, self-efficacy represents an individual’s belief that he or she has the capabilities to fulfill the assigned tasks in an innovation project; outcome expectancy represents the belief that the fulfillment of one’s assignments produces the desired outcomes, such as recognition and project completion. The malleability of these constructs was shown, e.g. by Riggs and Knight (1994), who found that failure affects the levels of individual efficacy beliefs as well as outcome expectancy.

Both self-efficacy and outcome expectancy relate to the control a person experiences in a given context (Bandura, 1977). They are necessary for considering a situation as changeable. In turn, this is particularly important in the present context, as innovation is often driven by the desire to achieve something that might ‘change the game’ (O’Connor & McDermott, 2004: 16). In addition, high self-efficacy is widely acknowledged as a facilitator of individual creative action (Bandura, 1997; Tierney & Farmer, 2002), which is a necessary prerequisite of innovation (Amabile, 1988). Hence, high outcome expectancy and self-efficacy are very likely to facilitate a project member’s ability to innovate. Concerning resilience’s link to high outcome expectancy and self-efficacy, self-efficacy is used as a component of career resilience in Grzeda and Prince’s (Grzeda & Prince, 1997) validation of their career motivation measure. Furthermore, Luthans and colleagues (Luthans, Avolio, Avey, & Norman, 2007a) consider self-efficacy as a component of PsyCap. Outcome expectancies associated with different behavior types are likely to affect which behaviors individuals will utilize and thus the way in which they choose to apply their cognitive competencies (Freitas & Downey, 1998). This enables individuals to score high on outcome

expectancy, applying their cognitive competencies more effectively (Freitas & Downey, 1998), which is likely to make them more resilient in future adverse situations.

3.2.2.2 Optimism

The construct of optimism was introduced by the anthropologist Lionel Tiger as ‘a mood or attitude associated with an expectation about the social or material future – one which the evaluator regards as socially desirable, to his advantage, or his pleasure’ (Tiger, 1979: 18). It is related to cognitive processes as well as to emotions (Stajkovic, 2006). In this research, we refer to the explanatory style of Seligman, Peterson, and colleagues (Seligman, 1998). This more state-like approach to optimism depends on the attributes an individual uses ‘to explain why certain events occur . . . past, present or future’ (Luthans et al., 2007b: 87). According to Seligman (1998), an optimist attributes positive events to personal, permanent, and pervasive causes and negative events to external, temporary, and situation-specific factors. For pessimists, the attribution is the opposite. These attributional styles are malleable individual characteristics that may be influenced, for example, by stress and trauma (Peterson, 2000) or therapeutic interventions (Seligman et al., 1988).

Optimism was shown to mediate the relationship between supportive climate and performance, and innovation outcomes (Luthans, Norman, Avolio, & Avey, 2008). Furthermore, prior work suggests positive relationships among optimism, goal engagement, and attainment of high-priority goals (Geers, Wellman, & Lassiter, 2009). All these aspects are essential for developing successful innovations. Concerning the context of resilience, Wanberg and Banas (2000) used optimism to define and measure resilient individuals, while Luthans et al. (Luthans et al., 2007a) see it as a component of PsyCap. Furthermore, strong optimism is assumed to generate a state of vigor and resilience (Peterson, 2000).

3.2.2.3 Hope

Being closely related to goal-setting theory (Snyder et al., 1991; Stajkovic, 2006), hope is defined as a ‘cognitive set that is based on a reciprocally derived sense of successful (a) agency (goal-directed determination) and (b) pathways (planning to meet goals)’ (Snyder et al., 1991: 570). While the agency aspect closely relates to self-efficacy and optimism (Peterson, 2000; Stajkovic, 2006), the pathway aspect is particularly distinct. Hopeful individuals find out ‘what is to be done and how to do it’ (Stajkovic, 2006: 1209). They therefore set goals and identify ways to achieve these goals. Several scholars argue that hope is malleable, following Snyder’s state concept of hope (Snyder et al., 1996), which has been demonstrated, for example, by Luthans et al. (2006a).

Hope was shown to positively influence survival beliefs (Range & Penton, 1994). Even though the innovation process does not threaten the lives of those involved, it involves many obstacles and ill-defined problems, which make a kind of survival belief indispensable in order to persist in the face of adversity. Especially the pathway component ‘allows for rekindling of determination and willpower even when faced with blockages, as additional alternative pathways have been proactively determined’ (Youssef & Luthans, 2007: 793). Hope also allows one to turn obstacles into challenges and learning opportunities (Luthans et al., 2007a), which is essential in innovation (Amabile, Hadley, & Kramer, 2002). Stajkovic (2006) includes hope in his higher-order core confidence construct, suggesting that hope shares a common confidence core with resilience. Furthermore, hope also represents a component of PsyCap (Luthans et al., 2007b).

3.2.2.4 Self-esteem

Self-esteem, which is defined as a person’s perception of his or her self-worth (Stajkovic, 2006), may be distinguished from self-efficacy, which refers to confidence in

one's abilities. Self-esteem relates to judgments of self-worth – liking or disliking oneself (Bandura, 1997; Braden, 1998). According to Heatherton and Polivy (1991), self-esteem may be subject to temporary changes, thus representing a malleable construct.

Self-esteem has been shown to relate positively to motivation and creativity (Braden, 1998; Erez & Judge, 2001), which are key determinants of innovative functioning. Hence, self-esteem appears to be a crucial prerequisite for successful engagement in innovation projects. Furthermore, self-esteem was used by Wanberg and Banas (2000) to define and measure high individual resilience, with a higher level of self-esteem corresponding to higher resilience levels.

3.2.2.5 Risk propensity

The propensity to take risks 'involves calculated actions to make effective decisions that promote goal attainment with the clear recognition of the potential of damage, setbacks, and other losses' (Tjosvold & Ziyou, 2007: 655). The extent of an individual's risk propensity depends on contextual factors such as the organizational environment, for example, psychological safety in a work group (Edmondson, 1999), thereby pointing to this construct's malleability. Further, negative emotions were found to influence risk adversity (Lerner & Keltner, 2001).

The propensity to take risks strongly correlates with general flexibility (Rybowiak, Garst, Frese, & Batinic, 1999) and promotes innovation as well as recovery from mistakes (Tjosvold & Ziyou, 2007). This is further underlined by risk propensity representing a component of London's (1983) career resilience construct, which refers to an individual's resistance to career setbacks. Consequently, several empirical studies demonstrate that risk propensity strongly relates to new product innovativeness and seems to be a key factor for successfully developing novel products and solutions (e.g., Sethi & Sethi, 2009). This connec-

tion has been established particularly in the literature on entrepreneurial innovation (Hung, 2004) and entrepreneurs' responses to failure (Corbett et al., 2007; Shepherd et al., 2009a). For example, Simon et al. (2000) emphasize the positive effect of experiencing failure for future entrepreneurial activities. Furthermore, the importance of resilience for entrepreneurs to start subsequent ventures after business failure is an important approach to explain why many entrepreneurs do not lose their overconfidence when trading-off risks and opportunities when founding new ventures (Hayward, Forster, Sarasvathy, & Fredrickson, 2010).

Despite similarities and some overlap between the six IRP components, we consider them as distinct aspects of IRP. This is similar to Luthans and colleagues' conceptualization of PsyCap as a multidimensional construct comprising four components considered positive psychological resources (Avey et al., 2010b). We will now embed the theoretically derived concept of IRP by presenting the case example of the termination of a large-scale innovation project in an internationally leading hospitality company.

3.3 Methods

We conducted an in-depth case study to illustrate how the six components of IRP are affected by a termination. Interviews were conducted after the termination of a large-scale real-life innovation project. This method was chosen primarily for two reasons. First, the research question has not been addressed in previous studies, which calls for a qualitative approach to extend and elaborate existing theory (Eisenhardt & Graebner, 2007; Glaser & Strauss, 1967; Silverman, 2000). As such, our objective in this case study research was to supplement our theory development. Second, an inductive case study is suitable for the investigation and identification of the complex social processes involved in the organizational context surrounding these processes (Eisenhardt & Graebner, 2007) as most research questions deal with reciprocal interactions between the organizational context and individual behavior (Schneider, 1983).

3.3.1 Case setting

The unit of analysis was a terminated innovation project with several subprojects in a global hospitality company. We chose a single case design to capture the circumstances and conditions of an innovation project termination that seem typical for such occurrences in order to illustrate the IRP concept's practical relevance (Yin, 2003). Further, by studying a project termination in a single company, the structural company and industry characteristics can be held constant, thus increasing internal validity of the findings compared with analyzing projects from different companies or industries (Yin, 2003). Internal validity is further strengthened by the theoretically derived research framework and questions, for which the specific circumstances of this termination provide an excellent case to examine (Gibbert, Ruigrok, & Wicki, 2008; Yin, 2003). As different subprojects existed, which were in different stages of progress when the termination occurred, a variety of insights, opinions, and feelings could be found and analyzed in this case study. Although there is always a trade-off between internal and external validity, incorporating these different subprojects in the analysis and thus pursuing a 'nested' approach enabled us to extend generalizability of findings to other contexts (Yin, 2003) while at the same time holding constant company and industry influences. The provision of a detailed case description also supports external validity (Cook & Campbell, 1979).

As resilience needs to be investigated after the trigger event has occurred in order to examine resilience as an outcome variable, the participants were interviewed after the project's termination. Interviews were conducted with seven key people in the innovation project in the focal European country. On the company side, our research was supported by the head of human resource development and the top management, which allowed us to have interviewees from all hierarchical levels – including the lowest, i.e. a team/staff member, and highest, i.e. the director (CEO) – of the focal country. Table 3-1

shows the different positions the interviewees held in the company and their function during the project. The three branch directors represent classical middle management positions in the company. The branches were of different sizes and belonged to different brands, thus the hierarchy of these three positions within middle management also varied. This cross-section of functions and positions in the innovation project enabled us to gather data from a multitude of perspectives on the innovation project termination. Interviewees were selected in cooperation with the head of human resources development, who was involved in the innovation project from the outset.

	Gender	Position	Function during the project
1	male	Director (CEO)	Initiator of the project FI
2	male	VP HR	Head of an unsuccessful subproject
3	male	Local branch director	Overall project leader
4	male	Local branch director	Head of an unsuccessful subproject
5	male	Local branch director	Head of a successful subproject
6	male	HR Development manager	Coach of the project
7	female	HR Manager	Member of an unsuccessful subproject

Table 3-1: *Interviewees functions during the project and positions.*

3.3.2 Data collection

In order to maximize reliability of results, multiple sources of evidence were used and a case study database was created (Gibbert et al., 2008; Yin, 2003). Open-ended interviews, site visits, site observations, documents, and rich archival records were the sources available for the investigation of this in-depth case study. Documents were provided by interviewees and derived from the company's intranet and the media. In total, more than 1000 pages of

documentation were reviewed. All interviews were semi-structured (Wengraf, 2001) and the questions were adjusted to interviewee role. We developed the interview guideline questions by means of a critical incident approach (Flanagan, 1954), asking interviewees for aspects that influenced the IRP components after the termination and its future impact. Sample questions included: ‘Do you have the feeling that you can influence outcomes in the company?’; and ‘Do you currently have work goals? What are they?’ To maximize the insights gained from every interview, the interview guideline was adjusted as the research progressed. Interviews were tape-recorded and transcribed. During the interviews, the interviewer took notes to complement the records.

The total length of the recorded interviews was 573 minutes, and the transcripts yielded 273 pages of text. All interviews were conducted by the same interviewer at the interviewees’ workplace and took place one year after the innovation project’s termination. The interviews were accompanied by on-site observations that helped us interpret and understand the case context. Two interviews were conducted in the focal country’s headquarters and the other five interviews at local sites in major European cities. Furthermore, six additional on-site visits (between one and three hours in duration) at the company’s headquarters helped us gain a deeper impression of the company’s culture, as well as a picture of the changes that recently occurred in the company, and enabled us talking to some employees who were not involved in the terminated project. These discussions were informal and facilitated our understanding of the surroundings of the innovation project and the company’s current situation.

3.3.3 Data analysis

Interviews were fully transcribed and analyzed. The data analysis started with a review of the interview transcripts. The collected responses were then content analyzed (Neundorff, 2002) by identifying key words and phrases in each response related to the IRP components,

and a ‘miscellaneous’ category for phrases not matching any of the six IRP components. Interview data were categorized using the qualitative research software NVision. Data were double-coded by two PhD students who were blind to the study’s purpose. Cohen’s kappa for interrater reliability was calculated. An acceptable value of $\kappa = .83$ was found (Lombard, Snyder-Duch, & Campanella Bracken, 2002). Passages coded differently by the two coders were discussed among the coders and the researchers to obtain a consensus. After coding, the most representative and illustrative quotes were selected. In this process, no further category emerged from an analysis of the ‘miscellaneous’ category for incorporation into the IRP construct. In general, we found that the interviewees provided themes that followed a common thread. This demonstrated that there was substantial agreement and convergent statements among interviewees concerning the topic despite the different positions and perspectives they had in the innovation project, which further reflects validity of the collected data (Gibbert & Ruigrok, 2010; Yin, 2003). Documents, including organizational charts, official letters, reports, and project booklets were used to cross-check, verify, and complement the information retrieved in the interviews.

3.4 Case description: The rise and fall of ‘Foster Innovation’

3.4.1 Project idea and goals

In 2005, the company CEO initiated a companywide project with the purpose of fostering innovation and maintaining the company’s (leading) market position. Each country was free to conceive and implement its individual innovation initiatives. The director of our focal country initiated a nationwide innovation project ‘Foster Innovation’ (FI) (name changed), which sought to get every employee to submit ideas. The entire project was strictly voluntary – everyone was free to choose his or her degree of participation. The innovation project pursued two main goals in the focal country: The first goal was ‘to set new standards

as the market leader and to be one step ahead of our competitors' (project booklet). The generation and implementation of product ideas and organizational innovations were the means to achieve this objective. The second goal was to readjust the company culture and to stimulate deep motivation throughout the entire workforce by involving all interested employees, regardless of their function and their hierarchical position in the company. Table 3-2 provides a timeline of key events during the innovation project's progress.

Month	Event
0	Initiation of the project 'Foster Innovation' in the worldwide headquarters country.
2	Planning of the project 'Foster Innovation' in the focal country (country director, head of HR development, and publicists).
4	Kick-off Convention, 400 branch directors and managers set up a steering committee.
7	Appointing a project leader (branch director); sending out the request for the election of an ambassador from every branch.
8	Project leader begins to work on the project full time; workshops with the ambassadors .
9	Brainstorming workshops in the branches by ambassadors; consolidation of ideas within regions and with steering committee.
9	Presentation of 43 ideas to the board; board decides on six core topics to work on in subprojects (including the three topics mentioned most frequently by employees).
10	Subprojects begin work.
10	Meeting in the headquarters country where all country subsidiaries presented their initiatives.
12	Publishing of the project booklet, with information about the project, the subprojects, its goals, and progress.
13	The two project initiators at headquarters leave the company; budgetary negotiations due to financial problems in the focal country, which lead to the cancellation of budget for the project.
14/15	Apprehension about termination of the project; discussions within some project groups about termination.
15	Debriefings with project members in some subprojects.
16	Official letter from the country director about setting the project on hold.

Table 3-2: *Timeline of key events during the project.*

3.4.2 Start and kick-off in the focal country

First, a manager from the focal country was appointed project leader. He was taken out of his regular position to assume the role of the project leader and reported directly to the board member responsible for the project. Eventually, in every branch office in the focal country voluntary workshops (in their locations and departments) were organized to which every employee – from apprentice to director – was invited, to take part in and generate innovative ideas. The branch office workshops were generally characterized by high participation, documenting a general belief in management's commitment to this innovation project and its importance. Thereafter, the ideas were consolidated, first within each region and then countrywide, to generate a list of ideas that could be presented to the board. This finally led to presenting as many as 43 ideas to the board, to show the respect for employees' dedication and ideas. In a workshop characterized by passion, three regional representatives, the members of the steering committee, the project leader, and the board members discussed the ideas. Finally, the board members decided on six core topics. Two examples for subprojects are: 'Modern models of working hours and child care' with the goal of enhancing work-life balance and easing the re-entry of mothers returning from maternity leave (not successfully completed), and 'Initiation of a trend scout division' with the aim to establish a new division that searches for innovations in the hospitality sector. This latter subproject was the only successfully completed one. Its project team even won a national prize with its innovative ideas, which were generated in cooperation with high school pupils. For each of the six core topics, a management board member was appointed as a so-called godfather, to provide oversight and support. All employees were invited to apply for the team of one subproject. Five months after the outset, a project booklet containing information about the innovation project was published. Thus, at that moment, all employees were well informed about FI's progress, initial results, and the future.

3.4.3 Problems and termination

Shortly after the release of the booklet, the first problems occurred. At the world-wide headquarters, the company CEO and the VP Europe left the company. Rumors about FI's future began to spread in the focal country, because the global innovation project had been initiated by the departing company CEO. Headquarters allocated no further budget to FI in the focal country. At almost the same time, during budgetary negotiations in the focal country, it became clear that the business results (revenue and profit) were below expectations. The board and the country director felt they had no alternative but to cut expenses and to cancel the following year's FI budget. However, up to this point, no board member considered terminating FI, and the project work continued. As the situation could not be rectified swiftly, a reorganization of the branch was initiated and several employees had to leave the company. As it was hard to find reasons to justify expenses on an innovation initiative such as FI when employees were laid off, the country director wrote an official letter to all employees, which said that owing to the difficult situation FI was put on hold. However, even though the company bounced back during the same year with the highest revenue ever, the country director left the company in the middle of the following year, owing to disagreements with the worldwide headquarters. He was therefore unable to relaunch the FI project. In the end, only one subproject was successfully completed, as it was near completion when the decision to stall the overall project was taken. The only communication of the termination was the country director's letter and a final meeting by the project leader with regional representatives. In some subprojects, a debriefing took place, while in others responsible managers spoke to some team members. In other subprojects, however, the communication was merely informal, and most project work phased out prior to official termination.

3.5 The innovation project termination and innovator resilience potential

The findings of our case study support the conceptual arguments from the literature that led us to specify the components of the IRP construct, by showing how the termination of an innovation project affected the six components of IRP. This supports our theoretical construct illustrated in Figure 3-2, where IRP is represented by the malleable part of the intersection of the two circles of innovation and resilience qualities (grey shaded area). To illustrate our findings we embedded the most informative quotes from the interviewees into a matrix in Table 3-3. Each row represents one of the six IRP components. The first column shows how the factors were affected by the termination. Columns two and three indicate how the negatively affected IRP components influenced the individuals' potential for future innovative functioning and future coping.

	Influenced/malleable	Potential for Innovative Functioning	Potential for Future Coping
Self-efficacy	<p>"It is difficult to distinguish which reasons I am accountable for and which not." (3)</p> <p>"It took me about a week. After that my motivation was ok, not very high." (4)</p> <p>"He knows that he learnt a lot during the project, but that he was missing a lot of ... you know, and that he wasn't the right person for the project." (6)</p> <p>"I have made mistakes." (1)</p> <p>"... to me, our work was a great success, which made me much more confident in my performance." (5)</p>	<p>"I have no trust in working for such a project again." (7)</p> <p>"In the kitchen [his workplace] the work was great, but not in such projects anymore." (4)</p> <p>"I am not sure if I could lead such a project again." (3)</p>	<p>"If I were asked to do another project, I would defer my enthusiasm and would rationally elaborate if I am able to handle another project failure and still believe in myself." (4)</p>
Outcome expectancy	<p>"This project was only directed at employees and not towards profit, so it was worth nothing for them and was simply terminated." (4)</p> <p>"The more committed they were the more frustration they experienced regarding the company." (2)</p> <p>"They are deeply frustrated and disappointed because there was no sign for them, no appreciation at all for their tremendous work." (6)</p>	<p>"One colleague is still very innovative. But only in an area he can influence by himself, and where he knows that influences from outside cannot destroy his work or that parts of his work are prevented from continuing." (4)</p> <p>"I would have a lot of fun and I think I am suitable to do such a project again, but I would check very, very thoroughly beforehand, for instance, management commitment, after seeing what's happened here." (3)</p> <p>"I would have appreciated it if the results could have been transformed or saved in a way that you can use them afterwards." (7)</p>	<p>"I would only engage in a project like this in another company; not here, I couldn't stand it [failing again]." (3)</p>
Optimism	<p>"After the termination, the employees stopped believing in management's ability to be a guiding authority. This will not change." (6)</p> <p>"Most of us think that it is always the same: they start something and then end it." (4)</p> <p>"... this termination is so typical." (7)</p>	<p>"Today, I am smiled at when I talk about a companywide project. What has happened will not change." (4)</p> <p>"The acceptance of new projects was low and there was still, and will be, disappointment." (6)</p> <p>"I would be more critical now." (3)</p> <p>"I would maintain a low profile in projects regarding working hours, yet I think it is important. ... Low profile in expecting management support." (7)</p>	<p>"After it happened once, or the more it happens the more difficult it is to get employees motivated." (6)</p>

Hope	<p>"I would have appreciated if there had been a personal closure at team level, to preserve the results in order to be able to continue to use them and to find new ways. Therefore, I stopped talking and thinking about it." (7)</p> <p>"Then the questions about my future." (4)</p> <p>"The question remains, what is the next step, what is the long-term perspective." (3)</p>	<p>"People are in low spirits and when they are done with projects of that ilk, at least for a while. They don't know how to do it. [...] Employees are very sensitive [...] depending on the personality, they develop fears, fears of job loss, for example." (2)</p> <p>"I think we are so disappointed that no one desires to get together again and work." (7)</p>	<p>"From the outset, not having so many expectations ... more the small goals, not the big one, this will help with such a thing in the future." (6)</p> <p>"For a short period I was very afflicted, [...] but then I set myself new working goals and made plans for it and future projects." (4)</p>
Self-esteem	<p>"What is my reputation, how do others perceive me now?" (3)</p> <p>"I have personally suffered." (4)</p> <p>"I lost face." (6)</p> <p>"I am the insane project guy, the tragic person." (3)</p> <p>"You are very quick to equate the failure of a project with a person." (2)</p> <p>"I learned a lot and grew stronger as a person." (4)</p>	<p>"If I would do a new project, I would be the project dude." (3)</p>	<p>"I had to contemplate whether I really like to work for this company, also in regard to my standing in future projects." (4)</p> <p>"I have to find a point where I can draw a line for me personally to be able to cope." (6)</p> <p>"I am stigmatized now; I don't need it a second time." (3)</p>
Risk propensity	<p>"I fought for the project. I leaned out the window and I fell." (6)</p> <p>"It left scars. They look closer now." (3)</p>	<p>"I will very precisely check how much enthusiasm I personally invest." (4)</p> <p>"I am open to risk something, but not for new projects. I would definitely check very carefully before I commit." (3)</p> <p>"Leave us alone with projects, let's get the business back on track before we manage projects." (2)</p>	<p>"In another project, I would need to be impervious as to whether it will be completed, before I consider taking the risk. Too afraid to fail." (3)</p> <p>"I would need to check very carefully just to ensure it never happens again. It is self-defense, to minimize the risk." (7)</p> <p>"I would now be more calm and would analyze more." (6)</p>

(n) = Interviewee number

Table 3-3: *Quotes illustrating the influence of an innovation project termination on the IRP components.*

Thus, as illustrated by the interview quotes in Table 3-3, all six IRP components were affected by the innovation project's termination (column 1), and this impact left its mark on individuals' potential for future innovative behavior, and future coping (columns 2 and 3). Specifically, the quotes reflect various influences of the innovation project termination on the involved actors. In this case, for example, the team members' self-efficacy was challenged in two ways – their own experience of failure: 'I have made mistakes'; and seeing others fail: 'He knows that he learnt a lot during the project, but that he was missing a lot of . . . you know, and that he wasn't the right person for the project.' Both experiences are likely to lessen the expectation to successfully accomplish a future task (Bandura, 1977). In this case, self-efficacy and outcome expectancy depended largely on the extent of individual control over the course of the project. Furthermore, not knowing to what extent one's own performance (negatively) affected the innovation project's termination (and thus may have led to the innovation project's termination) jeopardized individual self-efficacy and outcome expectancy: 'It is difficult to distinguish which reasons I am accountable for and which not.'

Furthermore, the interview quotes suggest that an optimistic view is important for full engagement in future innovative endeavors, to fight for new projects and, particularly, how such optimism may be compromised by a termination: 'Most of us think that it is always the same: they start something and then end it.' Without the belief that good things will result, engagement tends to be reduced. A realistic assessment of the situation is generally needed in order to develop or maintain realistic optimism after a setback.

Similarly, the interviews demonstrate how important hope is for engaging in new innovation projects, which are essential for company advancement. This makes the impact of a termination on this IRP component even more problematic: 'The question remains: what is the next step, what is the long-term perspective.' Clearly, the self-esteem of those involved mostly suffered severely, owing to the innovation project's termination. Finding words for

what they experienced during and after termination, e.g. ‘I lost face’ or ‘I have personally suffered’, these people demonstrate a sharp decline in how they see and value themselves or perceive how they are seen by others in the organization. The quotes also point to a more cautious posture adopted after the termination, with apparently impeding consequences regarding their potential for future innovative functioning: ‘I am open to risk something, but not for new projects.’

What also becomes evident from interviewee quotes is that there is some overlap between the components, as explained in the sections above (e.g. hope, self-efficacy, and optimism). While each component addresses a unique aspect of IRP, the components are also conceptually related to one another, thereby integrating to the overall IRP construct. This is similar to Luthans and colleagues’ conceptualization of PsyCap as a multidimensional construct (Avey et al., 2010b).

A further finding of our case is that the project termination mainly influenced project members’ IRP negatively. One exception is the interviewee of the successfully finished subproject. Besides showing the general malleability of the IRP components, this supports our assumption that project terminations have the potential to influence project members’ IRP. In this vein, whether the interviewees were involved in a successful subproject or in a terminated subproject made a considerable difference on how the IRP components have been influenced. Being a member of a (un)successful subproject can even lead to opposing experiences and changes in IRP. The positively framed quote in Table 3-3 can be allocated to the member of the successful subproject. He states, regarding self-efficacy: ‘To me, our work was a great success, which made me much more confident in my performance.’ In contrast, an interviewee who experienced the termination as a failure recalls: ‘I have made mistakes.’ These two quotes show that these people’s self-efficacy has been influenced quite differently. The way in which these interviewees experienced the overall termination of the innovation

project therefore influenced them and their IRP components. Another example of how the termination was experienced differently, this time regarding self-esteem, is the following: ‘I learned a lot and grew stronger as a person’ versus ‘I have suffered personally’. These two individuals represent two very different ways in which self-esteem can be influenced by a termination, even though they were both members from terminated subprojects.

3.6 Discussion

3.6.1 Theoretical implications

By specifying the IRP construct, this article contributes to the literature on project terminations and innovation management and provides an important advancement in this line of research. As innovations are essential for most companies (Eisenhardt & Tabrizi, 1995) and employees are one of the most important resources for innovation (Verona, 1999), it is important to maintain or strengthen IRP after the likely occurrence of an innovation project termination. Further, IRP is not only important concerning the potential for future innovative functioning and future coping, as argued in this article and illustrated in the case study. The six IRP components (self-efficacy, outcome expectancy, optimism, self-esteem, hope, and risk propensity) may, in turn, well be affected themselves by a termination. This addresses the identified research gap, i.e. what consequences an innovation project termination has for the project members and their subsequent innovative work. This view is in line with SCT, as it shows the reciprocity of the situation, personal factors, and behavior (Bandura, 1988).

In contrast to a major part of literature on resilience in organizations, that ranks resilience among traits, capabilities, attitudes, or resources that influence how individuals react to a setback (e.g., Avey, Luthans, & Jensen, 2009; Coutu, 2002; London, 1983; Noe et al., 1990; Ollier-Malaterre, 2010; Ong et al., 2006; Stajkovic, 2006; Weick, 1993; Youssef & Luthans, 2007), we explicitly build on a process perspective of individual resilience that enables

conceptualizing IRP as an outcome variable that is influenced by situational and environmental factors. This first part of the resilience process, in which resilience is influenced by an adverse event, has been largely disregarded in organizational research. This is in stark contrast to research on general depression, where the measurement of resilience (e.g. by the absence of depression) after a setback is fairly established in the literature (Masten, 2001; Richardson, 2002). We therefore contribute to the literature on resilience in organizations by introducing a process perspective of individual resilience into this research field. In the given context, it is reasonable to expect that the IRP construct is affected by an adverse event, as all its components are malleable. This assumption is illustrated by the study results, which show that interviewees consider the constructs that constitute IRP being affected by the termination. Finally, to our best knowledge, this is the first study to examine the resilience construct in an innovation setting, which allowed the identification of aspects of resilience specific to this setting, such as the importance of risk propensity.

This approach also allows for studying innovation project terminations' influence on individual project members. This aspect has been largely neglected in the literature on innovation project termination to date (Green, Welsh, & Dehler, 2003), with the exceptions of recent studies by Shepherd and colleagues (Shepherd, 2009; Shepherd & Cardon, 2009; Shepherd et al., 2009a; Shepherd & Kuratko, 2009; Shepherd, Wiklund, & Haynie, 2009b), who chose a different approach to address this problem. Our study focus complements their research, which focuses on the grief process and individual learning. Both approaches appear worthwhile to shed light on future innovative functioning and the commitment to future innovation projects after termination (Shepherd et al., 2009a; Shepherd & Kuratko, 2009). We also expand Shepherd and colleagues' focus on failed entrepreneurial projects by considering innovation project terminations in mature companies.

In this regard, we believe that the reason for the termination is likely to result in notable differences in an innovation project termination's impact on project team members. Most importantly, whether such team members mention project-endogenous causes (e.g. poor performance of team members) or project-exogenous reasons (e.g. changes in top management, such as in the present case example) entail highly different consequences. Attribution theory (Rotter, 1966; Weiner, 1985) suggests that attributing external causes for termination (i.e. beyond the control of innovation project team members) has less negative impact on variables connected with individuals' beliefs about their capabilities, or with their perception of self-worth, such as self-efficacy or self-esteem (McFarland & Ross, 1982). In contrast, external failure attribution is very likely to have stronger detrimental effects on innovation project team members' outcome expectations, inducing a feeling of hopelessness and resignation when experiencing that the perception of performing well does not lead to goal achievement (Maddux, Norton, & Stoltenberg, 1986; Weiner, 1985). Regarding the internal attribution of reasons for innovation project termination, the reverse should be the case. While both attributions are likely to affect IRP, they nonetheless are expected to do so in different ways, thereby pointing to distinctive countermeasures to protect and restore IRP in the context of an innovation project termination, depending on the reasons underlying such a termination.

One contribution of this study relates to the individual research streams, i.e. resilience in organizations and innovation project terminations, while reconciling the research streams on innovation project terminations and resilience is another. It seems adequate and necessary to do so. The termination of an innovation project can be seen as a traumatic trigger event (Kahn, 2003; Välikangas et al., 2009) that represents the core of resilience research (Coutu, 2002). Both research streams therefore entail a gap that the other research area can help close, as resilience research is advanced by analyzing resilience in the context of organizational

innovation after an adverse event (e.g. an innovation project termination). Furthermore, innovation project terminations are regarded from a human perspective, which may help incorporate 'human costs' in termination decisions.

3.6.2 Managerial implications

Introducing the concept of IRP can provide managers with guidelines on how to improve employee ability to overcome setbacks such as innovation project termination, or how IRP can be restored after a setback that has negatively affected employee IRP. This is important, as IRP is necessary for the future goal-setting, commitment (Bandura, 1997), and creativity (Amabile et al., 2004; Grzeda & Prince, 1997) of these employees after a termination and, thus, for future innovation project performance. We now deliberately go beyond this study's setting to allude to ways in which organizations and managers may influence project members' IRP components after project termination.

Realistic optimism can be elevated after a failure when the termination reasons are made clear and an outlook for the future is provided (Schneider, 2001). In addition, honest and constructive feedback can enable realistic attributions, which could both take place in an official project debriefing, which seems a very valuable instrument in this context (Von Krogh, 1998).

To reinforce hope among the team members of a terminated project, leaders and other supporters (e.g. colleagues) should help assess the situation and develop future goals (Juntunen & Wettersten, 2006). Furthermore, it is important to ensure that appropriate and not overly difficult goals are set, as these might stimulate employees to embark on actions that are too demanding and difficult. This would increase the likelihood of failure and thus the danger of causing an even greater negative impact on affected individuals (Polivy & Herman, 2000).

The self-esteem of affected individuals can be maintained or restored by executing a termination in a way that appears fair to project team members, as procedural justice has been demonstrated to foster individual self-esteem (Schroth & Shah, 2000). To do so, managers should communicate information about the termination process in a concrete way and should convey accurate future performance expectations (Schroth & Shah, 2000).

Both aspects may also help project members to better evaluate their contributions to the project and to protect their self-efficacy and self-esteem from the consequences of incorrectly attributing project failure to their own shortcomings (McNatt & Judge, 2008). Furthermore, managers should reassure employees that they are capable of success, despite suboptimal circumstances (Pierce, Gardner, Dunham, & Cummings, 1993), and should avoid managerial actions that may tell employees that they are incompetent and distrusted, such as excessive work rules and oppressive leadership (Pierce et al., 1993). Self-efficacy and outcome expectancy can also be influenced by performance accomplishments (Bandura, 1977). To foster self-efficacy and outcome expectancy, it appears necessary to let project members feel that their capabilities and individual performance did indeed influence project performance and its consequences, for example, through feedback, acknowledgement of good employee performance in terminated projects (Latham, 2001), and/or organizational rewards (Bandura, 1977; Maddux et al., 1986). Finally, a sufficiently high risk propensity level may be restored among team members of a terminated innovation project by lessening the fear of future failures and by motivating future achievement by establishing a climate of psychological safety and tolerance for mistakes (Edmondson, 1999). When a failure is experienced as less dramatic, the fear of a future failure is also likely to decrease (Edmondson, 1999).

Our conceptual analysis, complemented by the case study, demonstrates that innovation project terminations may hold very negative consequences for project members as well as

companies when it comes to future innovation projects. Yet, management can – by various means – effectively support project members and foster their innovative functioning in future innovation projects after a termination. With knowledge of these opportunities, managers can develop initiatives that protect and strengthen IRP after a termination. This benefits employees, as they and their careers will be less impaired by setbacks such as an innovation project termination. This also benefits companies, as employees who maintain their motivation and innovation capabilities after a major setback have the potential to produce more valuable outcomes in terms of future innovation endeavors. Following the research on thriving and post-traumatic growth (Carver, 1998; Westphal & Bonanno, 2007), individuals may even grow or thrive after such a setback. An innovation project termination can become an opportunity when ‘project failures’ are turned into ‘successful failures.’ In short, having outlined the IRP construct, we point to aspects managers need to keep in mind when faced with an innovation project termination.

3.7 Limitations and outlook

Reasonable questions often arise concerning the generalization of case study findings beyond the specific context of analysis. Although it is always potentially problematic to argue for generalization from single case studies like this one (Siggelkow, 2007), this study has a number of features that suggest that the mechanisms we found operating in the FI project are likely to apply to innovation project terminations generally. Clearly, the reasons for a termination could influence IRP, but there is nothing unusual in the innovation project context we studied. In fact, the reasons for this specific termination (changes in management and budget problems) are quite common reasons for termination, which lends credence to the proposition that the mechanisms observed in this study might well fit other locales. Moreover, our qualitative analysis builds on seven interviews with representatives from the terminated innovation project. It goes without saying that larger sample sizes might provide additional

data. However, the main focus of our qualitative study was to illustrate that innovation project terminations indeed may influence the IRP components, which we are confident that our analyses successfully did. Finally, the qualitative data we analyzed are cross-sectional rather than longitudinal. In the present context, a longitudinal study design, collecting data before and after the termination of an innovation project (and in the perfect case even a subsequent termination) would surely offer substantial benefits.

Directly addressing this aspect, a particularly worthwhile direction for future research is a longitudinal research design that could establish causalities of the identified antecedent variables and their consequences for IRP, and that would demonstrate the development and influence of variables over time – i.e. before, during, and after the termination of an innovation project. In this regard, it appears particularly interesting to investigate whether project members who scored higher on the IRP components before the termination are indeed able to cope better and to remain more innovative after a setback. Moreover, identifying and examining possible protective situational and environmental factors would help managers build and sustain IRP in employees. Generally, the development of the IRP construct may be used as a starting point for further empirical investigation of this topic in qualitative and quantitative ways. One next step would be to identify certain characteristics of innovation project terminations that determine what influences such terminations hold for affected individuals' IRP. Aware of such characteristics, managers may plan and coordinate innovation project terminations in a way that minimizes innovation project terminations' negative consequences on IRP and may thus avoid some (if not most) of the human costs of innovation project termination.

4 Innovator resilience potential and the relationship with project commitment²

² This unpublished working paper was written by Gisa Moenkemeyer based on conjoint work with Prof. Dr. Martin Hoegl and Dr. Matthias Weiss. A previous version was presented at the 2012 European Academy of Management Conference, Rotterdam under the title “Innovator resilience potential and commitment to innovation projects: A theoretical concept and empirical evidence”.

ABSTRACT

Commitment is an important factor in the success of any innovation project. This study investigates the relationship between innovator resilience potential (IRP) and the ability of individuals to commit themselves fully to innovation projects. Using data on 183 innovators, we find a significant relationship between IRP and project commitment. Moreover, this relationship is contingent on whether an innovator has previous experience of the termination of an incomplete innovation project. These results offer important conceptual implications for research on resilience in innovation, indicating that IRP is particularly relevant for an innovator's commitment to a project after he or she has experienced a professional setback (in the case of this study, an innovation project termination) in the past.

Keywords: resilience, project termination, project commitment, innovation projects

4.1 Introduction

Most people experience a significant setback at some time during their life. As in every other aspect of life, the potential for failure is inherent in organizational work. Especially in the innovation context, failure is the rule rather than the exception (Corbett et al., 2007; Shepherd et al., 2009a; Shepherd et al., 2011). Innovation projects – i.e. projects for the adaptation or development of new products, services, or processes (Woodman et al., 1993) – are often terminated prior to completion (Shepherd & Cardon, 2009), especially when they involve radical or discontinuous innovations (Bessant, 2008). Setbacks like the termination of an innovation project prior to its completion can, in unfavorable cases, have strong and detrimental effects on the participants in the projects (Välíkangas et al., 2009), which is particularly problematic since the vast majority of innovation in organizations is carried out in team projects (Edmondson & Nembhard, 2009). Reduced commitment to subsequent innovation projects by the participants is a very likely negative outcome (Välíkangas et al., 2009), especially when they are faced with multiple failures (Shepherd et al., 2009a). This constitutes a major problem, since the commitment of the project members has been found to be key for the performance of innovation projects (Amabile, 2000; Ernst, 2002; Hoegl, Weinkauff, & Gemuenden, 2004; Shepherd et al., 2009a). Organizations therefore need innovators who are able to commit themselves once again to innovation projects after such setbacks, which are unavoidable in the uncertain and fuzzy realm of innovative endeavors (Shepherd et al., 2009a).

Early approaches that addressed the effects of innovation project terminations on the people involved have been taken by Shepherd and colleagues and by Moenkemeyer and colleagues. Shepherd and colleagues focused especially on the effects on individual learning and affective commitment after project failure, taking the grief process, coping and emotions into account (Shepherd & Kuratko, 2009; Shepherd et al., 2011). Moenkemeyer, Hoegl, and

Weiss (2012) posit that resilience – i.e. “positive adaptation within the context of significant adversity” (Luthar et al., 2000: 543), such as the termination of an innovation project – is essential to prepare the ground for future innovative endeavors (Powley, 2009), since the project members, along with their motivation and capabilities, are among the most valuable resources for innovation within an enterprise (Verona, 1999). To establish the basis for studying the influence of innovation project terminations on innovators, Moenkemeyer et al. developed the context-specific construct of innovator resilience potential (IRP), which they defined as “the potential for future innovative functioning and coping with future setbacks” (2012: 632).

While providing significant initial insights into employee resilience in the context of innovation, the qualitative research by Moenkemeyer and colleagues leaves important questions unanswered. It seems particularly important to investigate whether the construct of IRP, which hitherto has been conceptually developed and qualitatively investigated, can be actually confirmed in quantitative empirical testing. Moreover, research by Moenkemeyer et al. (2012) has focused on the possible effects of current setbacks on IRP, while emphasizing the process perspective of innovator resilience. Subjacent arguments pertaining to the process view of innovator resilience suggest the relationship between IRP and commitment to innovation projects is an important aspect in the innovation process. However, this relationship has remained largely unexplored. Further, research has not yet shown whether having formerly experienced an innovation project termination alters this relationship, nor investigated the importance of IRP especially after an innovation project termination. These research gaps suggest the following questions which guide the present investigation: (1) How can IRP be operationalized and measured for quantitative empirical study? (2) How is IRP related to commitment to future innovation projects? (3) Does having experienced an innovation project termination make a significant difference in this relationship?

Following these research questions, this article sets out to provide three main contributions. First, we build on the initial step by Moenkemeyer et al. (2012) in investigating the human side of innovation project terminations. We operationalize, as well as empirically validate, the construct of IRP in a quantitative field study on innovators. In doing so, we prepare the ground for further empirical research in this area, which has long been needed given the huge share of innovative endeavors that end in failure, and the largely unknown consequences of such professional setbacks on the innovative capacity of the affected individuals and hence the companies that employ them. Specifically, the operationalization of the IRP construct provided in this paper opens the door to the identification of managerial measures and organizational processes that may help mitigate the negative consequences of professional setbacks on both the careers of individual innovators and on companies' innovative potential.

Second, much of the literature on resilience in organizations so far suggests a rather static view of individual resilience in organizations by conceptualizing resilience as a trait-like variable that influences the reaction to a setback (Grzeda & Prince, 1997; e.g., Masten & Reed, 2002; Ong et al., 2006; Wanberg & Banas, 2000). In this field, conceptualizing a resilience variable such as IRP as an outcome variable after having experienced an innovation project termination as well as seeing it as a variable that influences innovative functioning and coping before and after having experienced an innovation project termination is an approach that has been neglected (Harland et al., 2005). In the current study we conceptualize the importance of IRP for commitment to innovation projects, an important attitude in the innovation context that is likely to be jeopardized by having experienced the termination of an incomplete innovation project. By using IRP as both an outcome and an influencing variable, we contribute to the literature by paving the way for investigations of the human side of

innovation failure that may take into account inter-temporal interdependencies between setback situations.

Third, in this paper we argue for a positive relationship between IRP and commitment to innovation projects, which is contingent on an individual's experience of an innovation project termination. This connection is important because commitment to the innovation project is the key to the success of an innovation (Amabile, 2000; Ernst, 2002; Hoegl et al., 2004; Shepherd et al., 2009a), leading to the expectation that the long-term innovativeness of innovators and thus organizations will benefit greatly from strengthening IRP, especially in those who have experienced the termination of an incomplete innovation project. Further, we advance research on commitment in organizational contexts by pointing to factors that protect commitment even after the experience of a professional failure. Previous research in this field has examined a multitude of antecedents of different aspects of commitment in organizations (e.g., Allen & Meyer, 1990; Goulet & Singh, 2002; Mathieu & Zajac, 1990; Steers, 1977). However, little of this research has taken into account possible contingency effects caused by situational factors (Carr, Boyar, & Gregory, 2008; Chen & Indartono, 2011), and to our knowledge no research efforts so far have looked at whether the occurrence of adverse events may alter the relationships between commitment and its antecedents.

The article is organized as follows. First, we introduce the constructs of IRP and project commitment. Then, the relationship and contingencies between IRP and project commitment will be discussed. After describing the analytical methods and validating the measures, we present the results of our analyses, followed by discussing the theoretical and practical implications of these results. The article closes with an outline of this study's limitations and an outlook to future research.

4.2 Theory

4.2.1 Innovator resilience potential and project commitment

Moenkemeyer et al. (2012) were the first to study the termination of an innovation project in the context of resilience research. They conceptualized IRP as a variable embedded in a process perspective of individual resilience. Following the process view it is expected that IRP may influence innovative functioning and coping with a challenging situation, e.g. the termination of an innovation project (Richardson, 2002). Furthermore, in an ongoing process, IRP is influenced by the termination of an innovation project and the termination's specific characteristics. Moreover, IRP again holds the potential for future innovative functioning and better capacity to deal with future setbacks. This process perspective of IRP makes it possible to specify the characteristics of innovation project terminations that may influence IRP as well as identifying outcomes of IRP before and after the experience of a setback. A thorough description of the process perspective of innovator is given by Moenkemeyer et al. (2012), who developed the IRP variable by identifying its six constituting facets. The premise for incorporating the constituting facets was they relate to resilience (better coping with future setbacks), innovation (future innovative functioning), and are malleable in nature (being possibly influenced by the setback or other factors). As such, IRP incorporates state-like qualities that are essential prerequisites for innovative functioning and coping with future setbacks, thus representing fundamental prerequisites for accomplishing subsequent innovative tasks (Amabile, 1988). It is important to note that IRP is proposed to be an important but not a sufficient condition for innovative functioning and coping and does not equal it. As a latent construct, IRP comprises six facets; self-efficacy, outcome expectancy, optimism, hope, risk propensity and organization-based self-esteem. They are shown and defined in Table 4-1.

Facet	Definition
Self-efficacy	The self-judgment of an individual how successfully she or he can perform his job (Riggs & Knight, 1994).
Outcome expectancy	“A judgment of the likely consequence such performances will produce” (Bandura, 1977: 21).
Optimism	Attributions which an individual uses “to explain why certain events occur, [...] past, present or future” (Luthans et al., 2007b: 87).
Hope	A “cognitive set that is based on a reciprocally derived sense of successful (a) agency (goal-directed determination) and (b) pathways (planning to meet goals)” (Snyder et al., 1991: 570).
Risk propensity	“Calculated actions to make effective decisions that promote goal attainment with the clear recognition of the potential of damage, setbacks, and other losses” (Tjosvold & Ziyou, 2007: 655).
Org.-based Self-esteem	“OBSE reflects the self-perceived value that individuals have of themselves as organization members acting within an organization.” (Pierce et al., 1989: 625).

Table 4-1: *Definitions of the six IRP facets.*

Building on this conceptualization, in this study we examine the relationship between IRP and innovative functioning and the contingency influence of whether an innovation project termination has been experienced before or not. This conceptually derived proposition needs to be validated empirically against a criterion to confirm this positive effect. We chose the project commitment of innovators as such a criterion to argue conceptually and to test empirically the proposed role of IRP and the relationship to future innovative functioning, as the commitment to innovation projects is key for the performance of innovation projects (Amabile, 2000; Ernst, 2002; Hoegl et al., 2004; Shepherd et al., 2009a).

Drawing on an early definition by Mowday, Steers, and Porter (1979), Hoegl et al. (2004) define project commitment as “characterized by the acceptance of and the strong belief in the goals and values of the project, the willingness to engage in the project, and the desire to maintain membership in the project” (Hoegl et al., 2004: 40). Previous studies show that project commitment is vital for the performance of an innovation project and its success (e.g., Hoegl et al., 2004; McDonough, 2000). There are two major reasons why project commitment

is an important aspect of future innovative functioning. First, commitment is related to an elevated willingness to innovate (Hoegl et al., 2004) and to the success of the innovation (Shepherd et al., 2009a), as well as lowering the risk of negative work behaviors (Porter, Steers, Mowday, & Boulian, 1974) such as vengeance, work and job avoidance, deviance (Mannheim et al., 1997), and ethically questionable behaviors (Cullian, Blin, Farrar, & Lowe, 2008). Second, most innovative endeavors are conducted in projects (Edmondson & Nembhard, 2009) and the commitment to a project has an influence on the overall goals of the project and the team's success (Hoegl et al., 2004; McDonough, 2000). We suggest that when IRP is related to project commitment, it is able to buffer negative effects on project commitment to a certain extent and thus enhance innovative functioning. Therefore we aim to show that the proposed relationship of IRP and project commitment is indeed observable.

We follow research on positive organizational behavior, especially the research on psychological capital introduced by Luthans and colleagues (e.g., Luthans & Church, 2002; Luthans et al., 2007b; Youssef & Luthans, 2007). Their rationale suggests that the identified positive state-like qualities (e.g., resilience) termed "psychological capital" demonstrate an impact on work-related outcomes such as commitment (Avey et al., 2010a; Luthans et al., 2007a; Youssef & Luthans, 2007). This rationale underlying their research fits with our logic, where IRP is expected to positively relate to project commitment. As such, in the following section we will provide the theoretical rationale as well as the proposed hypotheses regarding the relationship between IRP and project commitment considering the discussion above and on the basis of all six facets and their relationship to project commitment. We will use the six individual IRP facets to explain this relationship, providing for each facet explanations for the general relationship between IRP and project commitment.

4.2.1.1 Self-efficacy

In their research on goal commitment, Locke, Latham, and Erez (1988) state that commitment decreases when the perceived chance of reaching a goal decreases. This can be caused by lower self-efficacy and/or outcome expectancy. Thus, it is argued that both self-efficacy and outcome expectancy correlate positively with commitment. Several further studies support a strong relationship of self-efficacy and commitment (e.g., Bandura & Wood, 1989; Gist, 1987; Luthans et al., 2008; Youssef & Luthans, 2007). The rationale behind the relationship between self-efficacy and project commitment is that when individuals believe in their abilities to reach the objectives of the project they are more likely to be committed and to try to achieve these goals, in our case the goals of the project team. They feel confident and able to engage fully in the project. The reverse side of the coin is that individuals who question their capabilities are more likely to decrease their efforts or even completely resign from the (project) goals (Bandura & Schunk, 1981; Brown Jr & Inouye, 1978; Gist, 1987).

4.2.1.2 Outcome expectancy

If individuals doubt that their efforts will actually influence the outcome of the goal, they are likely to lower their commitment because they know there is hardly any chance to succeed (Maddux et al., 1986). Positively framed, when innovators expect that their performance will result in positive outcomes, i.e., that their performance indeed has an influence on the outcomes (high outcome expectancy), they are likely to invest more in the project. In line with cognitive dissonance theory (Festinger, 1957), this is expected to result in greater commitment to the project. This assumption is underlined by the findings of several studies stating that expectancy and commitment are significantly related (Huber & Neale, 1986; Locke et al., 1988; Mento, Cartledge, & Locke, 1980). Or, in the words of Riggs and Knight (1994: 757): “Individuals are drawn to, identify with, and are more likely to intend to

stay with groups (organizations) that consistently provide valued outcomes contingent on expected behavior”.

4.2.1.3 Optimism

Optimism is also closely related to commitment (Luthans et al., 2008). Conceptually, it is especially linked to goal commitment in that optimism leads to greater efforts to attain goals (Peterson, 2000) as well as to persist in striving to attain them (Bressler, 2010; Lee, Ashford, & Jamieson, 1993). Further, optimism facilitates expectations that goals are achievable (Peterson, 2000). This is an important aspect in regard to project commitment. Project members with no faith in the possibility that the goals (of the project) can be achieved will not fully commit themselves to the project goals. Moreover, several empirical studies confirm this assumed connection, reporting a positive relationship between optimism and commitment (e.g., Armstrong-Stassen, 2006; Kluemper, Little, & DeGroot, 2009; Montgomery, Haemmerlie, & Ray, 2003).

4.2.1.4 Hope

Whereas a primary view of optimism is that goals are achievable (Peterson, 2000), hope additionally incorporates the way of achieving them (Stajkovic, 2006). The construct of hope is thus closely related to goal-setting theory. Hopeful individuals find ways to achieve their goals; they have both the willpower and the way-power to do so (Snyder et al., 1996). Therefore, and especially because of the way-power component, hope is important for project commitment. A project member must think that the goals (of the project) are achievable and have an idea of how to achieve these in order to engage fully in the project. With strong way-power, project members have more confidence in achieving the objectives because they have a plan which in turn fosters project commitment, otherwise project members might lower their engagement in the project. Prior studies have also confirmed a relationship between

commitment and hope (Luthans et al., 2008; Youssef & Luthans, 2007), especially regarding the affective component of commitment (Bressler, 2010).

4.2.1.5 Risk propensity

Risk propensity is also closely related to commitment. When individuals commit themselves to something, e.g., an innovation project, they encounter high risk and make themselves vulnerable as a high chance of failure is inherent in innovations (Corbett et al., 2007; Shepherd et al., 2009a; Shepherd et al., 2011). If the commitment does not “pay off” the individual might be hurt. When individuals start working on an innovation project they usually know about the risk of failure especially if they have encountered an innovation project termination previously. Thus project members must be willing to accept the risk and accept that their commitment may be in vain, otherwise they will not be able to commit to a new innovation project. This is underlined by a finding of Tjosvold and Ziyou (2007) that, for the attainment of goals in the face of possible risks and setbacks, risk propensity is a decisive factor. We therefore expect that commitment to innovative projects and risk propensity are positively related. This is in line with meta-analytic research by Colquitt, Scott, and LePine (2007), which confirms the positive relationship of risk propensity and affective commitment.

4.2.1.6 Organization-based self-esteem

Organization-based self-esteem (OBSE) is shaped by experiences within the organization and has frequently been shown to have a positive influence on related attitudes and behaviors such as organizational commitment (Bowling, Eschleman, Qiang, Kirkendall, & Alarcon, 2010; Pierce, Gardner, Cummings, & Dunham, 1989), especially affective commitment (Chun & Lee, 2000; Lee & Peccei, 2007; Van Dyne & Pierce, 2004). This can be explained by Korman’s self-consistency motivational theory that individuals will behave in ways and form attitudes that are consistent with their self-esteem (Korman, 1970; Korman,

1976). As such, “employees with high OBSE [...] will attempt to engage in behaviors valued in their organization” (Pierce et al., 1989: 630). We expect therefore that project members with higher OBSE tend to engage more in innovation projects and strive to achieve the goals of the project in order to maintain being valued in the organization, thus being more committed.

Taking into consideration research by Luthans and colleagues in general and in particular the discussion of the theoretical and empirical evidence above, all six IRP facets deliver explanations for the relationship of IRP and project commitment. In this line we propose the following hypothesis.

Hypothesis 1: *IRP positively relates to project commitment.*

4.2.2 The innovation project termination as a trigger event

While a positive relationship between IRP and innovators’ project commitment in general is suggested, we expect that this positive effect is even stronger for those innovators who have experienced an innovation project termination in their career. In other words, we propose that the relationship between IRP and the commitment to innovation projects is contingent on whether an innovator has already had experience of an innovation project being terminated before completion. At this point, we follow research on resilience and vulnerability which emphasizes the exposure to risk and adversity (Masten, 2001; Richardson, 2002; Riskind, 1999), as well as research on psychological contract (Rousseau, 2001) which is similarly important for the commitment of affected individuals.

In deriving Hypothesis 1 we have seen that multiple studies have found a generally positive relationship between the six facets of IRP and organizational attitudes as well as behaviors (e.g., Colquitt et al., 2007; Pierce et al., 1989; Riggs & Knight, 1994; Youssef & Luthans, 2007). IRP is expected to influence an individual’s innovative functioning (project

commitment) after he or she has experienced an innovation project termination to a greater extent than without having experienced a termination. The rationale behind this proposed relationship is that people are likely to be more vulnerable after having experienced an adverse event like an innovation project termination (e.g., Dougall et al., 2000; Moore et al., 2004; Overmier & Murison, 2005). This jeopardizes their commitment to subsequent innovation projects after having experienced what it means when a large investment of personal effort and commitment was in vain. Hence, IRP is expected to be even more important in such situations when commitment to innovation projects is already tarnished. We build this assumption on theoretical and empirical evidence in the literature on resilience, vulnerability, and psychological contracts, respectively.

First of all, innovators are likely to become more aware of possible setbacks in working on innovative projects when they have actually experienced them, making the setback more cognitively available and appear more likely to occur (Galak & Meyvis, 2011; Riskind, 1999). In the words of Tversky and Kahneman (1974: 1127) : “...people assess the frequency of a class or the probability of an event by the ease with which instances or occurrences can be brought to mind. For example, one may assess the risk of heart attack among middle-aged people by recalling such occurrences among one’s acquaintances.” Moreover, the experience of loss tends to make people more fearful of subsequent losses, inducing a sense of looming vulnerability as well as shifting an individual’s focus on to further potential setbacks and away from potential successes to be achieved in future innovation projects (Riskind, 1999), thereby further compromising the commitment to such future projects.

Besides these effects of an increased salience and cognitive availability of professional failure following the termination of an innovation project, the level of trust in supervisors and in the organization’s management is also likely to decline after a project has been terminated,

as we expect that individuals will perceive the termination of an innovation project as a breach of psychological contract (Robinson, 1996; Rousseau, 2001). Terminating an innovation project to which team members have devoted great amounts of effort and passion, and making these investments obsolete, is very likely to result in reduced trust, loyalty, and commitment to the organization, and so to subsequent projects (Chen, Tsui, & Zhong, 2008; Robinson, 1996). Trust in outside factors, e.g. leadership and management, might have decreased and thus the dependence of individuals on those factors for project commitment diminishes. It is expected that individuals in general would be less likely to commit again to subsequent innovation projects after having experienced the termination of an innovation project (Shepherd et al., 2009a). From that follows an increased importance for affected innovators to keep or restore their IRP. We suggest that when IRP is related to project commitment, it is able to buffer to a certain extent the negative effect of an innovation project termination on commitment to subsequent innovation projects and thus future innovative functioning. For these reasons we propose that an innovation project termination is an important contingency variable for the relationship between IRP and commitment to subsequent innovation projects. Therefore we posit:

Hypothesis 2: The positive relationship between innovators' IRP and project commitment is moderated by the experience of an innovation project termination, in that this relationship is stronger after having experienced an innovation project termination.

4.3 Methods

4.3.1 Sample and data collection

The participants for this study were identified and contacted via a large business-related social networking website. At the time of data collection, this social network had 10.8 million members. People registered cover all major professional groups and industries. The

majority of the target group of respondents is enlisted in this professional network as it is seen as a social necessity to be a member of the network. We specifically contacted participants working as “innovators” – persons who, in a professional capacity, work on or incite innovative tasks, i.e., they work on the adaptation or development of new products, services, or processes (Woodman et al., 1993). To identify these innovators in the network’s database, we entered key search words such as “innovation”, “(product) development engineer”, “new product development”, and “project manager.” Then, a detailed screening of their profiles led to the inclusion or exclusion for this study based on the above definition of an innovator. The majority (around 75%) of participants were scientists or product development engineers and were employed mainly in manufacturing industries. Participants were contacted via the website’s email system whereas the survey was conducted on an external platform independent from the social network. In total 326 innovators filled out the IRP questionnaire. The participants were asked if they had experienced an innovation project termination. Thereafter the questionnaire was split according to the answer. For those with experience of innovation project terminations in the past, on average, the termination was experienced 24 months prior to the survey with a standard deviation of 21 months. Further, all participants were asked if they are currently involved in an innovation project; those who gave an affirmative answer were asked about their current project commitment. As such, 183 innovators were involved in an innovation project at the time of data collection and these completed the project commitment scale. Therefore, our final sample to test the hypotheses consists of 183 innovators. Of these 183, 146 had experienced a project termination, 37 had not. As participants had to disclose personal information, the contact e-mail as well as the cover page of the questionnaire emphasized that the data were treated confidentially and anonymously in order to encounter response bias (Paulhus, 1991). E-mail invitations went to 7,102 innovators. We could confirm that 612 innovators received the e-mail as they accessed

the link of the questionnaire's start page or sent an e-mail response. Of these, 326 innovators filled out the Innovator resilience potential questionnaire. The survey was deliberately open to every industry as innovation project terminations can be found in every industry and to secure external validity of findings by avoiding industry biases. To test for non-response bias we compared the gender ratio in the sample with both the individuals invited and the population of engineers in Germany. The population information was drawn from the German census bureau using data on engineers, chemical engineers and physicists. 16.8% of all questionnaire respondents were female, 14.3 % of all invitations were sent to females and 14% of all engineers, chemical engineers and physicians in Germany were female (according to the German census bureau). T-tests show no significant differences between the means at $p < .05$. Thus, non-response and sampling biases do not seem to be a problem. More detailed information about the sample can be found in Table 4-2.

Job	70% scientists or developmental engineers, 27% managers, 2% assistant managers, 1% consultants.
Age	Mean age was 35.5 years and ranged from 23 to 61 years.
Gender	16.8% female, 83.2 % male
Tenure	Mean organizational tenure 6.4 years, ranging from 1 to 42 years
Industry	Automotive 32%, aerospace 11%, other manufacturing 29% (e.g., medicine, mechanical & electrical engineering, renewable energies), pharmaceutical & chemical industry 10%, telecommunication, IT & media 8%, Services 6% (engineering, scientific, and transportation services), consumer goods 4%.

Table 4-2: *Sample characteristics.*

4.3.2 Measures

The questionnaire was conducted in German language. Validated German translations of standardized measures were used when available. In other cases items and anchors were translated and then back-translated by independent bilinguals (Brislin, 1986; Szabo et al., 1997). We relied on existing measures in the literature where possible. To test the items and

their understanding, a pretest was conducted in an innovative research setting at a university. In reference to the pretest comments the wording of a few items was refined. If not stated otherwise, a five-point Likert scale with anchors ranging from strongly disagree (1) to strongly agree (5) was used for the items in this study.

4.3.2.1 Project commitment

Project commitment was measured using an adapted version of Hoegl et al. (2004) five-item project commitment scale. The original scale focused on the team as the unit of analysis and was therefore reworded to fit the individual level, which represents the level of analysis of our study. A sample item is: "I am proud to be part of the project." Cronbach's alphas of this scale is .91.

4.3.2.2 Innovator resilience potential

The six IRP facets were measured by adapting widely used, validated, and standardized measures. All measures of the six facets used three-item scales adapted to the workplace context. Self-efficacy was measured by a shortened version of the Personal Efficacy Beliefs Scale developed by Riggs and colleagues (Riggs & Knight, 1994; Riggs, Warka, Babasa, Betancourt, & Hooker, 1994). A sample item is: "I have confidence in my ability to do my job." Cronbach's alpha of this scale in the current study is .74. Outcome expectancy was measured by three items of the Personal Outcome Expectancy Scale developed and used in the same studies (Riggs & Knight, 1994; Riggs et al., 1994). A sample item is: "In this organization I must do a good job in order to get what I want." We calculated Cronbach's alpha for this scale to be .80. To measure optimism the extensively used and validated optimism subscale of the LOT-R Test by Scheier, Carver, and Bridges (1994) was applied (Cronbach's alpha = .67). The alpha value calculated in our study is similar to values of this scale reported in the literature, which have been found to range from .69 to .71 in two

large-scale German studies (Glaesmer, Grande, Braehler, & Roth, 2011; Glaesmer, Hoyer, Klotschke, & Herzberg, 2008; Herzberg, Glaesmer, & Hoyer, 2006). The construct of hope was measured using three items from the Snyder et al. (1996) state hope scale. This validated and widely used instrument consists of three items to tap the agency component of hope and three items to assess pathway thinking. In the current study we use two items reflecting the agency component (sample item: “At the present time, I am energetically pursuing my work goals”) and one item to assess pathway thinking (“If I should find myself in a jam at work, I could think of many ways to get out of it”). Considering the heterogeneity of this extensively used measure, a decent Cronbach’s alpha of .67 has been reached in this study. Risk propensity was measured using three items of the widely used (e.g., Tjosvold & Ziyoun, 2007) error risk-taking scale by Rybowskiak et al. (1999) (sample item: “To get on with my work, I gladly put up with things that can go wrong.”). In the current study a Cronbach’s alpha of .79 was detected. To measure self-esteem, we referred to Pierce et al. (1989), who embedded self-esteem into the organizational context and created and validated the organization-based self-esteem scale (Pierce et al., 1989). Since its development the scale has been widely used (Gardner, Van Dyne, & Pierce, 2004; Lee & Peccei, 2007) in organizational studies. In the current study three items of the OBSE scale were used, a sample item is: “I count at work.” Cronbach’s alpha in this study is .79.

The inter-item correlations of these IRP subscales range from .40 to .58. As all inter-item correlations exceed .40, they demonstrate good internal consistency (Hair, Black, Babin, & Anderson, 2010). To further assess reliability, convergent and discriminate validity of the six subscales a confirmatory factor analysis (CFA) was conducted. As the six factor structure was a priori defined, theoretically developed, and qualitatively analyzed by Moenkemeyer et al. (2012), CFA was considered the appropriate approach here. Composite reliability values show internal consistency as assessed by the CFA. Values can be found in Table 4-3 ranging

from .67 to .86. All composite reliabilities exceed the greatest common variance between the factors and thus indicate discriminant validity (Hair et al., 2010). Significant factor loadings (t-values greater than 1.96) supported the six factor solution and indicate convergent validity. Only one item (opt1) showed a loading slightly below .50. For reasons of content validity, this item was nonetheless retained. In order to assess the reliability of the third-order IRP scale consisting of the six subscales mentioned above, Cronbach’s alpha for the IRP scale was calculated to be .78 when using aggregated values of the six sub-scales. Additionally, we performed a higher order CFA, using the theoretically proposed structure including IRP as a second-order construct, which yielded an acceptable fit to the data (RMSEA = .07; SRMR = .07; CFI = .91).

Scale	Item	Factor Loading	t-value	Alpha	Inter item correlation	Composite Reliability	Common Variance with other Factors							
							1	2	3	4	5	6		
1. Self-Efficacy	SE1	0.81		.74	.50	0.86								
	SE2	0.66	10.78				-							
	SE3	0.66	10.87											
2. Outcome-Expectancy	OE1	0.80		.80	.57	0.82								
	OE2	0.94	15.93				0.06	-						
	OE3	0.60	11.14											
3. Optimism	Opt1	0.39		.67	.40	0.67								
	Opt2	0.60	5.95				0.27	0.29	-					
	Opt3	0.84	6.33											
4. Self-Esteem	OBSE1	0.63	11.29	.79	.55	0.84								
	OBSE2	0.81	14.76				0.37	0.37	0.58	-				
	OBSE3	0.80												
5. Hope	Hope1	0.66	9.88	.67	.41	0.73								
	Hope2	0.60	9.14				0,64	0.21	0.48	0.61	-			
	Hope3	0.65												
6. Risk Taking	RiTa1	0.69	10.80	.79	.57	0.79								
	RiTa2	0.87	11.39				0.09	0.01	0.09	0.09	0.30	-		
	RiTa3	0.67												

Table 4-3: *Confirmatory factor analysis on innovator resilience potential.*

4.3.2.3 Innovation project termination

The binary moderator variable innovation project termination assessed whether the participants had experienced an innovation project termination (2) or not (1). An innovation

project termination was defined as definitely ending the innovation project or a massive and substantial change in the innovation project.

4.3.2.4 Control variables

To control for possible demographical influences on the examined relationships, we included gender, age, and organizational tenure of the respondents in all models calculated in this study.

4.4 Results

4.4.1 Descriptive statistics and correlations

Descriptive statistics and correlations of all variables are shown in Table 4-4. In order to test our hypotheses, hierarchical multiple regression analysis was used. To test Hypothesis 1 we regressed current project commitment on IRP after having entered the control variables. Hypothesis 2 was tested by adding the interaction term of IRP and innovation project termination to the regression analysis (Aiken & West, 1991). Multi-collinearity does not seem to pose a problem here as all VIF values are below 1.8 (Cohen, West, Aiken, & Cohen, 2003; Marquard, 1970).

Variable	Mean	SD	1	2	3	4	5	6
1) IRP	3.91	0.51	-					
2) Subsequent Project Commitment	4.04	0.85	.51**	-				
3) Termination Experience	1.76	0.43	.05	-.10	-			
4) Gender	1.17	0.38	-.12	-.06	.05	-		
5) Age	35.51	7.41	.02	.04	.12	-.11	-	
6) Organizational tenure	6.38	6.15	.13*	.14	.05	-.12	.63**	-

N (subsequent project commitment) = 183, N (other variables) = 238; **p < .01; *p < .05 (two-tailed)

Table 4-4: *Descriptive statistics and correlations.*

4.4.2 Hypotheses

Hypothesis 1 proposed a positive relationship between IRP and subsequent project commitment, which is supported by the results documented in Table 4-5 (model 2), showing a significantly positive relationship between these variables.

	<u>Model 1</u>				<u>Model 2</u>				<u>Model 3</u>			
	un- standardized		SE VIF		un- standardized		SE VIF		un- standardized		SE VIF	
	Beta	coefficient B	SE	VIF	Beta	coefficient B	SE	VIF	Beta	coefficient B	SE	VIF
Control variables												
Gender	-.04	-.10	.17	1.02	.02	.04	.15	1.03	.05	.12	.14	1.05
Age	-.09	-.01	.01	1.68	-.01	-.00	.01	1.71	-.02	-.00	.01	1.71
Organizational tenure	.19*	.03*	.01	1.68	.09	.01	.01	1.72	.07	.01	.01	1.72
Direct effects												
Termination experience					-.13*	-.11*	.06	1.02	-.11	-.10	.05	1.03
IRP					.50**	.43**	.06	1.04	.52**	.45**	.05	1.05
Interaction effect												
IRP*Termination experience									.27**	.23**	.05	1.04
R ²	.03				.28				.35			
R ² corrected	.01				.26				.33			
ΔR ²	.03				.25**				.07**			
F	1.62				13.71**				15.91**			

Dependent variable: subsequent project commitment; N = 183, N Termination Experience = 146; N No Termination Experience = 37; **p < .01; *p < .05 (two-tailed)

Table 4-5: Results of regression analyses.

Hypothesis 2 proposed that the positive relationship of IRP and project commitment is stronger for innovators who have experienced an innovation project termination than for innovators who have not experienced such a termination. The results of the full model 3 (see Table 4-5) support this hypothesis, revealing a significant interaction term of IRP and the experience of innovation project terminations. To further probe this interaction effect, we plotted the simple slopes (Aiken & West, 1991) for innovators having and not having experienced, respectively, an innovation project termination, which is illustrated in Figure 4-2. While the simple slope for the innovators having experienced an innovation project termination shows a strong and significant positive relationship between IRP and commitment

to subsequent projects ($b = 0.97, p < .01$), the same relationship is notably weaker and non-significant for innovators who did not experience such a termination ($b = 0.19, n.s.$). Thus, we conclude that all hypotheses are supported by the results of the regression analyses.

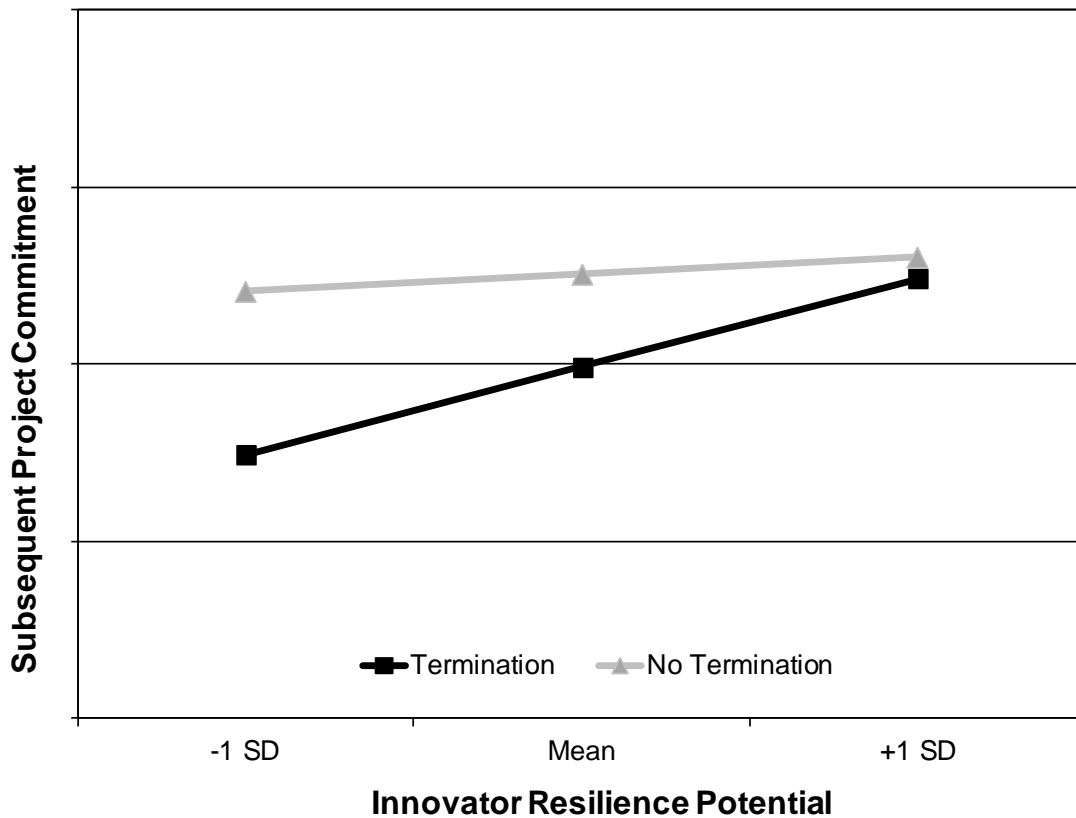


Figure 4-1: *Interaction effect of IRP and experience of an innovation project termination on the relationship between IRP and project commitment.*

It is interesting to note that the analysis of the simple correlations between the study’s variables shows that neither IRP nor project commitment correlates with termination experience, thus pointing to the independency of these variables.

4.4.3 Robustness checks

To check the robustness of our models we conducted several tests. First, as the data were collected from single respondents, we checked for a possible common source bias that might affect the results (Podsakoff et al., 2003; Podsakoff & Organ, 1986). Following

procedures recommended by Podsakoff et al. (2003), we conducted Harman's one-factor test. In this test, no single or general factor emerged, which reduces the likelihood of an undetected common source bias (Podsakoff et al., 2003). We further applied the approach recommended by Lindell and Whitney (2001) to check for a potential common method bias. Therefore, we used the big five variable agreeableness ("I see myself as critical and quarrelsome") from Gosling et al. (2003) as a marker variable, which is assumed not to be theoretically relevant to the individual level variables in our models. Non-significant and low correlations of this variable with the focal variables in our models (.06 for IRP, .02 for project commitment) lend further confidence to assuming a negligible presence of common method bias in our data.

Furthermore, we conducted separate regression analyses for the individual subgroups of innovators, which can be found in Table 4-6. For the group of innovators that experienced a termination, we added further control variables to the regression model. We expected that the commitment to the terminated innovation project might have a systematic influence on subsequent project commitment. We checked for this relationship by recalculating the regression models and entering commitment to the terminated innovation project as an additional control variable, thereby following the approach of Siegel, Post, Brockner, Fishman, and Garden (2005) in their study on post-acquisition organizational commitment. To do so, we used the same scale of Hoegl et al. (2004) as applied for measuring commitment to subsequent innovation projects focusing, however, on the terminated innovation project (Cronbach's alpha = .83). A further control variable was entered for this subgroup, i.e., the time span since the innovation project termination. It was expected that the length of this time span might have an impact on the relationship. Shepherd and colleagues, for example, found a relationship between time span and learning from failure (Shepherd et al., 2011). However, entering these additional control variables did not lead to a substantial change of results as the

relationship between IRP and project commitment is still similarly strong for the subgroup of innovators that have experienced an innovation project termination (beta = .54**).

	Model 4 (Termination)				Model 5 (Termination)				Model 6 (No Termination)			
	N(project commitment)=146				N(project commitment)=146				N(project commitment)=37			
	N(other variables)=180				N(other variables)=180				N(other variables)=58			
	un- standardized				un- standardized				un- standardized			
	Beta	coefficient B	SE	VIF	Beta	coefficient B	SE	VIF	Beta	coefficient B	SE	VIF
Control variables												
Gender	.01	.02	.16	1.08	.03	.06	.16	1.07	.10	.22	.38	1.06
Age	-.07	-.01	.01	1.80	.03	.00	.01	1.61	-.35	-.04	.02	2.03
Organizational tenure	.04	.01	.01	1.72	.04	.01	.01	1.70	.40	.05	.03	2.00
Terminated project commtment	.12	.12	.08	1.13								
Time since termination	.20**	.01 **	.00	1.16								
Direct effects												
IRP	.54**	.93**	.13	1.17	.56**	.97**	.13	1.08	.13	.19	.25	1.04
R ²	.37				.32				.14			
R ² corrected	.34				.30				.03			
F	13.47**				16.54**				1.32			

Dependent variable subsequent project commtment; **p < .01; * p < .05 (two-tailed)

Table 4-6: Results of robustness checks.

4.5 Discussion

In this study, we developed a measure of the recently introduced concept of IRP for use in quantitative empirical research, which paves the way for future investigations. By showing the positive relationship of this construct with commitment to innovation projects, we demonstrate the appropriateness of using this construct in innovation research as project commitment is important for the success of innovation projects (Amabile, 2000; Ernst, 2002; Hoegl et al., 2004; Shepherd et al., 2009a). The elevated importance of this relationship after the experience of termination of an innovation project underlines the suitability of this construct for the study of the human side of innovation project terminations. How the findings contribute to the literature of project termination, resilience, and project commitment and how it brings together these complementary research fields will be discussed in the following. In the current study we examine the influence of IRP on innovative functioning as measured by commitment to an innovation project and the contingent influence of whether an innovation

project termination was experienced or not. We thus complement the process view of resilience by focusing on the other parts in the process as such how IRP is related to a possible outcome variable.

4.5.1 Theoretical implications

First, the operationalization and validation of the IRP construct in a measurement scale marked the first step to testing the possible relationships of IRP empirically. The strong relationship between IRP and project commitment, particularly for innovators who have suffered from termination of an innovation project in their career, lends confidence of this scale's adequacy for this purpose. The IRP construct is thus the basis for further investigations that examine the human side of innovation failure. In future research further outcomes and influencing factors on IRP can be investigated. The relationship and specifically the contingency uncovered in this study stress the importance of studying influencing factors on IRP especially after an innovation project termination, as IRP is seen to be important for project commitment and as such for the success of future innovation projects. By strengthening IRP it is expected that project commitment and hence project success are positively affected. Especially the influence of specific characteristics of innovation project terminations on the project members' IRP needs to be investigated in order to provide specific recommendations on how innovators can be best supported during and after an innovation project termination. As the termination of projects prior to completion is ubiquitous in the innovation context (Corbett et al., 2007; Shepherd et al., 2009a; Shepherd et al., 2011) and is expected to harm the members of the terminated projects (Välikangas et al., 2009), it is helpful to understand possible buffering effects on these outcomes. In this regard, this study has already examined and uncovered processes as well as contingencies involved after an innovation project termination. The literature on the human side of innovation project

terminations is therefore informed by the identification of this strong and significant relationship and the contingency involved.

Moreover, commitment to innovation projects has been found to be decisive for the innovativeness of project members and for the success of such projects (Amabile, 2000; Ernst, 2002; Hoegl et al., 2004; Shepherd et al., 2009a). Therefore it was a further aim of this study to examine the relationship of IRP and project commitment with regard to research on project commitment. Previous studies identified few factors influencing project commitment, for example, quality of team work (Hoegl et al., 2004). Thus, in a first step, this study identified a further antecedent of project commitment that is IRP. Yet the finding of the second step, i.e., the moderation analysis, was even more revealing, as it uncovered specific contingencies in this relationship. The strong relationship between IRP and project commitment was dependent on having experienced an innovation project termination beforehand. In the literature, despite its importance, project commitment has hardly been regarded taking into account situational factors like a setback. Even considering other types of commitment, possible contingency effects caused by situational factors have not been taken into account so far (Carr et al., 2008; Chen & Indartono, 2011). This is surprising as failure generally constitutes an influential factor on many attitudes (Cannon & Edmondson, 2001). Considering such situational contingency effects brings a new perspective to the investigation of commitment in the organizational context as a whole and specifically with regard to innovation projects.

The validation of a measurement scale of IRP and the relationships uncovered also expand the literature on resilience, especially resilience in the organizational context (Noe et al., 1990; Powley, 2009; Youssef & Luthans, 2007). It represents the first measure of resilience in an organizational setting that considers resilience from a process perspective. This appears to be of particular importance as it allows the use of IRP as an outcome variable

as well as an influencing factor in future studies which is necessary to capture potential strengthening or confounding effects. The view of resilience as a process has been acknowledged and fostered in the clinical context (Luthar et al., 2000; Richardson, 2002), and even by a few organizational researchers (Sutcliffe & Vogus, 2003), yet an operationalization and empirical research in the organizational context is missing. In order to uncover further relationships in this regard the development of the embedded and measurable variable (IRP) was necessary. Additionally, the findings of this study support a further important aspect in resilience research. The experience of a setback can be seen as a chance, meaning that it offers the opportunity for advancement (e.g., Carver, 1998; Dougall et al., 2000). By strengthening IRP after an innovation project termination, commitment to a subsequent innovation project can be elevated, as a strong relationship was detected. Therefore the achievements of an innovator can even be higher after an innovation project termination provided his or her IRP is maintained or strengthened. Low values of IRP might cause the opposite, as low levels of IRP significantly lower the commitment to future innovation projects. As such it is decisive to understand the antecedents of IRP after an innovation project termination in order to strengthen IRP and as such project commitment. The establishment of an operationalization of IRP offers a basis for this purpose.

A further surprising finding of this investigation is revealed by the simple correlations between the variables in Table 4-4. Both IRP and project commitment are independent of the experience of an innovation project termination. The independence of IRP and the termination experience support the view that it is not the termination per se that has a strong influence, but characteristics of the innovation project termination, as suggested by Moenkemeyer et al. (2012). The independence of project commitment and innovation project termination further underlines the importance of the IRP construct when examining the human side of innovation project terminations. Some authors have suggested that a project termination influences

project commitment per se (e.g., Shepherd et al., 2009a; Välikangas et al., 2009), yet the findings of this study support the view that IRP seems to be the decisive factor here.

Overall, the findings of this study enhance the three related research streams by themselves. Furthermore, this study brings together three complementary research fields that have hardly been intertwined before. Resilience and innovation project terminations close the gap the other area opens as the innovation project termination is the necessary “traumatic trigger event” for resilience research, while the concept of resilience helps us to explore the human side of innovation project terminations (Moenkemeyer et al., 2012). Further, project commitment and project terminations have been related in previous studies (Shepherd et al., 2009a) but without taking resilience into account. Yet, resilience can connect these two research streams and open up the black box of this relationship, providing a framework to examine when and how these variables interlink. Hence, each field is advanced by considering influences from the others.

4.5.2 Practical implications

Besides the theoretical importance of the findings, this study has high practical relevance as the termination of innovation projects is the rule rather than the exception in organizational innovation activities (Corbett et al., 2007; Shepherd et al., 2009a; Shepherd et al., 2011). IT innovation projects, for example, fail at an astonishing rate of almost 80% (Oaks, 2006). The findings of the current study show that the IRP construct is important for the commitment to innovation projects in general, and especially after having experienced an innovation project termination. Therefore it is important to strengthen IRP and the underlying factors in order to foster project commitment. As strengthening IRP after the experience of an innovation project failure seems to be clearly more challenging we focus on recommendations that are especially relevant during and after an innovation project termination.

One initiative that appears helpful in strengthening IRP after an innovation project termination is the conduct of a debriefing. There, management can provide feedback, explain the reasons for the termination and give an outlook into the future; it can even provide social support (Devilley, Gist, & Cotton, 2006). It is a method of communication and as such it may help project members to process the fact of termination better. To put it in the words of Devilly et al. (2006: 336-337): “Most people, for example, first crave solid, reliable information following a traumatic event – questions such as ‘What exactly happened? Who has been affected? How badly? What is being done? What will happen tomorrow?’”. Therefore it is essential that a debriefing is timely, honest and as personal as possible with a chance for interaction. A debriefing may also strengthen the six IRP facets directly. In this regard, to foster self-efficacy and outcome expectancy, it appears on the one hand necessary to let project members feel that their capabilities and individual performance did indeed influence the project’s performance and its consequences and, on the other hand, acknowledging good employee performance in terminated projects (Latham, 2001). This may help project members to evaluate their contributions better and to protect their self-efficacy and self-esteem from the consequences of incorrectly attributing the project’s failure to their own shortcomings (McNatt & Judge, 2008). A debriefing can also constitute the platform for explaining the reasons for the termination more thoroughly and to give an outlook to the future which is expected to help restoring realistic optimism (Schneider, 2001).

A further initiative to foster IRP is saving the results. This shows the project members that their work was not in vain and that the results can be used in the future. Rewarding the achievements is also important, because it can boost self-esteem and resilience in general. Contingent rewards influence an individual’s perception of control, when the outcome is attainable (Grzeda & Prince, 1997). Awards for “successful failures” are a possibility for the valuation of achievements. This will encourage the project members and other members of

the organization to engage in new and even risky projects (e.g., Buchenau, 2007), because the fear of failing is reduced.

Nonetheless, besides these specific protective initiatives, in general knowing that project commitment is connected to IRP in itself is an interesting insight for managers, especially after an innovation project termination. They can learn that they need to strengthen project members' IRP especially after an innovation project termination and that this will contribute to the project members' project commitment. This will enable managers to understand the attitudes and behavior of their subordinates better and thus be able to provide support. Overall, the recommendations show that it is possible to support project members after an innovation project termination and that the organization has several possibilities to do so. All together, the study has revealed that an innovation project termination can be very troublesome for the project members, yet management has several opportunities to support these individuals effectively after a termination. Thus a termination can even be an opportunity.

4.6 Limitations and outlook

Some limitations of this study should be mentioned. First, this study's data are cross-sectional, meaning they demonstrate relationships between variables but cannot fully establish causality as possible in a longitudinal study. In future research, a longitudinal study would thus enrich our understanding of IRP and its role regarding innovation project terminations. Using the process view of innovator resilience as the framework and seeing IRP as a state-like construct, a longitudinal study could further establish the development of the variables over time. Second, this research followed the objective of operationalizing and validating the construct of IRP, as well as showing its importance for project commitment especially after an innovation project termination. Yet, the characteristics of the setback situations have not been addressed in our study. Further research might seek to establish the influence of these

characteristics on IRP and subsequent innovative functioning of innovators in order to uncover the full scope of the IRP construct and the human side of innovation project terminations. Third, this research set out to establish the relationship of IRP with project commitment, while other types of commitment, attitudes and behaviors were omitted. However, these outcomes might also be affected by IRP. Those supplementary relationships would also further our knowledge and would help understand the effects of an innovation project termination. Overall, uncovering the relationships and processes involved after a setback will enable a better handling of these situations. Therefore it is of interest for all parties involved (e.g., project members, managers, employing companies) to build a broader and more thorough understanding here.

5 Social support and innovator resilience potential³

³ This unpublished working paper was written by Gisa Moenkemeyer based on conjoint work with Prof. Dr. Martin Hoegl and Dr. Matthias Weiss. A previous version was presented at the 2012 Product Development & Management Association (PDMA) International Research Conference, Orlando under the title “The influence of social support during and after innovation project terminations on innovator resilience potential”.

ABSTRACT

The characteristics of innovation project terminations are expected to affect innovator resilience potential (IRP) an important consideration for future innovative functioning and for coping with future setbacks. As yet we do not know how, specifically, to best support innovators and their IRP during and after an innovation project termination. In this study, we examine the relationship of three sources of social support and IRP: family and friends, the leader, and the organization. Building on a sample of 180 innovators who experienced an innovation project termination, we find that support from the leader and the organization strongly and significantly relate to IRP, whereas support from family and friends does not show a significant relationship with IRP. This result hints at ways to support project members during and after an innovation project termination, showing that social support from work-related sources proves most important in such situations.

Keywords: innovator resilience potential, project termination, social support

5.1 Introduction

The risk of early terminations of innovation projects is ubiquitous in the innovation context (e.g., Balachandra, Brockhoff, & Pearson, 1996; Shepherd & Cardon, 2009), and the more radical the innovation the higher the chance of failure (Bessant, 2008). Although such terminations are mostly of managerial necessity to avoid unnecessary expenses (Boulding, Morgan, & Staelin, 1997; Schmidt & Calantone, 2002), they bear the threat of having detrimental effects, particularly on the people engaged in those terminated innovation projects (Shepherd et al., 2011; Välikangas et al., 2009). This implies severe problems for the sustained innovativeness of a company, since these specific individuals represent the most important resources for innovation (Verona, 1999).

Despite the obvious importance of this aspect, researchers have just begun to turn their focus on the human side of innovation project terminations and on the effects of innovation project terminations on project members (Moenkemeyer et al., 2012). Although prior research suggests that innovation project terminations possibly affect project members' innovator resilience potential (IRP), defined as “the potential for future innovative functioning and coping with future setbacks” (Moenkemeyer et al., 2012: 632), to date the literature has not identified characteristics of such terminations that influence project members and their IRP. Such an identification seems important, however, as IRP positively relates to aspects of innovative functioning such as commitment to innovation projects (Moenkemeyer, Weiss, & Hoegl, 2012a), considered critical to the success of future innovative endeavors (Amabile, 2000; Ernst, 2002; Hoegl et al., 2004; Shepherd et al., 2009a).

Therefore, this paper looks at identifying termination characteristics that positively influence IRP to enable better support for affected individuals in such a setback situation. In line with literature on resilience, we identify social support as such a “protective” characteristic (Luthans, Vogelgesang, & Lester, 2006b; Masten, 2001), which we argue

positively influences project members' IRP. As social support can be differentiated by different sources of support (Garmezy & Masten, 1986), we selected three sources widely accessible for affected employees and likely to provide the needed support for project members in the current context: family and friends, the organization, and the leader.

Building on the broaden-and-build theory (Fredrickson, 2001), we expect that social support from these sources will help project members to experience positive emotions, such as joy, love, and pride, which positively influence resilience, during professionally difficult times (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Tugade & Fredrickson, 2004; Tugade, Fredrickson, & Feldman Barrett, 2004). Here we reason that positive emotions provided through social support help project members cope better with the setback and build lasting personal resources such as resilience (Fredrickson, 2001). Thus, this study investigates these three sources of support during and after an innovation project termination and how these sources relate to project members' IRP.

Based on this research objective, the article offers two main contributions. First, we conceptually argue and empirically verify that characteristics of the termination process such as social support can indeed influence IRP. We conceptualize IRP in a way that allows us to use this construct as an outcome variable in a process view of innovator resilience (Moenkemeyer et al., 2012). The literature has largely neglected this aspect – using and operationalizing resilience in an outcome-oriented way – so far in research on resilience in the organizational context (Moenkemeyer et al., 2012). Prior research looked at the influence of resilience on layoffs, organizational change, and other organization related outcomes such as job satisfaction and performance (Grzeda & Prince, 1997; Rush et al., 1995; Wanberg & Banas, 2000; Youssef & Luthans, 2007). Although some acknowledge the malleability of resilience (Luthans et al., 2007b), no one has tested the influence of a setback and its characteristics on resilience. The current study thus breaks new ground by showing that an

innovation project termination may indeed influence resilience, such as project members' IRP, during and after the event. Hence, this study advances knowledge on the outcomes of innovation project terminations on the affected individuals, which has been neglected for a long time (Välikangas et al., 2009) as it provides an adequate outcome variable. To date, the field lacks such an outcome-oriented resilience variable (Harland et al., 2005). This research thus opens the door for further research on the effects of innovation project terminations on affected individuals in the future. Especially in the innovation context, this appears critical given the proportion of terminated innovation projects (Shepherd & Cardon, 2009).

The second contribution concerns the identification of social support during and after an innovation project termination as a protective factor for IRP. Even though studies in resilience research have taken into consideration the influence of social support (Richardson, 2002; Werner, 1995; Wills & Cleary, 1996), this research did not relate to resilience in organizational contexts. Most studies investigating the influence of social support in organizational work settings have focused on creativity respectively innovation (Eisenhardt & Tabrizi, 1995; Weick, 1993) and on work-related stress (Garmezy & Masten, 1986; La Rocco & Jones, 1978). However, these streams of inquiry have remained largely separated, which is surprising as, for example, resilience, innovation, and creativity appear to have a strong linkage (Metzl, 2009; Moenkemeyer et al., 2012; Runco & Richards, 1998). We therefore contribute by taking a more detailed look at the influence of social support during and after the experience of adverse events by focusing on three different sources of support earlier studied with regard to work stress, creativity, and innovation and that, as we argue, play a role for most members of terminated innovation projects (e.g., Bhanthumnavin, 2003; Eisenberger, Stinglhamber, Vandenberghe, Sucharski, & Rhoades, 2002; La Rocco & Jones, 1978; Madjar, 2008). Drawing on the broaden-and-build theory, we expect that these three sources will enable project members to experience positive emotions despite the setback,

which will in turn help to strengthen their resilience (Fredrickson, 2001). Investigating the contribution of each of the three sources of support on IRP allows deeper insights on the supporting mechanisms during and after an innovation project termination, information we long needed to shed light on the functioning of social support in adverse situations. This particularly relates to the innovation context, where so many projects are terminated with unclear intertemporal consequences on individual and firm innovation (Shepherd & Cardon, 2009).

The paper is organized as follows. First, we briefly outline research on IRP, social support, and the broaden-and-build theory before developing the hypotheses on the relationship between these variables. Thereafter, we explain the applied method before presenting the results. A discussion, limitations, and future areas of study will conclude this article.

5.2 Theory

5.2.1 Innovator resilience potential and innovation project termination characteristics

Developed as an innovation-related resilience construct, IRP incorporates state-like qualities, that are essential prerequisites for innovative functioning and coping with future setbacks, thus representing fundamental prerequisites for accomplishing subsequent innovative tasks after setbacks like an innovation project termination (Moenkemeyer et al., 2012). In this vein, we propose IRP as a necessary but not sufficient condition for innovative functioning and coping after a setback. IRP comprises six facets: self-efficacy, outcome expectancy, optimism, hope, organization-based self-esteem, and risk propensity.

In taking a process perspective we expect that, first, IRP will influence the outcomes of a challenging situation, e.g., the termination of an innovation project. Further, in an ongoing process, we consider IRP as influenced by the termination of an innovation project

and its specific characteristics (Moenkemeyer et al., 2012), the focus of this study. Overall, the process perspective of innovator resilience offers a dynamic approach that allows for identifying specific characteristics of an innovation project termination that influences IRP (Moenkemeyer et al., 2012) – hardly possible hitherto given the nonexistence of an adequate outcome variable (Harland et al., 2005). Uncovering the relationships of the termination characteristics and IRP interests us in this study as they may help to understand how to best support project members after such a setback.

To identify termination characteristics relevant for IRP after an innovation project termination, we draw on findings from the literature on general resilience (rather than resilience in the specific context of innovation). In this field, a number of studies focused on uncovering positive influencing factors on general resilience after an adverse event. The literature commonly terms these as “protective factors” (Bonanno, 2004; Phillips & Gully, 1997; Richardson, 2002; Werner, 1995), as those factors “foster the development of positive outcomes and healthy personality characteristics” (Bonanno, 2004: 20) despite adversity. Those protective factors, or assets, can represent internal (e.g., personality characteristics) or external (e.g., receiving support) phenomena (Richardson, 2002). Garmezy (1991) identified a triad of protective factors: personal dispositional attributes, a supportive family environment, and external support resources. For example, in one of the pioneer studies in resilience research, Werner (1982) identified a care-giving environment inside and outside the family as helpful for children at risk. In a similar vein, extensive research by House and colleagues on the relationship between work stress and social support showed a positive influence of social support on the affected individuals (House, 1981; La Rocco, House, & French Jr, 1980). In this study we focus on the influence of external factors, specifically social support during and after an innovation project termination, on project members’ IRP. The rationale underlying this choice follows the idea that external factors such as social support can be best influenced

by management and organizations, which allows us to give recommendations as how to support project members best in these situations. In general, as mentioned earlier, research has acknowledged social support an important external “protective” factor (Cohen, Sherrod, & Clark, 1986; Neundorf, 2002; Westphal & Bonanno, 2007; Wolin & Wolin, 1993), whereas lack of social support was associated with a negative influence on individuals (Bonanno, 2004; Cohen et al., 1986).

5.2.2 The broaden-and-build theory

We draw on findings of the broaden-and-build theory to discuss the influence of social support on IRP and to explain the underlying functioning. Fredrickson developed the broaden-and-build theory because prior theories lacked the ability to explain the functioning of positive emotions (Fredrickson, 1998). Previous research rather focused on negative emotions and such negative emotions narrow one’s momentary thought-action repertoire to react to life-threatening circumstances (Fredrickson, 1998). Fredrickson found that this understanding of the functioning of emotions did not meet the requirements for understanding positive emotions. Therefore, Fredrickson developed a new theory proposing that positive emotions such as interest, contentment, joy, and love “both broaden the individuals’ momentary thought-action repertoire, and in turn build the individual’s enduring personal resources” (Fredrickson, 1998: 307) such as physical, intellectual, social, and psychological resources (Fredrickson, 2001). Hence, positive emotions induce the opposite thought-action tendencies of negative emotions. Along this line, positive emotions “undo” or “correct” the effects of negative emotions and function as antidotes thereof (Fredrickson, 1998, 2001). Important for the current study is the finding that resilience is one of the resources that is strengthened through positive emotions (Cohn et al., 2009; Fredrickson, 2001; Fredrickson & Branigan, 2005). Furthermore individuals often experience emotions like joy, contentment, interest, and love in contexts that provide a feeling of safety (Fredrickson, 1998) and such

positive emotions again positively influence resilience (Cohn et al., 2009; Fredrickson, 2001). An additional significant finding holds that positive emotions foster broad-minded coping, which again furthers positive emotions and thus activates an upward spiral (Tugade et al., 2004). Overall, the broaden-and-build theory can help to explain the proposed relationship between social support and IRP. We will thus use this theory in explaining the proposed relationships.

5.2.3 Social support

The variety of aspects and outcomes being investigated in the literature on social support is large and can be categorized according to its source (Barling, MacEwen, & Pratt, 1988). The source of social support most helpful depends on the context, the accessibility, and the support needed (House, 1981). To put it in the words of House (1981:59) “Support from the right kind of people can be of significant value in reducing occupational stress, improving health, and buffering the impact of stress on health.” For this research, we selected three sources of support, which we expect most employees would find widely accessible and which might provide the support needed in the context of innovation project terminations: family and friends, the organization, and the leader.

More specifically, we focus on support from family and friends as we expect this to play a major part in the lives of most project members, in enabling members to experience positive emotions despite difficult situations. We propose that such support helps especially with regard to providing the emotions of care, love, and joy (House, 1981). We include support from the organizational level (Zhou & George, 2001), which we conceptualize in this study as a climate of psychological safety, because this would likely provide project members a feeling of safety in the workplace (Baer & Frese, 2003). We expect such a feeling of safety, despite the experience of a setback, to have a positive influence on IRP as feelings of safety foster positive emotions (Fredrickson, 1998) and reduce the fear of future failures. Finally, we

include support from leaders as they can give emotional support for example by showing empathy for the project members (La Rocco & Jones, 1978; Wayne, Shore, & Liden, 1997). Such emotional support from the leader can evoke positive emotions like pride (Carless, Wearing, & Mann, 2000), and trust and caring (House, 1981), which we expect will further foster a feeling of safety and security and thus positively influence IRP.

We propose that support from these three sources positively influences IRP as it might help project members to experience positive emotions during this difficult time; research has associated such positive emotions with resilience (Fredrickson, Tugade, Waugh, & Larkin, 2003; Tugade & Fredrickson, 2004). We expect that underlying this, all selected sources of support provide a feeling of safety and care, which in turn induces positive emotions (Fredrickson, 1998) that again foster resilience (Cohn et al., 2009; Fredrickson, 2001). These findings relate importantly to this research as positive emotions not only enhance personal resources like resilience but also buffer the negative influence of negative emotions potentially induced by a setback (Fredrickson et al., 2003) such as innovation project termination (Shepherd & Cardon, 2009). Those individuals who experience positive emotions during such a difficult time better and faster regulate their negative emotional experiences (Tugade & Fredrickson, 2004; Tugade et al., 2004). Besides these positive effects on resilience “The experience of positive emotions during times of stress prompt individuals to pursue novel and creative thoughts and actions” (Tugade & Fredrickson, 2004: 331). We therefore expect that the experience of positive emotions also fosters creativity and innovative behavior (Tugade & Fredrickson, 2004) and thus further IRP. In accordance with the broaden-and-build theory, these three suggested sources should therefore strongly relate to IRP. Moreover, these three sources of social support have also found frequent application in the literature on creativity, innovation, work stress, and general resilience (e.g., Bhanthumnavin, 2003; Daniels & Guppy, 1997; Eisenberger et al., 2002; La Rocco & Jones, 1978; Madjar,

2008). In the following, we elaborate in a more detailed way on the proposed relationship between these sources of support and IRP.

5.2.3.1 Support from family and friends

In setback situations, support from family and friends seems helpful as close confidants can help to lessen distress (Cohen & Wills, 1985) and their emotional support helps to cope with setbacks (Harlow & Cantor, 1995). We expect that such sources provide positive emotions and generally decrease the perceived stress after the adverse event by alleviating negative emotions (Bonanno, 2004; Fredrickson, 2001) as proposed by the broaden-and-build theory and by “increasing continued contact with and support from important people in the ... person’s social environment” (Bonanno & Keltner, 1997: 134). Especially after the termination of an innovation project, negative feelings will likely be elevated as project members experience a loss or even a kind of innovation trauma (Peterson, 2001; Välikangas et al., 2009). Sometimes disengaging from the negative experience helps in these situation and this requires time and opportunity as well (Nadler, 1988). Family and friends can help individuals to disengage, for example, by just spending a enjoyable time with these close confidants, leading to experiencing positive emotions like love and joy (House, 1981). Laughter and humor can help individuals forget temporarily such setbacks as an innovation project termination and can further foster positive emotions (Tugade & Fredrickson, 2004; Tugade et al., 2004). We expect that members of terminated innovation projects get the feeling of being loved and cared through the support from family and friends (House, 1981); these positive emotions will likely foster a positive outlook in the future and lessen one’s fear of failure. The effect of experiencing these positive emotions might further help to undo the negative effect of negative emotions (Fredrickson, 1998) induced by an innovation project termination. Therefore, personal support from one’s close confidants may

help to resemble new power for future innovative functioning as well as for feeling strong enough to cope with future setbacks and as such for IRP.

Several studies on general resilience and social support have also pointed to the importance of support from family and friends and its positive relationship with health (House, Landis, & Umberson, 1988; King, Reis, Porter, & Norsen, 1993; Leavy, 1983; Warheit, 1979). Moreover, support from the spouse and the family buffered the effects of work-related stress on health and psychological states and directly associate with decreased perceptions of stress (House, 1981; La Rocco et al., 1980). When considering the negative relationship between academic stress and resilience, support from friends was also found to be a moderator, in that the interaction between academic stress and friend support positively influenced resilience (Wilks & Spivey, 2010). Based on these findings and the broaden-and-build theory we posit that:

Hypothesis 1: Social support from family and friends during and after an innovation project termination positively relates to IRP.

5.2.3.2 Support from the organization - climate of psychological safety

Support from the organization – the extent to which employees believe that “the organization values their contribution and cares about their well-being” (Eisenberger, Huntington, Hutchison, & Sowa, 1986: 500) – is also expected to be helpful for individuals involved in an innovation project termination. In the current context, for project members’ IRP, the support provided through the organizational climate seems especially important during and after the termination of an innovation project.

In particular, a climate of psychological safety, “the formal and informal organizational practices and procedures guiding and supporting open and trustful interactions within the work environment” (Baer & Frese, 2003: 50), will likely make the project members

feel cared about and valued in the current context and provides a feeling of safety. Such a context of safety generates positive emotions like joy and interest (Fredrickson, 1998), which foster resilience despite the experience of the setback (Cohn et al., 2009). The experience of positive emotions induced by a feeling of safety (Fredrickson, 1998) might buffer the negative emotions aroused at the termination of an innovation project (Tugade & Fredrickson, 2004).

Further, organizational support is “valued as assurance that aid will be available from the organization when it is needed” (Rhoades & Eisenberger, 2002: 698), which a climate of psychological safety can provide. This is of particular importance since a high degree of uncertainty inheres in the development of new products and processes in general (Shalley & Gilson, 2004), whereas this risk becomes even more prevalent after the actual experience of a setback (Galak & Meyvis, 2011; Riskind, 1999). Therefore, a feeling of safety seems critical when innovation project members have already experienced what it means to fail and potential risks after a setback are more salient and probably result in an increased fear of failure (Brown & Leigh, 1996). Therefore, the upward spiral of positive emotions (Tugade et al., 2004) suggested by the broaden-and-build theory helps to counteract this negative spiral. As such, positive emotions fostered by a climate of safety enhance one’s ability to cope with negative emotions and setbacks (Tugade & Fredrickson, 2004; Tugade et al., 2004), which in turn foster positive emotions and thus resilience, allowing an individual to begin an ongoing upward spiral (Tugade et al., 2004). We further expect this to positively influence the project members’ potential for coping with future setbacks, an integral part of IRP (Moenkemeyer et al., 2012).

Additionally, we expect a climate of psychological safety to foster two distinct emotions. An organization that supports open and trustful interactions as such a climate of safety (Baer & Frese, 2003) seems to know what project members need in such situations and will make project members feel valued and cared (Eisenberger, Fasolo, & Davis-LaMastro,

1990), as well as less afraid of future failures. Thus it also generates the positive emotion of fearlessness, which we expect fosters IRP. Furthermore, a climate of pronounced safety fosters risk taking (one of the IRP facets), instead of avoiding uncertainty, and induces the positive emotion of interest (Fredrickson, 1998), essential for both creativity (Shalley & Gilson, 2004) and innovation (Baer & Frese, 2003). Thus psychological safety also strengthens the potential for innovative functioning, the second integral of IRP (Moenkemeyer et al., 2012). Based on findings from research on broaden-and-build theory we therefore posit:

Hypothesis 2: Support from the organization in the form of a climate of psychological safety during and after an innovation project termination positively relates to IRP.

5.2.3.3 Support from the leader

Prior research has frequently identified support from the leader as an important influencing factor on resilience, innovation, and creativity (Amabile et al., 2004; Gumusluoğlu & Ilsev, 2009; Harland et al., 2005; Oldham & Cummings, 1996). At this leaders are found to provide different types of support, among them informational and emotional support (Wayne et al., 1997). Emotional support primarily serves to help people feel better about themselves and their situation when things go wrong (Cutrona, 1986). It involves the provision of empathy, care, love, and trust (House, 1981) and provides opportunity for emotional expression (Cohen, 2004). In contrast, informational support, often provided in the form of feedback (Cutrona, 1986; Madjar, 2008) means the provision of information (Cohen, 2004), whereas “Such information is not in and of itself helpful, rather it helps people help themselves“ (House, 1981: 25). The latter represents task-focused support like giving advice or guidance in vocational issues (Harlow & Cantor, 1995). The support from leaders is thus expected to be an important source of support in the corporate context as they can provide help in many aspects (emotional and informational), which most other

sources can hardly provide in combination. Assuming that primarily the emotional support from the leader induces positive emotions after the setback situation, we will focus on this type of leader support in the following.

A setback like an innovation project termination usually signals a difficult time that requires relevant emotional support from the leader (Amabile et al., 2004). In line with the broaden-and-build theory and as suggested by the term emotional support the leader is expected to provide positive emotions (House, 1981). As such, we expect that the supportive leader (Amabile et al., 2004), who fosters positive emotions like pride (Carless et al., 2000), and who shows empathy and cares (House, 1981) will prove helpful in such a situation. Behaviors related to individual consideration provide such a feeling of being cared for and valued, which may make the individuals less afraid of negative consequences of the failure and more likely to ask the leader for support or guidance (Harland et al., 2005). In such situations, subordinates will turn to their leaders during a setback when they need encouragement or an impulse for positive thinking (Luthans et al., 2006b). This will induce positive emotions in such an environment and further foster resilience (Cohn et al., 2009). Furthermore, (transformational) leader behaviors provide a feeling of safety (Popper & Maysless, 2003); such a context of safety again fosters positive emotions (Fredrickson, 1998) and thus builds resilience (Cohn et al., 2009). Especially during times when negative emotions such as disappointment and frustration are prevalent due to the termination of an innovation project, positive emotions play an important role in undoing the effects of these negative emotions (Fredrickson, 1998). Again these positive emotions further strengthen the ability to cope with negative emotions and setbacks (Tugade & Fredrickson, 2004; Tugade et al., 2004), which in turn foster positive emotions and thus also resilience (Tugade et al., 2004).

In general, the positive emotions induced by the leader, (e.g., pride) tend to build health and personal resources (Tugade & Fredrickson, 2004; Tugade et al., 2004). In this line we further expect that the experience of positive emotions as a result of a leader's emotional support likely fosters not only resilience but also creativity in stressful times (Tugade & Fredrickson, 2004). Thus, we expect the twofold strengthening of IRP as IRP incorporates resilience and innovation qualities (Moenkemeyer et al., 2012). Overall, we expect that leader behaviors that focus on "the socioemotional: showing consideration for subordinates' feelings, acting friendly and personally supportive to them, and being concerned for their welfare" (Amabile et al., 2004: 7) are important for IRP during and after an innovation project termination. Therefore we expect that:

Hypothesis 3: Emotional leader support during and after an innovation project termination positively relates to IRP.

5.3 Methods

5.3.1 Sample and data collection

The participants for this study were identified and contacted via a large business-related social networking site targeting the German-speaking business environment. At the time of data collection, this social network had 10.8 million members. People registered cover all major professional groups and industries. The majority of the target group of respondents is enlisted in this professional network as it is seen as a social necessity to be a member of the network in Germany. We specifically contacted participants working as "innovators" - persons who, in a professional capacity, work on or incite innovative tasks, i.e., they work on the adaptation or development of new products, services, or processes (Luthans & Church, 2002). To identify these innovators in the network's database, we entered key search words such as 'innovation', '(product) development engineer', 'new product development', or

‘project manager’. Then, a detailed screening of their profiles led to the inclusion or exclusion for this study based on the above definition of innovator. Scientists or product development engineers employed mainly in manufacturing industries made up the majority (around 75%) of participants. Participants were contacted via the social network’s e-mail system, whereas the actual survey was conducted on an external platform independent from the social network. In total 180 innovators who had experienced the termination of an innovation project filled out the complete questionnaire. On average, participants experienced the termination 24 months prior to the survey. E-mail invitations went to 7,102 innovators, and 612 innovators confirmedly received the e-mail as they accessed the attached link to the study’s website or sent an e-mail response. Then, 326 innovators filled out the innovator resilience potential questionnaire, of which 180 had experienced an innovation project termination and completed the social support questionnaire. As participants had to disclose personal information, the contact e-mail, and the cover page of the questionnaire, emphasized that the data were treated completely confidentially and anonymously to counteract any response bias (Paulhus, 1991). The survey was deliberately open to every industry as innovation project terminations occur in every industry and as this approach secured external validity of findings and avoided industry biases. To test for non-response bias, we compared the gender ratio in the sample with both the individuals invited and the population of engineers in Germany. The population information was drawn from the German census bureau using data on engineers, chemical engineers and physicists. Of the respondents, 16.8% were female, 14.3% of all invitations were sent to females; and 14% of all engineers, chemical engineers and physicians in Germany are female (according to the German census bureau). T-tests show no significant differences between the means of these populations. Thus, non-response and sampling biases do not seem to be a problem. Table 5-1 presents more detailed information about the sample.

Job	70% scientists or developmental engineers, 27% managers, 2% assistant managers, 1% consultants.
Age	Mean age was 35.5 years and ranged from 23 to 61 years.
Gender	16.8% female, 83.2 % male
Tenure	Mean organizational tenure 6.4 years, ranging from 1 to 42 years
Industry	Automotive 32%, aerospace 11%, other manufacturing 29% (e.g., medicine, mechanical & electrical engineering, renewable energies), pharmaceutical & chemical industry 10%, telecommunication, IT & media 8%, Services 6% (engineering, scientific, and transportation services), consumer goods 4%.

Table 5-1: *Sample characteristics.*

5.3.2 Measures

The questionnaire was conducted in German language and used validated German translations of standardized measures when available. In other cases items and anchors were translated and then back-translated by independent bilinguals (Brislin, 1986; Szabo et al., 1997). We relied on existing measures in the literature where possible. To test the items and their understanding, a pretest was conducted in an innovative research setting at a university. In reference to the pretest comments the wording of some items was refined. If not stated otherwise, this study used five-point Likert-scales with anchors ranging from strongly disagree (1) to strongly agree (5).

5.3.2.1 Support from family and friends

To measure support from family and friends we relied on a measure used by Spreitzer (1996) and adjusted the questions to fit the context for family and friends. We asked participants if they received the support they needed from their friends and families. Collapsing measures from family and friends into a single measure is widely used (House, 1981). Two items were used to measure support from family and friends. In addition to the five-point Likert-scale stated above a sixth answer was possible – “person did not exist”. In

total 149 participants answered both questions on the five-point Likert-scale. In these cases we used the mean of both values. A Cronbach's of .90 was calculated for these participants. For the following regressions we used an N of 180 (the same number of observations is used for the other support variables). The remaining 31 participants either answered one or none of the two questions on the five-point Likert-scale. When one question was answered (12 participants) we used this one value as a strong correlation (.83**) between the values of the support from family and the support from friends exists. When none of the questions were answered (19 participants) we used a value of 1 as it is expected that no support was present.

5.3.2.2 Climate of psychological safety

To determine the climate of psychological safety, this study applied five items of the scale transformed and used by Baer and Frese (2003). The foundation of this scale was the scale developed by Edmondson (1999) for use on the team level. Sample items include: "In my company one is free to take risks", and "In my company it is not a problem to ask someone for help." Cronbach's alpha of the scale is .80.

5.3.2.3 Emotional leader support

To measure emotional leader support three items of the transformational leadership scale from Carless et al. (2000) were used. These three items related to emotional supportive behavior were slightly adjusted to the research setting. The questions included the following items: „My leader treated me as an individual." and "The leader instilled pride and respect in me." The three-item scale shows a Cronbach's alpha of .91.

5.3.2.4 Innovator resilience potential

We used the IRP scale developed in Chapter 4 consisting of 18 items in total, three for each of the six IRP facets (self-efficacy, outcome expectancy, optimism, hope, organization-based self-esteem, and risk propensity) (Moenkemeyer, Weiss, & Hoegl, 2012a).

Cronbach's alpha for the IRP scale was .78. A higher order CFA, using the theoretically proposed structure including IRP as a second-order construct yielded a good fit to the data (RMSEA = .07; SRMR = .07; CFI = .91). 326 observations were available here. Sample items include "I have confidence in my ability to do my job," for self-efficacy, and "At the present time, I am energetically pursuing my work goals," for hope.

5.3.2.5 Control variables

To control for possible demographical influences on the examined relationships, we included gender, age, and organizational tenure of the respondents in all models calculated in this study as demographic attributes are suggested to possibly influence resilience and related constructs (Bonanno, 2004).

We further included informational leader support in form of feedback as a control variable. We can view feedback as an integral part of informational support (Cutrona, 1986; Madjar, 2008), as it provides an efficient way of providing subordinates with information. When regarding the influence of feedback on the project members of a terminated innovation project and their IRP, task-related feedback (Faction & Craig, 2001) may direct attention to innovation project members' achievements and development during the terminated innovation project. As this informational support through feedback may influence and bias perceptions of emotional leader support, we control for this variable to get a purified measure of emotional leader support in our empirical models. We measured leader feedback adapting three feedback-related items of the Van Dierendonck, Haynes, Borrill, and Stride (2004) leadership measure, and we did slightly adjust items to the research setting. One sample item is: "My leader provided me with timely feedback after the termination on my performance during the project." Cronbach's alpha of this scale is .94. Table 5-2 shows descriptive statistics and correlations between all variables.

Variable	Mean	SD	1	2	3	4	5	6	7	8
1) Emotional leader support	3.16	1.15	-							
2) Leader feedback	2.84	1.32	.74**	-						
3) Climate of psychological safety	3.56	0.77	.39**	.37**	-					
4) Family and friend support	3.61	1.38	.20**	.13	.02	-				
5) IRP	3.93	0.50	.34**	.28**	.44**	.06	-			
6) Organizational tenure	6.57	5.90	-.10	-.02	.05	.02	.20**	-		
7) Age	36.03	7.38	-.11	-.03	.00	.02	.07	.61**	-	
8) Gender	1.18	0.38	.02	-.06	.01	-.02	-.20**	-.19*	-.12	-

N = 180; **p < .01; *p < .05 (two-tailed)

Table 5-2: *Descriptive statistics and correlations of study variables.*

5.4 Results

To test our hypotheses, we used multiple regression analysis. The results are shown in Table 5-3. Multi-collinearity does not seem to pose a problem here as VIF values for all variables were 2.4 or smaller (Cohen et al., 2003).

	Innovator resilience potential							
	Model 1				Model 2			
	unstandardized				unstandardized			
	Beta	coefficient B	SE	VIF	Beta	coefficient B	SE	VIF
Control variables								
Gender	-.15*	-.19*	(.10)	1.04	-.17**	-.23**	(.09)	1.05
Age	-.08	-.01	(.01)	1.61	-.05	-.00	(.01)	1.62
Organizational tenure	.23*	.02*	(.01)	1.64	.21*	.02*	(.01)	1.65
Feedback	.28**	.11**	(.03)	1.01	-.03	-.01	(.04)	2.25
Main variables								
Family&friend support					.01	.00	(.02)	1.05
Climate of psychological safety					.35**	.23**	(.05)	1.21
Emotional leader support					.24*	.11*	(.04)	2.39
R ²	.15				.30			
R ² corrected	.13				.27			
ΔR ²					.15**			
F	7.64**				10.37**			

N = 180; **p < .01; *p < .05 (two-tailed); standardized regression coefficients; (SE)

Table 5-3: *Results of regression analyses.*

Hypothesis 1 proposes a positive relationship between support from family and friends and IRP, which we have to reject as the results of the regression do not show a significant relationship between these variables. Results of the multiple regression analysis, however,

support Hypotheses 2 and 3 as a climate of psychological safety and emotional leader support both significantly and positively relate to IRP.

An interesting finding resulting from the empirical analyses shows that the control variable leader feedback has a strong positive and significant correlation with IRP (see Table 5-2). Yet, the relationship between leader feedback and IRP no longer remain significant once we enter the three social support variables into the regression analysis in the second model. To probe for a potential indirect effect behind this observation, we performed a post-hoc mediation analysis.

5.4.1 Post-hoc mediation analysis

The relationship between feedback and IRP has changed due to the inclusion of the other independent variables. In uncovering the reason for this change, we suspected a mediation effect, in that another variable in our full model transmitted the influence of feedback on IRP. The bivariate correlations show a significant positive relationship between emotional leader support and feedback. Therefore, we assumed emotional leader support as the most likely mediator variable and tested for a possible indirect effect of feedback on IRP using the four steps recommended by Baron and Kenny (1986) with the results appearing in Table 5-4. Fulfilling the criteria of step 1, feedback is significantly related to IRP (see model 2). In step 2, the independent variable (feedback) must significantly relate to the mediator variable (emotional support), which model 1 shows. Step 3 checks whether the mediator variable emotional leader support still significantly relates to the dependent variable IRP when controlling for the independent variable feedback. Model 3 shows that this is indeed the case here. Finally, after performing step 4, we see that feedback is fully mediated by emotional leader support as the relationship between feedback and IRP is no longer significant when controlling for emotional leader support (see model 3). Complementing these mediation analyses, we further performed a Sobel test to probe whether the identified

indirect effect is also statistically significant. Computing the Sobel test yielded a significant indirect effect of constructive feedback on IRP via emotional leader support ($p < .01$).

	Emotional Leader Support				IRP				IRP			
	Model 1				Model 2				Model 3			
	Beta	un- standardized coefficient B	SE	VIF	Beta	un- standardized coefficient B	SE	VIF	Beta	un- standardized coefficient B	SE	VIF
Control variables												
Gender	.05	.15	(.15)	1.04	-.15*	-.19*	(.09)	1.04	-.16*	-.21	(.09)	1.05
Age	-.07	-.01	(.01)	1.61	-.08	-.01	(.01)	1.61	-.06	-.00	(.01)	1.62
Organizational tenure	-.03	-.01	(.01)	1.64	.23*	.02*	(.01)	1.64	.24**	.02**	(.01)	1.64
Main variables												
Feedback	.74**	.64**	(.04)	1.01	.28**	.11**	(.03)	1.01	.04	.01	(.04)	2.22
Emotional leader support									.33**	.15**	(.05)	2.24
R ²	.55				.15				.20			
R ² corrected	.54				.13				.18			
F	54.10**				7.64**				8.57**			

N = 180; ** $p < .01$; * $p < .05$ (two-tailed); standadized regression coefficients; (SE)

Table 5-4: *Results of mediation analyses.*

5.4.2 Common source bias

As the data were collected from a single respondent, we checked for a possible common source bias that might affect the results (Podsakoff et al., 2003; Simon et al., 2000). Following procedures recommended by Podsakoff et al. (2003), we conducted Harman's one-factor test. In this test, no single or general factor emerged, which reduces the likelihood of an undetected common source bias (Podsakoff et al., 2003). We further applied the technique recommended by Lindell and Whitney (2001) to test for a potential common source bias. To do so, we used the big five variable "agreeableness" as a marker variable, which is not theoretically relevant to the individual outcome variable in our model (Lindell & Whitney, 2001). The marker item representing agreeableness "I see myself as critical and quarrelsome" is part of the brief big five personality traits measure developed by Gosling et al. (2003). Non-significant and low correlation of this variable with the focal variable in our model (.06 for IRP) lends further confidence to our assumption of a negligible presence of common method bias in our data (Podsakoff et al., 2003).

5.5 Discussion

This study investigated the relationships between specific sources of support during and after an innovation project termination and project members' IRP. We found that specific sources of support indeed influence IRP. As such, a climate of psychological safety and emotional leader support significantly and positively relates to IRP. In addition, emotional leader support fully mediates the relationship between leader feedback and IRP. In contrast, we did not find social support from family and friends related to IRP as the relationship between these variables was non-significant.

5.5.1 Theoretical implications

Research on the human side of innovation project terminations is still in the beginning stages. The few early studies in this context have hardly focused on external factors (e.g., characteristics of the termination) and their influence on affected individuals (e.g., Shepherd & Cardon, 2009; Shepherd & Kuratko, 2009; Shepherd et al., 2011). This study explicitly focuses on such external factors and, specifically, their influence on IRP. The results show that specific characteristics of the termination such as aspects of social support during and after the termination of an innovation project indeed strongly affect IRP. The discovered relationships affirm IRP as an adequate outcome variable for use after an innovation project termination has occurred. This enables studying factors influencing IRP, which complements prior research on resilience in the organizational area. These prior studies regarded resilience as an influencing factor (e.g., Grzeda & Prince, 1997; Rush et al., 1995; Wanberg & Banas, 2000; Youssef & Luthans, 2007) that affects coping with a setback and the outcomes of the setback situation. Our study complements their research as we show that termination characteristics have an influence on IRP. Hence, the relationships uncovered expand the literature on resilience in the organizational context (Noe et al., 1990; Powley, 2009; Youssef & Luthans, 2007) in that the relationship is reciprocal. This means that it is an ongoing

process in which IRP influences the setback situation and the situational characteristics of the setback again can influence IRP. Therefore, using IRP as an outcome variable affected by the characteristics of an innovation project termination enriches research on resilience in the innovation and organizational context, as it was hardly possible previously to examine the influence of an innovation project termination's characteristics on resilience given the need for an adequate outcome measure (Harland et al., 2005).

Regarding the role of social support during and after an innovation project termination, a climate of psychological safety and emotional leader support strongly and significantly relate to IRP in this study. The inclusion of the control variable feedback showed that this informational leader support does not directly relate to IRP, but it does strongly relate to emotional leader support. Leader emotional support fully mediates the relationship between feedback and IRP. On the one hand the findings of the study thus suggest that project members mainly needed emotional support during and after an innovation project termination – such as the perception of empathy, trust, love, and caring (House, 1981) – as emotional support was strongly related to IRP. On the other hand, the findings suggest that feedback is important for IRP in the way that it strongly relates to project members' perceptions of leader emotional support. One explanation might be that by providing feedback the leader may show empathy and willingness to care about the project members, which induces positive emotions, while the mere provision of information about the performance per se did not appear specifically helpful in this situation. Feedback appears important therefore despite its non-significant direct relationship with IRP. Taken together these findings suggest that the leader should always engage in both types of supportive behaviors (Amabile et al., 2004) to provide the best possible help and enhance positive emotions.

When taking a closer look at the influencing factors tested in this study, it becomes evident that only work-related social support relate to IRP, whereas non-work-related support

from family and friends has no relationship with IRP. Building on prior research on general resilience and on the broaden-and-build theory (Fredrickson, 2001; Fredrickson et al., 2003), we deliberately considered sources from work as well as from non-work contexts as we expected that both influence IRP as they all possibly provide a feeling of safety and foster positive emotions. Despite the evidence that social support from family and friends help during a setback (e.g., King et al., 1993; La Rocco et al., 1980; Leavy, 1983) and the expectation that it provides positive emotions, the relationship with IRP surprisingly appears to be non-significant. One reason might be that family and friends, are not acquainted with the work setting, do not fully understand the problems and thus cannot provide the right kind of support (House, 1981). Their mere provision of positive emotions might not be enough. Furthermore, the feeling of safety induced by family and friends might not be as important for IRP of project members. The results from this research indicate that feeling safe in the workplace may be more significant in order to strongly relate to the work context variable IRP. It seems important that a beneficial source of support can help in the eyes of the affected individual to provide effective social support and a feeling of safety in the workplace. As such, it is likely that support provided helps most when coming from the same source where the setback occurred (Barling et al., 1988; La Rocco et al., 1980) or a source that corresponds to the stressor (Beehr, 1985). For example, in a study examining the effect of work stress on health, family support had no effect on health, and for individuals low in hardiness even a negative effect occurred (Kobasa & Puccetti, 1983). One explanation holds that for context-specific resilience constructs (Masten, 2001), like IRP, the social support should also be context specific as only this source of support may actually understand the problem. The findings of the current study therefore support the argument that the source of support should be the same or correspond to the source of the stressor (Barling et al., 1988; Beehr, 1985; La

Rocco et al., 1980), as in contrast to nonwork-related support of family and friends, support from work-related sources has a significant relationship with IRP.

This finding further also bears implications for the broaden-and-build theory, as the results of this study uncover an important contingency when regarding the application of the theory. We expect that positive emotions should originate from the same domain in which a setback occurred so as to positively influence context-specific resilience like IRP. Such a contingency aspect has not been acknowledged so far in the rising numbers of studies investigating the broaden-and-build theory, probably because these studies usually regarded only positive emotions induced by sources corresponding to the source of the stressor (e.g., Philippe, Vallerand, Houliort, Lavigne, & Donahue, 2010). In general the findings evoke another important theoretical implication for the broaden-and-build theory such as the applicability to the current context of innovation project terminations. Previous research found that positive emotions relate only to general resilience (Tugade & Fredrickson, 2004; Tugade et al., 2004). The relationship to context-specific resilience constructs has not been regarded hitherto. The finding that emotional leader support and a climate of psychological safety strongly relate to IRP underline the importance of strengthened positive emotions for IRP and as such for context-specific resilience. Thus, the broaden-and-build theory also applies to context specific resilience constructs like IRP and not only to general resilience. Along these lines research on innovation project terminations is also enriched as the findings of this study further emphasize how important human aspects are during such a setback, especially positive emotions.

5.5.2 Practical implications

Theoretically the findings show that work-related social support during and after an innovation project termination positively associates with project members' IRP and thus with their potential for future innovative functioning and coping. Translated into practical implications, the findings indicate that it is possible to support project members during and after the setback, especially at the workplace. This provides companies with more assurance that taking action during and after a termination can succeed toward reducing potential "human cost" in innovation project terminations.

First, to provide effective leader support, leaders must acknowledge that project members indeed need their support. Even though this may seem self-evident, leaders do not always provide support. One reason why the right kind of support from leaders is not always given might be that leaders do not know how to be supportive or how to show their support. It is possible and sometimes necessary to train supportive behavior as it is often much more than just being nice (House 1981). Showing that the leader is concerned for the project members' welfare (Amabile et al., 2004), realizes what the project member is going through, and gives the project members the feeling that they can count on the leader, is in a first step very helpful emotional support. Being accessible and visible, giving project members time to realize the implications of the termination and to digest the shock as well as giving project members the possibility to show and express their emotions also appears supportive (Peterson, 2001). Sometimes such support can be given in informal meetings such as an informal lunch break; as shown by McDonald and Westphal (2011), this also fosters the experience of positive emotions. Furthermore, with regard to informational support, it might help if leaders know what kind of feedback can be perceived as constructive. Constructive feedback should be specific (Baron, 1988), timely, and provide a workable plan (Van Dierendonck et al., 2004).

Besides the importance of leader support, we also found a climate of psychological safety to strongly relate to IRP. Therefore it is important to foster and enable such a climate, which usually takes time and can hardly be done ad hoc. The benefits are worth the effort and should convince managers to acknowledge the importance of such a climate. Several possibilities exist as to fostering such a climate. For one, it “can be role modeled and actively encouraged and supported by management” (Shalley & Gilson, 2004: 45). Therefore managers should set a good example by being open to questions and suggestions, by encouraging risk taking and by stressing the importance of feedback (Edmondson, Bohmer, & Pisano, 2001). Awards for “successful failures” offer a further possibility for the valuation of taking risk, even if this risk taking resulted in negative outcomes. Such organizational routines, in which individuals learn that failure is accepted and expected, will encourage project members and other members of the organization to engage in new risky projects (Lee, Edmondson, Thomke, & Worline, 2004).

Overall, the findings of this study show that it is indeed possible to support project members after the termination of an innovation project, and organizational sources can have an especially strong impact. Therefore, organizations and organizational members must acknowledge their influence on affected individuals and thus, their responsibility.

5.6 Limitations and outlook

In addition to the findings of this study, we will point to a few limitations and suggestions for future research. One possible limitation results from the use of cross-sectional data, because only relationships between variables can be demonstrated and causalities cannot be fully established. Therefore, a longitudinal design with multiple informants would enrich our understanding as this design allows uncovering causalities. Second, we expect that besides social support, other characteristics of the innovation project termination may also have an impact on IRP. Possible influential characteristics that might be tested include the

type and duration of the terminated innovation project, the communication used, and certain personality characteristics of the affected project members. Furthermore, it would be interesting to conduct a team-level analysis to find out how different team members experience the termination of the same innovation project. Are, for example, specific characteristics of the termination experienced systematically differently? Holding some characteristics and factors constant might bring additional insights into the relationships. As research on the influence of innovation project terminations on affected project members begin to emerge (Moenkemeyer et al., 2012; Shepherd et al., 2011; Välikangas et al., 2009), these further aspects appear worthwhile investigation subjects of future studies. The current findings offer a further step in understanding the human side of innovation project terminations and how to best support project members. Uncovering the importance of social support from corporate sources encourages managers to be helpful during and after an innovation project termination to strengthen IRP.

6 Concluding discussion

6.1 Summary of the findings

The findings of this dissertation reveal innovator resilience (IR) as a suitable framework within which to investigate the human side of innovation project terminations. Moreover, IRP was developed as the apposite resilience variable that can be used before and after the termination of an innovation project has occurred to study the relationships involved. Chapter 3 discussed this variable embedded in the process view of IR theoretically and empirically in a qualitative field study. IRP consists of six constituting components found important for future innovative functioning as well as for coping with future setbacks and they are malleable in nature. The findings of the qualitative case study support and underline the theoretical considerations. As such the case study found the IRP of project members engaged in the terminated innovation project 'FI' affected by the termination characteristics, and it found their IRP in turn important for future innovative functioning and coping with future setbacks.

The quantitative analyses further show that IRP is influenced by the characteristics of the innovation project termination and that IRP has importance for future innovative functioning in that it relates to project commitment. This latter relationship rests on whether an individual experienced an innovation project termination earlier. The positive relationship of IRP and project commitment is thus stronger for innovators who have experienced an innovation project termination than for innovators who have not experienced such a termination. Furthermore, this dissertation identified social support as an important protective factor. Social support from the organization and emotional support from the leader strongly relate to IRP. Leader feedback strongly relates to emotional leader support. A quite unexpected finding was that the support from family and friends had no effect on IRP.

Hypothesis 1 in Chapter 4 proposed that family and friends can lessen an individual’s distress (Cohen & Wills, 1985) and would thus be able to help project members and their IRP in this regard. Yet, the findings of the quantitative study support the assumption introduced by certain resilience researchers that the source of support should be the same or correspond to the source of the stressor (Barling et al., 1988; Beehr, 1985; La Rocco et al., 1980).

Table 6-1 summarizes the findings of the quantitative empirical study of this doctoral thesis and lists all hypotheses tested and the results.

Hypothesis	Result
Chapter 4	
<i>IRP positively relates to project commitment.</i>	✓
<i>The positive relationship between innovators’ IRP and project commitment is moderated by the experience of an innovation project termination, in that this relationship is stronger after having experienced an innovation project termination.</i>	✓
Chapter 5	
<i>Social support from family and friends during and after an innovation project termination positively relates to IRP.</i>	✗
<i>Support from the organizational level in from of a climate for psychological safety during and after an innovation project termination positively relate to IRP.</i>	✓
<i>Emotional leader support during and after an innovation project termination positively relates to IRP.</i>	✓
<i>Feedback from the leader is fully mediated by emotional leader support.</i>	✓

Table 6-1: Summary of hypotheses tested in the doctoral thesis.

6.2 Theoretical implications

This doctoral thesis strives to enrich several research streams including research on the human side of organizational setbacks, innovation project terminations, resilience as well as an enhancement of the broaden-and-build theory and the social cognitive theory. The next chapter will discuss how these research streams are influenced and will thus show how this doctoral thesis contributes to an advancement of research.

6.2.1 Innovator resilience – the framework

This study aims to uncover the human side of innovation project terminations and to shed light on the processes involved. Despite the findings that innovation project terminations are ubiquitous (Corbett et al., 2007; Shepherd et al., 2009a; Shepherd et al., 2011) and that they can be harmful for project members (Välikangas et al., 2009), research thereof has been scarce (Välikangas et al., 2009). Therefore, this doctoral thesis set out to answer remaining questions such as how an innovation project termination affects project members and what can be done to support the individuals involved. Especially in regard to future innovative activities, this seems important as the project members who have experienced the termination of an innovation project are often the ones to execute subsequent innovative activities and projects. Consequently, it is of special interest to find a way to uncover how those project members retain their innovative functioning and fully engage in subsequent innovation projects. These questions called for a resilience framework that enables studying the processes involved, which this doctoral thesis developed. This resilience framework is called innovator resilience (IR) and represents the entire resilience process. This process shows that: IRP influences individuals' innovative functioning and coping with possible setbacks, and the setback (e.g., innovation project termination) in turn influences IRP which then influences the

innovative functioning of innovators and their coping with future setbacks. This ongoing cycle can be seen as the resilience process or the framework named IR.

The development of the IR framework enlarges research on resilience, on organizational setbacks, and on innovation project terminations. Regarding the latter research stream, the IR framework was developed in a first step to examine the human side of innovation project terminations as this aspect has seen scarce research to date (Välikangas et al., 2009). The few studies looking at the human side of innovation project terminations so far (e.g., Shepherd & Cardon, 2009; Shepherd et al., 2011; Välikangas et al., 2009) focus on specific aspects. Shepherd and colleagues initial research focus on single outcomes like individual learning and affective organizational commitment (Shepherd et al., 2011), which are indeed important outcomes. Nonetheless, they do not deploy a framework that allows considering a broader context. Therefore, this dissertation lends itself to enriching the research on innovation project terminations as a framework is now available that enables studying the human side of such terminations.

Furthermore, this dissertation enriches research on organizational setbacks. Ample research regarding human aspects of other organizational setbacks such as layoffs and change (e.g., Amabile & Conti, 1999; Armstrong-Stassen, 2004; Herold et al., 2007) failed to develop a framework that allowed investigating the human side of a setback thoroughly. The resilience concept of IR, which takes recent findings in resilience research into account, depicts a process perspective, and includes an integrated measurable resilience variable (IRP), can be adapted to other organizational setbacks as well. Using such a framework enables studying a variety of processes involved in an organizational setback; the framework and the resilience construct (I)RP need to be adjusted to each specific context. Defined as the potential for future innovative functioning and future coping IRP targets the innovation context. When applying this framework to other setbacks, future functioning needs to be defined for each

setback separately. Furthermore, IRP needs to be adjusted to each specific context to represent the psychological factors that build the potential for future functioning and coping at the specific context. Figure 6-1 shows the basic resilience framework that applies to the multitude of organizational setbacks.

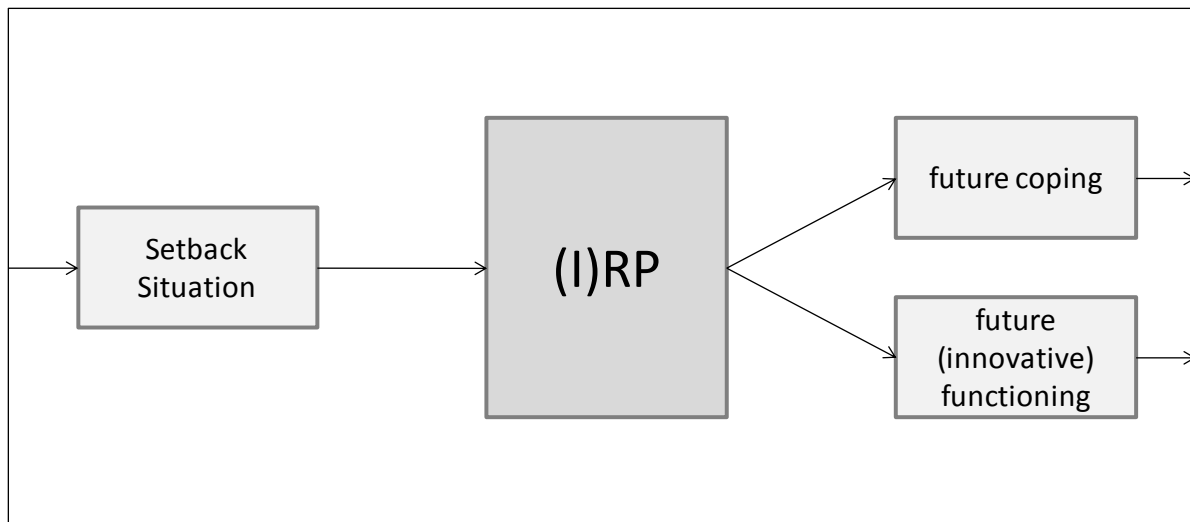


Figure 6-1: *The (innovator) resilience framework adapted from Moenkemeyer et al. (2012).*

This basic framework (I)R enlarges existing theory regarding organizational setbacks further, as the framework is not limited to studying the influence of an organizational setback on single aspects like creativity (e.g., Amabile & Conti, 1999) or affective organizational commitment (e.g., Shepherd et al., 2011) as previous studies did. Rather, the framework builds the basis for studying the influence of an array of aspects; for example, one could study the relationship of (I)RP with other outcome variables such as health, possibly defined as future (innovative) functioning. In addition, the research has a multitude of possible influencing factors to look at, such as individual status and the occurrence of multiple setbacks.

Furthermore, this dissertation also enriches research on resilience by the development of the framework. Developing the context specific resilience framework IR makes it possible

to combine the two major research streams of resilience (Luthar et al., 2000; Richardson, 2002), the concept of trait resilience (e.g., Block & Kremen, 1996), and the process perspective of resilience (e.g., Sutcliffe & Vogus, 2003). Therefore IR represents the process perspective of resilience, whereas IRP includes aspects of trait resilience. As such, IR represents the entire resilience process (the framework), and IRP represents the construct that can be measured before and after an innovation project termination occurs within this framework. In developing IRP, resilience qualities were incorporated that were used as resilience traits in previous research (e.g., Grzeda & Prince, 1997; Wanberg & Banas, 2000). This was possible as the facets included in IRP are malleable and can thus also be used as an outcome variable, even though they were hitherto used in trait resilience. Regarding the resilience process, the resilience concept for the organizational context proposed by Sutcliffe and Vogus (2003) serves as the process-oriented basis. Especially in the organizational resilience research, these two research streams (trait and process resilience) were mainly regarded separately and not combined, even though some researchers acknowledge both aspects (e.g., Luthans et al., 2007b; Sutcliffe & Vogus, 2003). This is surprising as they complement each other well and both research streams could close the others' research gap. In the organizational context, the existing (trait-like) measures (e.g., Grzeda & Prince, 1997; Wanberg & Banas, 2000) so far were hardly eligible to be used as outcome variables that are influenced by a setback (Harland et al., 2005), and the process perspective of resilience in the organizational context was mentioned but not operationalized (e.g., Sutcliffe & Vogus, 2003). The combined framework developed in this dissertation, enables measuring the resilience potential at any point in the process and studying the relationships involved. The combination of both resilience approaches helps to close existing gaps. Therefore, this dissertation enlarges research on resilience as it is possible to combine those intertwined resilience concepts in one single resilience framework.

6.2.2 Innovator resilience potential – the resilience construct

The crucial point in the resilience framework is the resilience construct. Only when a measurable resilience variable is available does it become possible to analyze the processes involved. In the innovation context, IR represents the entire process and IRP the construct that can be measured before and after an innovation project termination. The development of IRP builds the basis for investigating how an innovation project termination influences the project members. However, IRP does not determine if someone *is* resilient, rather it shows if someone has the potential to positively function and cope with future setbacks in the innovation context. Thus, IRP shows that individuals have the psychological factors that contribute to and build the basis for future innovative functioning and for coping with future setbacks. This is crucial as it is pertinent to determine if individuals have the potential to function again in an innovation context and thus, for example, to commit to a subsequent innovation project. Such commitment is essential for the success of an innovation (Amabile, 2000; Ernst, 2002; Hoegl et al., 2004; Shepherd et al., 2009a). Constructing IRP in such a way enables measuring it at any point in the resilience process, building on the fact that IRP is meaningful in itself no matter if measured before or after an innovation project termination. Previous measures on trait resilience in the organizational context limited the measurement of resilience to before the setback occurred (e.g., Grzeda & Prince, 1997; Wanberg & Banas, 2000). It was hardly possible to measure the influence of a setback's characteristics on resilience (Harland et al., 2005). Additionally, we can even measure IRP several times during the process and even after subsequent terminations. This allows comparing changes in IRP, which permits determining if someone has positively adapted after a setback and is resilient. Therefore, to determine if an individual is resilient, IRP needs to be at the same level or higher after the termination occurred than before the termination (Bonanno, 2004). These findings enlarge resilience research by introducing the new context-specific resilience

construct IRP, which allows measuring the resilience potential at any point while providing meaningful information in itself. It further builds the basis to analyze if someone has positively adapted and is resilient when studied using a longitudinal design.

Furthermore, research on innovation project terminations is enriched as the development of the context specific resilience construct, IRP, provides researchers with a new and needed measure to analyze the influence of such a setback on the individuals involved (Harland et al., 2005) in the innovation context. Besides the development of the IR framework, this research expansion was necessary to enable examining the human side of innovation project terminations, which studies tell us is important as failure is inherent in this context and happens frequently (Corbett et al., 2007; Shepherd et al., 2009a; Shepherd et al., 2011). The new construct, IRP, now enables studying the processes involved and allows comparing the results of different projects.

To be able to correctly use IRP and to fulfill the requirements posited by resilience researchers, it became necessary to properly deduce and justify the construct (Luthar et al., 2000). Therefore I defined, operationalized, and validated IRP based on theory as well through a quantitative and a qualitative study. At first I defined IRP in the innovation context as this has never been done before. Further, IRP had to be operationalized as no operationalization of resilience existed that could be used within and across fields (Sutcliffe & Vogus, 2003), nor did one exist that fit the definition developed. Luthans and colleagues, for example, acknowledge the malleability (state-like nature) of resilience in the organizational context but measure trait-like resilience (e.g., Youssef & Luthans, 2007). Therefore, IRP needed to be developed and operationalized, and IRP was constructed as a second order variable consisting of six facets. Three items of existing measures were used to determine each of the six constituting facets. Chapter 4 then tested IRP, using common validity and reliability measures. In addition to this common practice, it was possible to support the

adequacy of IRP by analyzing the relationships of IRP with other factors. To that end, it was at first necessary to test the relationship of IRP with future innovative functioning, to show the importance of IRP in the innovation context. Subsequently, possible factors influencing IRP show the malleability of the variable. I used project commitment to study the first objective, the relationship of IRP with innovative functioning. Project commitment represents an important aspect of positive functioning in the innovation context, and several studies found it the key to the success of an innovation (Amabile, 2000; Ernst, 2002; Hoegl et al., 2004; Shepherd et al., 2009a). By showing the positive relationship of IRP with project commitment, it became possible to show the appropriateness of using IRP in innovation research. In fact, IRP can explain a good amount of variance in project commitment, especially after the experience of an innovation project termination; IRP explains more than one third of the variance of project commitment. This shows the importance of the relationship and as such the importance of IRP for innovative endeavors, especially after the experience of an innovation project termination. The strong relationship between IRP and subsequent project commitment has nomologically validated the IRP construct, as it “makes accurate predictions of other concepts in a theoretically based model” (Hair et al., 2010). Furthermore, the findings of Chapter 5, which analyze the influence of social support, help maintain the assumption that IRP is malleable. Two sources of support had a strong and significant relationship with IRP. The malleability aspect of IRP is essential to using IRP at any point and to study the influence of setbacks on IRP. Overall, major concerns about resilience and its development have been taken into account. As such this study “encountered ambiguities concerning definitions and terminology, ... variations in interdomain functioning, ... instability of the construct and theoretical concerns” (Luthar et al., 2000: 343). Further, the development of the measurable resilience construct IRP was both conceptually and empirically justified (Luthar et al., 2000) and thus support the appropriateness of the

resilience construct developed. Research on resilience and innovation project terminations is enriched as a result.

6.2.3 Interrelations of innovator resilience potential and other factors

The preceding discussion shows that the relationships uncovered between IRP and other factors helped validate IRP. Importantly, the identified relationships also have implications for the related factors (commitment and social support) themselves. Additionally, the identified relationships are important for understanding the influence of an innovation project termination on project members, which this dissertation initially examined. Therefore, these identified relationships build the basis for giving recommendations to project members, leaders, and managers on how to handle such a setback. Furthermore, the interplay between IRP and social support, as well as project commitment embedded in the IR framework, enhances the two basic theories used in this study, social cognitive theory and broaden-and-build theory.

Research on project commitment is enlarged on the basis of the strong relationship with IRP. Chapter 4 identified IRP as a further influencing factor on project commitment and detected contingencies thereof (a previous innovation project termination). So far only a few factors, such as team work (Hoegl et al., 2004), have been found to influence project commitment. Identifying more influencing factors appears valuable given that project commitment of project leaders and members represent a success factor for innovation projects (Amabile, 2000; Ernst, 2002; Hoegl et al., 2004; Shepherd et al., 2009a). Nonetheless, research on this has only considered the commitment for projects preceding a possible termination. The literature has neglected the influence of an innovation project termination on such project commitment, including important contingencies. Yet, based on the strong relationship found in the study, we can expect that in an ongoing process it is important to

keep or strengthen project commitment after an innovation project termination. This is especially relevant, as it is likely that these innovators will be involved in subsequent innovation projects for which they will need to commit. Furthermore, contingencies caused by situational factors have not been regarded in research on commitment (Carr et al., 2008; Chen & Indartono, 2011). This opens the way to study also the influence of such contingencies in commitment research, which would enrich research on commitment in general as well.

The second relationship that I studied in this doctoral thesis concerns protective factors, more precisely social support and its relation to IRP. The findings of this dissertation enrich both research streams, resilience and social support. It identified specific sources of support strongly related to IRP, which supports prior findings stating that social support influences resilience (Luthans et al., 2006b; Masten, 2001). However, research had neither studied nor confirmed this relationship in the organizational context or in the more specific innovation context. Thus, the relationship between resilience and social support is now identified in an additional field and the concepts of resilience and social support are more broadly applicable.

One interesting finding arises when regarding both relationships of IRP (with social support and project commitment), namely the significant relationships identified are exclusively work-related. The sources of support that I found strongly and significantly related to IRP are work-related, whereas the non-significant relationship originates in the private context (support from family and friends). Furthermore, project commitment that positively and significantly relates to IRP is also a work-related construct. Thus, the findings of the quantitative study support the premise that IRP, as a context-specific resilience construct, probably mainly relates to variables from the same context – the work context. This agrees with research that suggests that the source of support should be the same or correspond to the source of the stressor (Barling et al., 1988; Beehr, 1985; La Rocco et al., 1980).

Nonetheless, this finding is enlarged as project commitment, which is not a source of support, is a further work-related construct that also relates to IRP. Hence, the finding concerning the consistency of context is not limited to social support and is instead expected to apply to other variables, such as project commitment, as well.

Furthermore, the two basic theories I used in this dissertation not only serve as a basis but also are enlarged by the findings. First, the broaden-and-build theory (Fredrickson, 2001) was taken as a basis to study the relationship of IRP with social support. The current study can support and enrich this theory as its applicability is validated in a further – innovation – context. The broaden-and-build theory, a rather young theory, especially profits from this advancement. Additionally, the uncovered contingency that support from the private context is non-significant also hints at the assumption that, concerning the broaden-and-build theory, the positive emotions provided by social support should result from the same domain in which the setback occurs to relate to IRP. This contingency might apply to other areas related to the broaden-and-build theory as well, which leads to the supposition that this contingency might be a general theme in this theory.

Further, the social cognitive theory (Bandura, 1986) served as the basis in the development of the process perspective of IR and the measurable construct, IRP. Showing that the social cognitive theory also applies in the innovation context enriches and supports the theory as we have now seen that theory appropriately applied in another context. Given that the resilience framework developed in this study also applies in other organizational setbacks, the social cognitive theory is theoretically expected to suit research in the broader organizational context as well. All in all, the IR framework and the IRP construct based on the interplay of personal, behavioral, and environmental factors (Moenkemeyer et al., 2012) may further help to explain why people react differently to different setbacks. Each situation has a different interplay of these three factors and can lead to different outcomes. In regard to

findings from the broaden-and-build theory, an upward spiral induced inter alia by positive emotions can be expected (Tugade et al., 2004). Therefore, we would expect an individual with high IRP to better cope with future setbacks and to show future innovative functioning, which both might positively influence IRP again. Such an upward spiral similar to the one proposed by the broaden-and-build theory can as such be expected in regard to IRP based on the findings of the social cognitive theory.

Overall, this doctoral thesis combines research of various interlinked fields that have hardly been considered in combination previously. To develop the framework, research on organizational setbacks, innovation, innovation project terminations, and resilience are taken together. Shedding light on the human side of innovation project terminations, by developing a suitable framework, adds to the literature by integrating and reconciling findings from various research fields. As such and based on the preceding discussion, the research of each field is enlarged.

6.3 Practical implications

6.3.1 Five steps leading to innovator resilience potential

Previous studies have pointed to the ubiquitous risk of termination of unsuccessful innovation projects (Corbett et al., 2007; Shepherd et al., 2009a; Shepherd et al., 2011), and chances of this increase with radical innovations (Bessant, 2008). Such terminations or setback experiences are expected to be detrimental for project members (Välíkangas et al., 2009). Regarding real-life experiences, most innovators can relate to this and might have suffered from a termination themselves or have seen someone experience this. The theoretical results of this doctoral thesis reveal an interesting finding, namely that it is not the innovation project termination per se that negatively influences project members but the characteristics of its unfolding. The termination experience was not found to be related to IRP, whereas the

characteristics of the innovation project termination (e.g., social support) strongly and significantly relate to IRP. Therefore, it is of vital interest for practitioners to organize and handle an innovation project termination in a way that positively influences the project members. This is crucial as these individuals are the most important source for the success of an innovation (Amabile et al., 2004; Shepherd et al., 2011; Verona, 1999).

Thus, the question remains: how can we best support innovators practically during and after an innovation project termination to achieve high IRP? Leaders have been identified in particular as being very helpful during and after setbacks (Amabile et al., 2004; Harland et al., 2005). Therefore this dissertation presents five steps leading innovators to IRP, which might provide leaders with a workable guideline for leading innovators through the setback. Figure 6-2 illustrates the five steps to resilience, which will be explained in more detail later. Answers from open-ended questions of the questionnaire of the quantitative study sometimes appear for illustration.

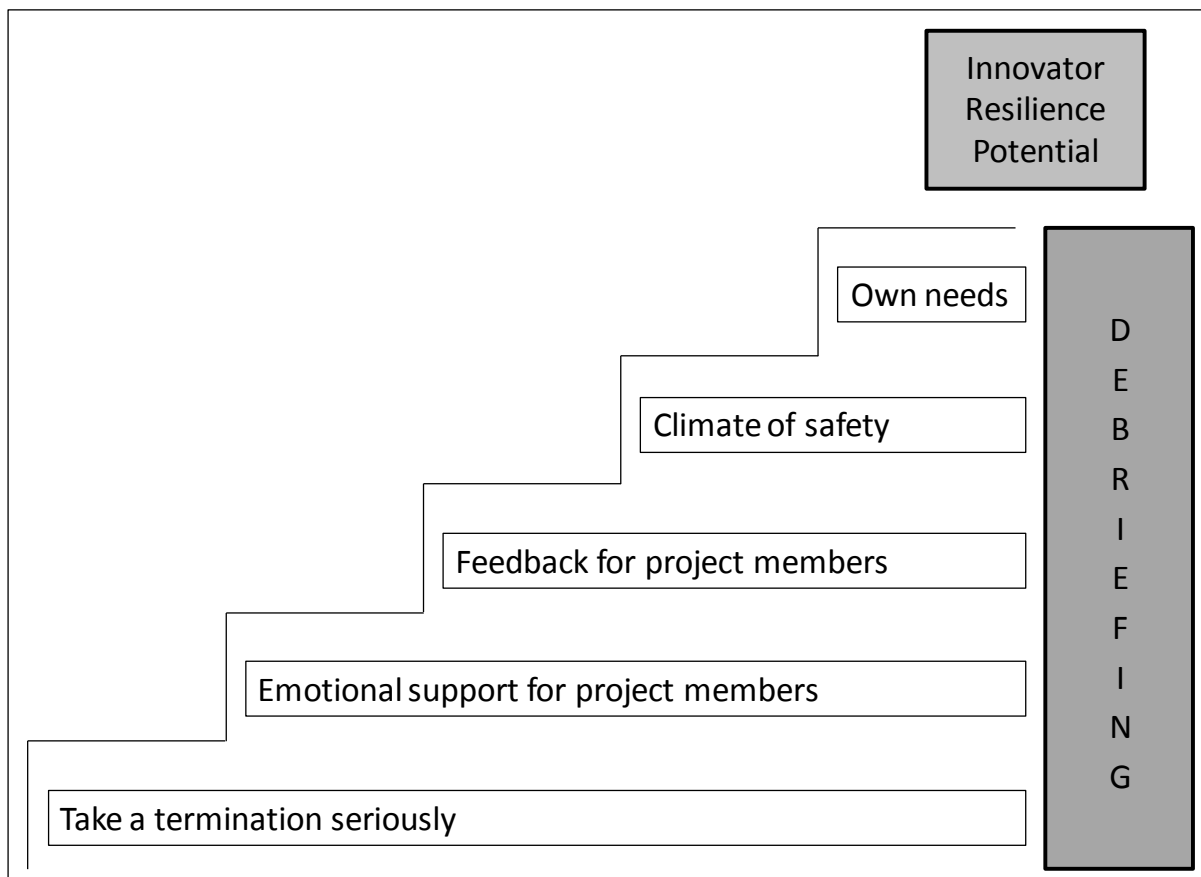


Figure 6-2: Five steps leading to innovator resilience potential.

6.3.1.1 Take an innovation project termination seriously

Practically and theoretically, studies have acknowledged the prevalence of innovation project terminations (Corbett et al., 2007; Shepherd et al., 2009a; Shepherd et al., 2011). Prior research has assumed that after having experienced such a termination, project members will function as before and has excluded the human consequences involved in innovation project terminations (e.g., De Reyck & Leus, 2008; Schmidt & Calantone, 1998). In recently conducted studies, researcher begun to consider the human side of innovation project terminations and have found a potentially harmful effect on project members (e.g., Shepherd et al., 2011; Välikangas et al., 2009). The outcomes of this dissertation mainly support this new, inaugural line of research, as this dissertation discovered that the characteristics of an innovation project termination strongly relate to project members' IRP. The fact that so little

research on this subject exists, points to its neglected status. Most probably it has been suppressed not only by researchers but also by project members, leaders, and managers. Therefore, importantly in a first step, leaders must take the effect of an innovation project termination and its specific characteristics seriously and acknowledge the potentially harmful effect of termination on project members. Acknowledging this is the crucial first step to support project members who experience an innovation project termination, and, hence, it is in fact the prerequisite of the following steps.

Significantly and worthy of note, the commitment to a subsequent innovation project relates to IRP of project members. Therefore, low commitment of project members might result from low or lowered IRP resulting from a previous termination. Open-ended questions revealed statements such as “I have less enthusiasm the next time,” or “My personal identification is limited.” Yet success requires project members’ and leaders’ commitment to the innovation project (Amabile, 2000; Ernst, 2002; Hoegl et al., 2004; Shepherd et al., 2009a). Thus, leaders should know that the handling of an innovation project termination might have consequences for future innovation projects, or, the success of an innovation might depend on the management of previous terminations and failures. Therefore, this first step in taking seriously the potential effect of the handling of an innovation project termination on the project members is important.

6.3.1.2 Acknowledge project members’ need for emotional support

Once having realized the potential impact of the characteristics of an innovation project termination on project members, leaders must acknowledge the possible needs of the affected individuals. Project members most often need emotional support from the leader during this difficult time (Amabile et al., 2004). They need a supportive leader who takes care of project members welfare (Amabile et al., 2004) and one who shows empathy (House, 1981). One interviewee, for example, revealed that “My leader’s support was decisive.” For

that it is necessary that the leader realizes what the project members go through and communicates this. Being visible and available for project members during this difficult time seems very important (Peterson, 2001). Giving project members the chance to show and express their emotions can help, too. Informal meetings like an informal lunch break might provide a possible setting (McDonald & Westphal, 2011).

Nonetheless, leaders must acknowledge every project member as an individual who needs slightly different emotional support. For this, the leader must have emotional intelligence – self-awareness, self-regulation, motivation, empathy, and social skills (Goleman, 1998, 2004). Furthermore, the complementing social intelligence of leaders, defined “as a set of interpersonal competencies built on specific neural circuits (and related endocrine systems) that inspire others to be effective” (Goleman & Boyatzis, 2008: 76), is especially helpful in crisis situations. Empathy, attunement, organizational awareness, influence, ability to develop others, inspiration, and teamwork are essential components of social intelligence and help followers, especially in times of crisis when shown by leaders (Goleman & Boyatzis, 2008). For that, employers should consider social and emotional intelligence when recruiting project leaders. Furthermore, leaders could be made aware of the importance of those aspects in trainings and workshops.

All in all, even leaders with high social and emotional intelligence may find it difficult to assess the right type and kind of emotional support. Therefore, it is always helpful when leaders provide the project members with a feeling of being valued and cared as it makes it more likely that project members will ask the leader for support or guidance (Harland et al., 2005).

6.3.1.3 Provide project members with feedback

Feedback provided by the leader also helps project members during and after the termination of an innovation project. Statements like “I would like to highlight my leader. He gave me feedback and appreciation” appeared in the open-ended questions. Feedback helps project members’ to assess their performance and to process the termination when they hear comments on their contribution to the project and information on the termination. The setback can enable the affected employees to evolve through the failure, grow stronger, and advance in the future (Corbett et al., 2007). An underlying mechanism is that feedback fosters a feeling of control, as it provides information about the relationship between behaviors and outcomes (Greenberger & Strasser, 1986). These control perceptions in turn are very important for individuals and their IRP. In other words, project members will get the feeling that they can influence the future and that the future will be positive, which can foster IRP and their potential for future innovative functioning as well as coping with future setbacks. Empirical backing for these assumptions can be found in the literature. For example, Amabile and colleagues identified constructive feedback as a leader behavior that enhances subordinate creativity (Amabile et al., 2004). It is even expected that creativity depends on actionable feedback (Amabile & Gryskiewicz, 1987). Furthermore, feedback was associated with an elevated level of subordinate well-being (Van Dierendonck et al., 2004), whereas a lack of feedback generates a decline in well-being and an increase in feelings of stress (Cartwright & Cooper, 1994).

Moreover, the question remains: what kind of feedback is perceived as helpful? Here, how the feedback is provided makes a difference (Kinicki, Prussia, Wu, & McKee-Ryan, 2004). For some leaders a training, which gives guidance on constructive ways to provide feedback, might be helpful. The current study shows that when the feedback is provided in an appropriate manner and is perceived as constructive, the leader was also perceived as

emotionally supportive. Constructive feedback that is specific (Baron, 1988), timely, and provides a workable plan (Van Dierendonck et al., 2004) is seen as beneficial. In this regard feedback should further show appreciation and give attention to the achievements and development of project members. Additionally, the qualitative case study showed that feedback helped the project members to learn from the setback. For that the feedback needed to be honest, enable elaboration on what had happened, and give information about a person's performance. Such feedback further helps to perceive the innovation project termination as fair, which was a common theme in the qualitative case study as well. Therefore, the provision of constructive feedback proves valuable in many possible aspects and should give leaders a tool in how to support participants during and after an innovation project termination.

6.3.1.4 Foster a climate of safety

A climate of safety that fosters "open and trustful interactions within the work environment" (Baer & Frese, 2003: 50) also helps after the termination of an innovation project. Managers are important role models for the establishment of such a climate (Shalley & Gilson, 2004); being open for questions and suggestions, encouraging risk taking, and stressing the importance of feedback (Edmondson et al., 2001) are important behaviors here. Further, organizational routines informing individuals that failure is commonplace strengthens individuals to engage in new and risky projects (Lee et al., 2004), which is essential for the success of subsequent innovation projects. A possible routine that fosters such a climate is an award for 'successful failures.' The company of Carl Zeiss, for example, awards a prize for 'successful failure' every year. This award rewards project terminations whose results can continue to be used or whose timely termination saves a lot of money (Buchenau, 2007). This prize, not seen as a consolation prize, is rather a highly prestigious award. The employees see it as a motivation to commit to new, even very risky projects (Buchenau, 2007). In general,

awarding interim achievements and not only the final outcomes or successful completion of projects is important. If not only the outcome (successfully completed projects) but also the achievements are rewarded, project members will see that their work has an impact and that it is not a waste of time even after an innovation project termination. An award and the official appraisal of accomplishments can foster self-efficacy, outcome expectancy, self-esteem, hope, optimism, and, especially, risk taking. Contingent rewards influence an individual's perception of control, but only when the outcome is attainable (Greenberger & Strasser, 1986: 167).

On the other hand, a reward system that punishes failure would be counterproductive (Sitkin, 1992). In line with this, the reporting structure and hierarchy of the organization can also have an influence on the perception of the climate (Shalley & Gilson, 2004). As such, a clear but not over-restrictive reporting system might support open and trustful interactions and constitute a climate of psychological safety (Baer & Frese, 2003). A climate of psychological safety can even enable a conflict, such as task disagreement, to be beneficial for team performance (Bradley, Postlethwaite, Klotz, Hamdani, & Brown, 2012). This underlines the value of such a climate in critical situations. A further helpful method to foster a climate of psychological safety is a post termination debriefing (PTD). Such a debriefing might include a review of the project goals, to what degree they were met, and feedback about reasons ascribed to a possible failure. Furthermore, in a debriefing, acknowledgement can be given to those project members who performed well and exerted notable efforts in the innovation project. A debriefing is also a possible platform to talk about feelings and emotions and provides a platform for emotional support (Deville et al., 2006). A debriefing may thus encourage a climate of psychological safety. Chapter 6.3.2 includes guidelines for a PTD.

6.3.1.5 *Be aware of your own support needs*

This last step to resilience is essential. Oftentimes leaders may find it difficult to provide the support needed because they, too, may suffer, especially when they have strong involvement in a project (e.g., project leaders). Involved leaders need to make sense out of the situation quickly and develop a future vision to deliver to their followers. Furthermore, sometimes the leaders are even responsible for the termination and as such “carry the personal responsibility for the termination” as one individual revealed in an open-ended answer. Nonetheless the qualitative case study showed that playing a role and pretending everything is fine does not work. It is not expected and unrealistic that leaders instantly have a new direction and can address every question immediately (Schweiger & Denisi, 1991), yet it is essential to explain why some questions cannot be answered, and even letting employees know when information is incomplete and state when it will be possible to give the missing information (DiFonzo & Bordia, 1998). Thus, until leaders develop a future vision, it is most authentic to explain the situation as honestly as possible and communicate what they know (Schweiger & Denisi, 1991). In this regard, leaders should mention that the future of the subordinates is of major concern and that “employees are never intentionally deceived” (Schweiger & Denisi, 1991: 111), even if no concrete statement can be given about future duties and functions. This will give followers the feeling that the leaders care about them and will prevent the leaders from playing an energy-sapping role.

On these grounds leaders need to take care of themselves and should actively seek support, because they benefit from social support as well (McGrath & Zell, 2009). The findings of this doctoral thesis support this as leaders were included in the sample. First, leaders benefit as well from the support provided by a climate of safety, which strongly relates to IRP. Second, they gain from the support provided by their own leaders. Unfortunately however, sometimes the leaders inhabit such high positions that they

themselves might not have a leader, or they have difficulties in trusting their leaders and/or colleagues. External coaches might provide a very valuable source of support especially for leaders (Sherman & Freas, 2004). They can, for example, provide objective feedback, which fosters the coached individual's growth (Sherman & Freas, 2004). Integrity, an important aspect for leader support (McGrath & Zell, 2009), can be expected from respected coaches. During difficult times such as an innovation project termination, it is therefore of vital interest to provide leaders with the possibility to turn to external coaches.

Overall, it is important to strengthen leaders, as they are an important part of how an innovation project termination is handled and how the project members are affected. Nonetheless, it is not easy for leaders to always show the desired behavior after such a setback. Therefore, honest, open, and authentic behavior will best support subordinates after an innovation project termination.

6.3.2 Guideline for a post termination debriefing

As noted above, one initiative, a debriefing, appears helpful in strengthening IRP after an innovation project termination. At a debriefing, feedback can be provided, reasons for the termination can be explained, an outlook into the future can be given, and social support can be provided (Devilley et al., 2006). It offers a method of communication and as such it may help project members to process the termination better. To put it in the words of Devilly et al. (2006: 336-337): "Most people, for example, first crave solid, reliable information following a traumatic event – questions such as 'What exactly happened? Who has been affected? How badly? What is being done? What will happen tomorrow?'" Therefore it is essential that a debriefing is timely, honest, and as personal as possible with a chance for interaction. One open-ended answered summarized the need and lack of exactly such a debriefing: "Feedback and recognition for what we have accomplished were missing. The findings were ignored.

The reason for the termination was known before the start of the project, but was ignored. A closure was missing. The team was instantly torn apart and used in other projects.”

In general, a post termination debriefing (PTD) is an important activity after an innovation project termination. Yet, it depends largely on the environment and the way it is conducted how efficient and successful it is, therefore it needs to be tailored to the specific circumstances (Devilley et al., 2006). For a PTD to be effective and successful, management support should to be given, the possibility for participants to ask questions must take place, and a trustworthy environment is necessary (Ellis, Mendel, & Nir, 2006). Furthermore the case study showed that the effectiveness of a PTD also depends on the attendees. Depending on the project, the senior management, the project leader, project members, and perhaps a neutral third party should attend. The following PTD guideline is based on findings of various types of debriefings, such as psychological debriefings (PD) (e.g., Devilly et al., 2006), after-event reviews (AER) (e.g., Ellis et al., 2006), and operational debriefings (OD) (e.g., Lunn, 2002).

PTDs always need to be adjusted to the individual circumstances (Devilley et al., 2006). Some general guidelines for PTDs, however, will illustrate steps toward an effective conduction. Five recommendations to include in a PTD follow:

1. Step one, define the purpose at the beginning of the PTD. Participants should have the chance to name the objectives they wish to address. That way they can participate in the process and regain a feeling of control. They should not see the debriefing as an intrusion or a waste of time; rather they should see it as an appreciation of their work and an opportunity and service for them. The debriefing should at least provide for credit recognition, defusing, and a learning experience (Lunn, 2002).

2. The second step: provide and gather information. Management and/or the project leader should provide information and facts about the project and the termination. The

information should also include the future strategy and general information about the future including issues like job security. In addition, the participants should get the chance to add information and to ask questions. Defusing can be achieved here.

3. Third, on the basis of the given information, an analysis of the project and the termination should take place. Discuss and analyze, for example, questions about what went wrong and what can be done. In addition, feedback should be integrated here. This should show appreciation, give credit, and pave the way for a learning experience. “Reminding failed learners of their successful actions in addition to their failures probably does no harm in motivational terms and may contribute to learning by opening a window of opportunity to elaborate their successful actions” (Ellis et al., 2006: 677-678).

Overall, issues two and three, providing and analyzing information, serve to help individuals cope with the situation and to make sense of it. The participants require accurate, reliable answers from recognizable resources who can win and maintain trust.

4. As the fourth step in a PTD: saving the project’s results. At the least talking about how to use and or save the results should be part of the PTD.

5. Fifth, at the end of the debriefing, participants should have a platform to discuss feelings, emotions, and thoughts. This can be done with or without senior management present and can be incorporated in the initial debriefing or in a separate setting. “This can, of course, include referral options for practical or emotional support” (Deville et al., 2006: 336-337).

The five suggestions for an effective PTD do not need to be followed in sequence nor does the PTD need to incorporate all five steps; the five steps provide an orientation for the execution of a PTD.

6.4 Limitations and outlook

This doctoral thesis sheds light on the human side of innovation project terminations and uncovers valuable insights thereof. However, this research is not without limitations and aspects, which might be explored further in future research.

First, both the qualitative and the quantitative study were cross-sectional. Whereas such an empirical design can demonstrate relationships, causalities cannot be fully established. A longitudinal study in turn would allow drawing conclusions about expected and proposed causalities. Additionally, a longitudinal design would enable to further develop and consider the dynamics of the process view of resilience (Luthar et al., 2000). In that respect Luthar et al. (2000: 555) propose that “Longitudinal studies must investigate not only the stability of resilience over time, but also the ability of formerly resilient individuals to bounce back after difficult periods, to achieving earlier resilient adaptation”. As such a longitudinal design can bring beneficial insights to this field of research on various accounts.

Second, the focus of the empirical study was on the German-speaking area. The theoretical and empirical findings on which the theory and the hypotheses are based relate to the US (e.g., Luthans et al., 2007b; Luthar et al., 2000; Sutcliffe & Vogus, 2003). Possibly the findings derived from German-speaking innovators slightly differ from those of other Western cultures. Furthermore, the assumptions, used as the basis of this dissertation might not relate to individuals in, for example, Asia or South America because people behave differently due to ‘culturally acquired beliefs and values’ (Henrich & Boyd, 1998: 215). Cultural differences in expectations about so-called good leader behavior, for example, varies across cultures (Den Hartog, House, Hanges, Ruiz-Quintanilla, & Dorfman, 1999), and specific leader behaviors foster different employee values (Muethel, Hoegl, & Parboteeah, 2011). It would therefore be valuable to study the human side of innovation project terminations in other Western countries and in other cultural areas such as Asia.

Third, the developed IRP construct focuses on innovation project terminations. Yet, the (I)R framework allows adaptation to other setbacks as well. Therefore in future studies it would be valuable to apply the process view of resilience and the (I)RP construct to other organizational setbacks, such as organizational change and layoffs, and to adapt the resilience construct IRP to the specific contexts whenever necessary. Furthermore, considering other vocational fields such as scientific research would be interesting to study as terminations are prevailing in this field as well (Shepherd et al., 2011).

Fourth, this doctoral thesis set out to introduce the development and operationalization of the new construct, IRP, for use in further studies to explore additional relationships. This dissertation identified first protective characteristics of an innovation project termination, positively related to IRP. Notwithstanding these important first insights it is necessary to investigate further characteristics that influence IRP and in that the potential for future innovative functioning and coping. Here the identification of both positive as well as negative influencing factors would further facilitate research on the human side of innovation project terminations, including, for example, communication and multiple terminations. Furthermore, it would be interesting to find out how team dispersion relates to IRP as this might affect team performance (Hoegl, Ernst, & Proserpio, 2007). Finding out more about further factors would provide leaders as well as managers with more possibilities to support project members purposefully during this challenging time. The aspects mentioned here appear worthwhile for future studies, while building on the findings of this dissertation.

6.5 Conclusion

Overall, this doctoral thesis represents an important step toward understanding and uncovering the human side of innovation project terminations. I developed the IR framework for this, which enables studying the relationships involved, and the integrated and measureable innovation-related construct, IRP, using theory, a quantitative as well as a

qualitative study. The development of such a measurable innovation-related resilience variable enables future research in this nascent research field. This step was vital as the research field regarding the human side of innovation project terminations just emerges and seems to have influence on the potential for innovative functioning of project members and, thus, for the success of innovation projects. Therefore, it was essential to establish the basis for further research in this field. This dissertation tested first relationships of IRP with other variables and provides theoretical as well as practical implications. The relationships and contingencies uncovered underline and support the process perspective of IR and the appropriateness of the newly developed construct IRP.

In sum, the findings of this doctoral thesis point to opportunities to support project member effectively during and after an innovation project termination. To overcome an innovation project termination, project members, leaders, and senior management need to work together. They need to acknowledge the human side of innovation project terminations and to regard this situation as an opportunity rather than as a setback. This way an innovation project termination offers a chance to grow, to advance and to even turn project failures into “successful failures.”

Bibliography

- Aiken, L. S., & West, S. G. 1991. *Multiple regression: Testing and interpreting interaction*. Newbury Park: Sage Publications.
- Akgün, A. E., Lynn, G. S., & Byrne, J. C. 2003. Organizational learning: A socio-cognitive framework. *Human Relations*, 56(7): 839-868.
- Allen, N. J., & Meyer, J. P. 1990. The measurement and antecedents of affective, continuance and normative commitment to the organization. *Journal of Occupational Psychology*, 63(1): 1-18.
- Amabile, T. M. 1988. A model of creativity and innovation in organizations. *Research in Organizational Behavior*, 10: 123.
- Amabile, T. M. 2000. Stimulate creativity by fueling passion, *Blackwell handbook of principles of organizational behavior*: 331-341.
- Amabile, T. M., & Conti, R. 1999. Changes in the work environment for creativity during downsizing. *Academy of Management Journal*, 42(6): 630-640.
- Amabile, T. M., & Gryskiewicz, N. 1987. Creativity in the R&D laboratory, *Technical Report no. 30. Center for Creative Leadership*. Greensboro, NC.
- Amabile, T. M., Hadley, C. N., & Kramer, S. J. 2002. Creativity under the gun. *Harvard Business Review*, 80(8): 52-61.
- Amabile, T. M., Schatzel, E. A., Moneta, G. B., & Kramer, S. J. 2004. Leader behaviors and the work environment for creativity: Perceived leader support. *Leadership Quarterly*, 15(1): 5.
- Armstrong-Stassen, M. 2004. The influence of prior commitment on the reactions of layoff survivors to organizational downsizing. *Journal of Occupational Health Psychology*, 9(1): 46-60.
- Armstrong-Stassen, M. 2006. Determinants of how managers cope with organisational downsizing. *Applied Psychology: An International Review*, 55(1): 1-26.
- Avey, J. B., Luthans, F., & Jensen, S. M. 2009. Psychological capital: A positive resource for combating employee stress and turnover. *Human Resource Management*, 48(5): 677-693.

- Avey, J. B., Luthans, F., Smith, R. M., & Palmer, N. F. 2010a. Impact of positive psychological capital on employee well-being over time. *Journal of Occupational Health Psychology*, 15(1): 17-28.
- Avey, J. B., Luthans, F., & Youssef, C. M. 2010b. The additive value of positive psychological capital in predicting work attitudes and behaviors. *Journal of Management*, 36(2): 430-452.
- Baer, M., & Frese, M. 2003. Innovation is not enough: Climates for initiative and psychological safety, process innovations, and firm performance. *Journal of Organizational Behavior*, 24(1): 45-68.
- Balachandra, R., & Brockhoff, K. 1995. Are R&D project termination factors universal? *Research Technology Management*, 38(4): 31.
- Balachandra, R., Brockhoff, K. K., & Pearson, A. W. 1996. R&D project termination decisions: Processes, communication, and personnel changes. *Journal of Product Innovation Management*, 13(3): 245-256.
- Bandura, A. 1977. Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2): 191-215.
- Bandura, A. 1982. Self-efficacy mechanism in human agency. *American Psychologist*, 37(2): 122-147.
- Bandura, A. 1986. Social foundations of thought and action: A social cognitive theory.
- Bandura, A. 1988. Organisational applications of social cognitive theory. *Australian Journal of Management (University of New South Wales)*, 13(2): 275.
- Bandura, A. 1997. *Self-efficacy: The exercise of control*. New York: Freeman.
- Bandura, A., & Schunk, D. H. 1981. Cultivating competence, self-efficacy, and intrinsic interest through proximal self-motivation. *Journal of Personality & Social Psychology*, 41(3): 586-598.
- Bandura, A., & Wood, R. 1989. Effect of perceived controllability and performance standards on self-regulation of complex decision making. *Journal of Personality & Social Psychology*, 56(5): 805-814.

- Barling, J., MacEwen, K. E., & Pratt, L. I. 1988. Manipulating the type and source of social support: An experimental investigation. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement*, 20(2): 140-153.
- Baron, R. A. 1988. Negative effects of destructive criticism: Impact on conflict, self-efficacy, and task performance. *Journal of Applied Psychology*, 73(2): 199-207.
- Baron, R. M., & Kenny, D. A. 1986. The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6): 1173-1182.
- Baumeister, R. F., & Exline, J. J. 2000. Self-control, morality, and human strength. *Journal of Social and Clinical Psychology*, 19(1): 29-42.
- Beehr, T. 1985. The role of social support in coping with organizational stress. In T. Beehr, & R. S. Bhagat (Eds.), *Human stress and cognition in organizations: An integrated perspective*: 375-398. New York: Wiley.
- Begley, T. M., & Boyd, D. P. 1987. Psychological characteristics associated with performance in entrepreneurial firms and smaller businesses. *Journal of Business Venturing*, 2(1): 79.
- Begley, T. M., & Czajka, J. M. 1993. Panel analysis of the moderating effects of commitment on job satisfaction, intent to quit, and health following organizational change. *Journal of Applied Psychology*, 78(4): 552-556.
- Bessant, J. 2008. Dealing with discontinuous innovation: The European experience. *International Journal of Technology Management*, 42(1/2): 36-50.
- Bhanthumnavin, D. 2003. Perceived social support from supervisor and group members' psychological and situational characteristics as predictors of subordinate performance in Thai work units. *Human Resource Development Quarterly*, 14(1): 79-97.
- Block, J., & Kremen, A. M. 1996. IQ and ego-resiliency: Conceptual and empirical connections and separateness. *Journal of Personality and Social Psychology*, 70(2): 349-361.
- Bonanno, G. A. 2004. Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist*, 59(1): 20-28.

- Bonanno, G. A., & Keltner, D. 1997. Facial expressions of emotion and the course of conjugal bereavement. *Journal of Abnormal Psychology*, 106(1): 126-137.
- Boulding, W., Morgan, R., & Staelin, R. 1997. Pulling the plug to stop the new product drain. *Journal of Marketing Research*, 34(1): 164-176.
- Bowling, N. A., Eschleman, K. J., Qiang, W., Kirkendall, C., & Alarcon, G. 2010. A meta-analysis of the predictors and consequences of organization-based self-esteem. *Journal of Occupational & Organizational Psychology*, 83(3): 601-626.
- Braden, N. 1998. *Self-esteem at work*. San Francisco: Jossey-Bass.
- Bradley, B. H., Postlethwaite, B. E., Klotz, A. C., Hamdani, M. R., & Brown, K. G. 2012. Reaping the benefits of task conflict in teams: The critical role of team psychological safety climate. *Journal of Applied Psychology*, 97(1): 151-158.
- Bressler, M. 2010. Planning and projecting critical human resource needs: The relationship between hope, optimism, organizational commitment, and turnover intention among U.S. Army reserve soldiers. *Journal of Behavioral Studies in Business*, 3: 1-12.
- Brislin, R. W. 1986. The wording and translation of research instruments. In W. J. Lonner, & J. W. Berry (Eds.), *Field methods in cross-cultural research. Cross-cultural research and methodology series*, Vol. 8: 137-164. Beverly-Hills: Sage.
- Brown Jr, I., & Inouye, D. K. 1978. Learned helplessness through modeling: The role of perceived similarity in competence. *Journal of Personality & Social Psychology*, 36(8): 900-908.
- Brown, S. P., & Leigh, T. W. 1996. A new look at psychological climate and its relationship to job involvement, effort, and performance. *Journal of Applied Psychology*, 81(4): 358-368.
- Buchenau, M.-W. 2007. Erfolgreiche Versager aus Kocher-Valley. *Handelsblatt*, 190(23).
- Buss, D. M. 2000. The evolution of happiness. *American Psychologist*, 55(1): 15-23.
- Cannon, M. D., & Edmondson, A. C. 2001. Confronting failure: Antecedents and consequences of shared beliefs about failure in organizational work groups. *Journal of Organizational Behavior*, 22(2): 161-177.
- Carless, S. A., Wearing, A. J., & Mann, L. 2000. A short measure of transformation leadership. *Journal of Business & Psychology*, 14(3): 389-406.

- Carr, J. C., Boyar, S. B., & Gregory, B. T. 2008. The moderating effect of work-family centrality on work-family conflict, organizational attitudes, and turnover behavior. *Journal of Management*, 34(2): 244-262.
- Cartwright, S., & Cooper, C. L. 1994. *No hassle: Taking the stress out of work*. London: Century Books.
- Carver, C. S. 1998. Resilience and thriving: Issues, models, and linkages. *Journal of Social Issues*, 54(2): 245-266.
- Chen, C. H. V., & Indartono, S. 2011. Study of commitment antecedents: The dynamic point of view. *Journal of Business Ethics*, 103(4): 529-541.
- Chen, Z. X., Tsui, A. S., & Zhong, L. 2008. Reactions to psychological contract breach: A dual perspective. *Journal of Organizational Behavior*, 29(5): 527-548.
- Chun, H., & Lee, C. 2000. Moderating effects of organization-based self-esteem on organizational uncertainty: Employee response relationships. *Journal of Management*, 26(2): 215-232.
- Clegg, S. R., Vieira da Cunha, J., & Pina e Cunha, M. 2002. Management paradoxes: A relational view. *Human Relations*, 55(5): 483-503.
- Cohen, A. M., & Foerst, J. J. R. 1968. Organizational behaviors and adaptations to organizational change of sensitizer and represser problem-solving groups. *Journal of Personality & Social Psychology*, 8(2): 209-216.
- Cohen, J., West, S. G., Aiken, L., & Cohen, P. 2003. *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahawa, NJ: Erlbaum Associates.
- Cohen, S. 2004. Social relationships and health. *American Psychologist*, 59(8): 676-684.
- Cohen, S., Sherrod, D. R., & Clark, M. S. 1986. Social skills and the stress-protective role of social support. *Journal of Personality & Social Psychology*, 50(5): 963-973.
- Cohen, S., & Wills, T. A. 1985. Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, 98(2): 310-357.
- Cohn, M. A., Fredrickson, B. L., Brown, S. L., Mikels, J. A., & Conway, A. M. 2009. Happiness unpacked: Positive emotions increase life satisfaction by building resilience. *Emotion*, 9(3): 361-368.

- Colquitt, J. A., Scott, B. A., & LePine, J. A. 2007. Trust, trustworthiness, and trust propensity: A meta-analytic test of their unique relationships with risk taking and job performance. *Journal of Applied Psychology*, 92(4): 909-927.
- Cook, T. D., & Campbell, D. T. 1979. *Quasi-experimental design: Design and analysis issues for field settings*. Chicago, IL: Rand McNally.
- Corbett, A. C., Neck, H. M., & DeTienne, D. R. 2007. How corporate entrepreneurs learn from fledgling innovation initiatives: Cognition and the development of a termination script. *Entrepreneurship: Theory & Practice*, 31(6): 829-852.
- Coutu, D. L. 2002. How resilience works. *Harvard Business Review*, 80(5): 46-51.
- Cullian, C., Bline, D., Farrar, R., & Lowe, D. 2008. Organization-harm vs. organization-gain ethical issues: An exploratory examination of the effects of organizational commitment. *Journal of Business Ethics*, 80: 225-235.
- Cutrona, C. E. 1986. Behavioral manifestations of social support: A microanalytic investigation. *Journal of Personality and Social Psychology*, 51(1): 201-208.
- Daniels, K., & Guppy, A. 1997. Stressors, locus of control, and social support as consequences of affective psychological well-being. *Journal of Occupational Health Psychology*, 2(2): 156-174.
- De Reyck, B., & Leus, R. 2008. R&D project scheduling when activities may fail. *IIE Transactions*, 40(4): 367-384.
- Den Hartog, D. N., House, R. J., Hanges, P. J., Ruiz-Quintanilla, S. A., & Dorfman, P. W. 1999. Culture specific and cross-culturally generalizable implicit leadership theories: Are attributes of charismatic/transformational leadership universally endorsed?. *Leadership Quarterly*, 10(2): 219.
- DeShon, R. P., & Gillespie, J. Z. 2005. A motivated action theory account of goal orientation. *Journal of Applied Psychology*, 90(6): 1096-1127.
- Devilley, G. J., Gist, R., & Cotton, P. 2006. Ready! Fire! Aim! The status of psychological debriefing and therapeutic interventions: In the work place and after disasters. *Review of General Psychology*, 10(4): 318-345.
- Diamond, M. A. 1996. Innovation and diffusion of technology: A human process. *Consulting Psychology Journal: Practice and Research*, 48(4): 221-229.

- DiFonzo, N., & Bordia, P. 1998. A tale of two corporations: Managing uncertainty during organizational change. *Human Resource Management*, 37(3-4): 295-303.
- Dougall, A. L., Herberman, H. B., Delahanty, D. L., Inslicht, S. S., & Baum, A. 2000. Similarity of prior trauma exposure as a determinant of chronic stress responding to an airline disaster. *Journal of Consulting and Clinical Psychology*, 68(2): 290-295.
- Drucker, P. F. 1985. The discipline of innovation. *Harvard Business Review*, 63(3): 67-72.
- Drucker, P. F. 1998. The discipline of innovation. *Harvard Business Review*, 76(6): 149-157.
- Edmondson, A. C. 1999. Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, 44(2): 350-383.
- Edmondson, A. C., Bohmer, R. M., & Pisano, G. P. 2001. Disrupted routines: Team learning and new technology implementation in hospitals. *Administrative Science Quarterly*, 46(4): 685-716.
- Edmondson, A. C., & Nembhard, I. M. 2009. Product development and learning in project teams: The challenges are the benefits. *Journal of Product Innovation Management*, 26(2): 123.
- Eisenberger, R., Fasolo, P., & Davis-LaMastro, V. 1990. Perceived organizational support and employee diligence, commitment, and innovation. *Journal of Applied Psychology*, 75(1): 51-59.
- Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. 1986. Perceived organizational support. *Journal of Applied Psychology*, 71(3): 500-507.
- Eisenberger, R., Stinglhamber, F., Vandenberghe, C., Sucharski, I. L., & Rhoades, L. 2002. Perceived supervisor support: Contributions to perceived organizational support and employee retention. *Journal of Applied Psychology*, 87(3): 565-573.
- Eisenhardt, K. M., & Graebner, M. E. 2007. Theory building from cases: Opportunities and challenges. *Academy of Management Journal*, 50(1): 25-32.
- Eisenhardt, K. M., & Tabrizi, B. N. 1995. Accelerating adaptive processes: Product innovation in the global computer industry. *Administrative Science Quarterly*, 40(1): 84-110.

- Ellis, S., Mendel, R., & Nir, M. 2006. Learning from successful and failed experience: The moderating role of kind of after-event review. *Journal of Applied Psychology*, 91(3): 669-680.
- Erez, A., & Judge, T. A. 2001. Relationship of core self-evaluations to goal setting, motivation, and performance. *Journal of Applied Psychology*, 86(6): 1270-1279.
- Ernst, H. 2002. Success factors of new product development: A review of the empirical literature. *International Journal of Management Reviews*, 4(1): 1.
- Ernst, H. 2003. Ursachen eines Informant Bias und dessen Auswirkung auf die Validität empirischer betriebswirtschaftlicher Forschung. *Zeitschrift für Betriebswirtschaft*, 73(12): 1249-1275.
- Ernst, H., Hoyer, W. D., & Rübsaamen, C. 2010. Sales, marketing, and research-and-development cooperation across new product development stages: Implications for success. *Journal of Marketing*, 74(5): 80-92.
- Ernst, H., & Teichert, T. 1998. The R and D/marketing interface and single informant bias in npd research: An illustration of a. *Technovation*, 18(12): 721.
- Facteau, J. D., & Craig, S. B. 2001. Are performance appraisal ratings from different rating sources comparable? *Journal of Applied Psychology*, 86(2): 215-227.
- Festinger, L. 1957. *A theory of cognitive dissonance*. Stanford: Stanford University Press.
- Flanagan, J. C. 1954. The critical incident technique. *Psychological Bulletin*, 51(4): 327-358.
- Fredrickson, B. L. 1998. What good are positive emotions? *Review of General Psychology*, 2(3): 300-319.
- Fredrickson, B. L. 2001. The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, 56(3): 218-226.
- Fredrickson, B. L., & Branigan, C. 2005. Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition & Emotion*, 19(3): 313-332.
- Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. 2003. What good are positive emotions in crises? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality & Social Psychology*, 84(2): 365-376.

- Freitas, A. L., & Downey, G. 1998. Resilience: A dynamic perspective. *International Journal of Behavioral Development*, 22(2): 263-285.
- Galak, J., & Meyvis, T. 2011. The pain was greater if it will happen again: The effect of anticipated continuation on retrospective discomfort. *Journal of Experimental Psychology: General*, 140(1): 63-75.
- Gardner, D. G., Van Dyne, L., & Pierce, J. L. 2004. The effects of pay level on organization-based self-esteem and performance: A field study. *Journal of Occupational & Organizational Psychology*, 77(3): 307-322.
- Garnezy, N. 1991. Resiliency and vulnerability to adverse developmental outcomes associated with poverty. *American Behavioral Scientist*, 34(4): 416.
- Garnezy, N., & Masten, A. S. 1986. Stress, competence, and resilience: Common frontiers for therapist and psychopathologist. *Behavioral Therapy*, 17: 500-521.
- Gassmann, O., & Reepmeyer, G. 2005. Organizing pharmaceutical innovation: From science-based knowledge creators to drug-oriented knowledge brokers. *Creativity & Innovation Management*, 14(3): 233-245.
- Geers, A. L., Wellman, J. A., & Lassiter, G. D. 2009. Dispositional optimism and engagement: The moderating influence of goal prioritization. *Journal of Personality and Social Psychology*, 96(4): 913-932.
- Gibbert, M., & Ruigrok, W. 2010. The “what” and “how” of case study rigor: Three strategies based on published work. *Organizational Research Methods*, 13(4): 710-737.
- Gibbert, M., Ruigrok, W., & Wicki, B. 2008. What passes as a rigorous case study? *Strategic Management Journal*, 29(13): 1465-1474.
- Gist, M. E. 1987. Self-efficacy: Implications for organizational behavior and human resource management. *Academy of Management Review*, 12(3): 472-485.
- Glaesmer, H., Grande, G., Braehler, E., & Roth, M. 2011. The German version of the satisfaction with life scale (swls): Psychometric properties, validity, and population-based norms. *European Journal of Psychological Assessment*, 27(2): 127-132.

- Glaesmer, H., Hoyer, J., Klotschke, J., & Herzberg, P. Y. 2008. Die deutsche Version des Life-Orientation-Tests (lot-r) zum dispositionellen Optimismus und Pessimismus. *Zeitschrift für Gesundheitspsychologie*, 16(1): 26-31.
- Glaser, B. G., & Strauss, A. L. 1967. *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aldine Publishing Company.
- Goleman, D. 1998. What makes a leader? *Harvard Business Review*, 76(6): 93-102.
- Goleman, D. 2004. What makes a leader? *Harvard Business Review*, 82(1): 82-91.
- Goleman, D., & Boyatzis, R. 2008. Social intelligence and the biology of leadership. *Harvard Business Review*, 86(9): 74-81.
- Gosling, S. D., Rentfrow, P. J., & Swann Jr, W. B. 2003. A very brief measure of the big-five personality domains. *Journal of Research in Personality*, 37(6): 504-528.
- Goulet, L. R., & Singh, P. 2002. Career commitment: A reexamination and an extension. *Journal of Vocational Behavior*, 61(1): 73-91.
- Gourville, J. T. 2006. Eager sellers & stony buyers. *Harvard Business Review*, 84(6): 98-106.
- Green, S. G., Welsh, M. A., & Dehler, G. E. 2003. Advocacy, performance, and threshold influences on decisions to terminate new product development. *Academy of Management Journal*, 46(4): 419-434.
- Greenberger, D. B., & Strasser, S. 1986. Development and application of a model of personal control in organizations. *Academy of Management Review*, 11(1): 164-177.
- Grueber, M., & Studt, T. 2011. 2012 global R&D funding forecast: Battelle Memorial Institute.
- Grzeda, M. M., & Prince, J. B. 1997. Career motivation measures: A test of convergent and discriminant validity. *International Journal of Human Resource Management*, 8(2): 172-196.
- Gumusluoğlu, L., & Ilsev, A. 2009. Transformational leadership and organizational innovation: The roles of internal and external support for innovation. *Journal of Product Innovation Management*, 26(3): 264-277.
- Gutknecht, J. E., & Keys, J. B. 1993. Mergers, acquisitions and takeovers: Maintaining morale of survivors and protecting employees. *Academy of Management Executive*, 7(3): 26-36.

- Hair, J. F. J., Black, W. C., Babin, B. J., & Anderson, R. E. 2010. *Multivariate data analysis - a global perspective* (7 ed.). Upper Saddle River: Pearson.
- Hamel, G., & Välikangas, L. 2003. The quest for resilience. *Harvard Business Review*, 81(9): 52-63.
- Hampson, S. E., & Goldberg, L. R. 2006. A first large cohort study of personality trait stability over the 40 years between elementary school and midlife. *Journal of Personality and Social Psychology*, 91(4): 763-779.
- Harland, L., Harrison, W., Jones, J. R., & Reiter-Palmon, R. 2005. Leadership behaviors and subordinate resilience. *Journal of Leadership & Organizational Studies*, 11(2): 2-14.
- Harlow, R. E., & Cantor, N. 1995. To whom do people turn when things go poorly? Task orientation and functional social contacts. *Journal of Personality and Social Psychology*, 69(2): 329-340.
- Hauschildt, J., & Kirchmann, E. 2001. Teamwork for innovation - the 'troika' of promoters. *R&D Management*, 31(1): 41-49.
- Hayward, M. L. A., Forster, W. R., Sarasvathy, S. D., & Fredrickson, B. L. 2010. Beyond hubris: How highly confident entrepreneurs rebound to venture again. *Journal of Business Venturing*, 25(6): 569-578.
- Heatherton, T. F., & Polivy, J. 1991. Development and validation of a scale for measuring state self-esteem. *Journal of Personality and Social Psychology*, 60(6): 895-910.
- Henrich, J., & Boyd, R. 1998. The evolution of conformist transmission and the emergence of between-group differences. *Evolution and Human Behavior*, 19(4): 215-241.
- Herold, D. M., Fedor, D. B., & Caldwell, S. D. 2007. Beyond change management: A multilevel investigation of contextual and personal influences on employees' commitment to change. *Journal of Applied Psychology*, 92(4): 942-951.
- Herscovitch, L., & Meyer, J. P. 2002. Commitment to organizational change: Extension of a three-component model. *Journal of Applied Psychology*, 87(3): 474-487.
- Herzberg, P. Y., Glaesmer, H., & Hoyer, J. 2006. Separating optimism and pessimism: A robust psychometric analysis of the revised life orientation test (lot-r). *Psychological Assessment*, 18(4): 433-438.

- Hoegl, M., Ernst, H., & Proserpio, L. 2007. How teamwork matters more as team member dispersion increases. *Journal of Product Innovation Management*, 24(2): 156-165.
- Hoegl, M., & Gemuenden, H. G. 2001. Teamwork quality and the success of innovative projects: A theoretical concept and empirical evidence. *Organization Science*, 12(4): 435-449.
- Hoegl, M., Weinkauff, K., & Gemuenden, H. G. 2004. Interteam coordination, project commitment, and teamwork in multiteam R&D projects: A longitudinal study. *Organization Science*, 15(1): 38-55.
- House, J. S. 1981. *Work stress and social support*. Reading et al.: Addison-Wesley Publishing Company.
- House, J. S., Landis, K. R., & Umberson, D. 1988. Social relationships and health. *Science*, 241: 540-545.
- Huber, V. L., & Neale, M. A. 1986. Effects of cognitive heuristics and goals on negotiator performance and subsequent goal setting. *Organizational Behavior & Human Decision Processes*, 38(3): 342.
- Hung, S. C. 2004. Explaining the process of innovation: The dynamic reconciliation of action and structure. *Human Relations*, 57(11): 1479-1497.
- Juntunen, C. L., & Wettersten, K. B. 2006. Work hope: Development and initial validation of a measure. *Journal of Counseling Psychology*, 53(1): 94-106.
- Kahn, W. A. 2003. The revelation of organizational trauma. *Journal of Applied Behavioral Science*, 39(4): 364-380.
- Kalimo, R., Taris, T. W., & Schaufeli, W. B. 2003. The effects of past and anticipated future downsizing on survivor well-being: An equity perspective. *Journal of Occupational Health Psychology*, 8(2): 91-109.
- Kester, L., Hultink, E. J., & Lauche, K. 2009. Portfolio decision-making genres: A case study. *Journal of Engineering and Technology Management*, 26(4): 327-341.
- King, K. B., Reis, H. T., Porter, L. A., & Norsen, L. H. 1993. Social support and long-term recovery from coronary artery surgery: Effects on patients and spouses. *Health Psychology*, 12(1): 56-63.

- Kinicki, A. J., Prussia, G. E., Wu, B., & McKee-Ryan, F. M. 2004. A covariance structure analysis of employees' response to performance feedback. *Journal of Applied Psychology*, 89(6): 1057-1069.
- Kluemper, D. H., Little, L. M., & DeGroot, T. 2009. State or trait: Effects of state optimism on job-related outcomes. *Journal of Organizational Behavior*, 30(2): 209-231.
- Kobasa, S. C., & Puccetti, M. C. 1983. Personality and social resources in stress resistance. *Journal of Personality and Social Psychology*, 45(4): 839-850.
- Korman, A. K. 1970. Toward an hypothesis of work behavior. *Journal of Applied Psychology*, 54(1 PART 1): 31-41.
- Korman, A. K. 1976. Hypothesis of work behavior revisited and an extension. *Academy of Management Review*, 1(1): 50-63.
- Kumar, V., Persaud, A. N. S., & Kumar, U. 1996. To terminate or not an ongoing R&D project: A managerial dilemma. *IEEE Transactions on Engineering Management*, 43(3): 273.
- La Rocco, J. M., House, J. S., & French Jr, J. R. P. 1980. Social support, occupational stress, and health. *Journal of Health & Social Behavior*, 21(3): 202-218.
- La Rocco, J. M., & Jones, A. P. 1978. Co-worker and leader support as moderators of stress-strain relationships in work situations. *Journal of Applied Psychology*, 63(5): 629-634.
- Latham, G. P. 2001. The importance of understanding and changing employee outcome expectancies for gaining commitment to an organizational goal. *Personnel Psychology*, 54(3): 707-716.
- Leavy, R. L. 1983. Social support and psychological disorder: A review. *Journal of Community Psychology*, 11(1): 3-21.
- Lee, C., Ashford, S. J., & Jamieson, L. F. 1993. The effects of type a behavior dimensions and optimism on coping strategy, health, and performance. *Journal of Organizational Behavior*, 14(2): 143-157.
- Lee, F., Edmondson, A. C., Thomke, S., & Worline, M. 2004. The mixed effects of inconsistency on experimentation in organizations. *Organization Science*, 15(3): 310-326.

- Lee, J., & Peccei, R. 2007. Perceived organizational support and affective commitment: The mediating role of organization-based self-esteem in the context of job insecurity. *Journal of Organizational Behavior*, 28(6): 661-685.
- Lerner, J. S., & Keltner, D. 2001. Fear, anger, and risk. *Journal of Personality and Social Psychology*, 81(1): 146-159.
- Lindell, M. K., & Whitney, D. J. 2001. Accounting for common method variance in cross-sectional research designs. *Journal of Applied Psychology*, 86(1): 114-121.
- Locke, E. A., Latham, G. P., & Erez, M. 1988. The determinants of goal commitment. *Academy of Management Review*, 13(1): 23-39.
- Lombard, M., Snyder-Duch, J., & Campanella Bracken, C. 2002. Content analysis in mass communication. *Human Communication Research*, 28(4): 587.
- London, M. 1983. Toward a theory of career motivation. *Academy of Management Review*, 8(4): 620-630.
- Lunn, J. 2002. The operational debrief process. *The Australian Journal of Emergency Management*, 16(4): 55-57.
- Luthans, F., Avey, J. B., Avolio, B. J., Norman, S. M., & Combs, G. M. 2006a. Psychological capital development: Toward a micro-intervention. *Journal of Organizational Behavior*, 27(3): 387-393.
- Luthans, F., Avolio, B. J., Avey, J. B., & Norman, S. M. 2007a. Positive psychological capital: Measurement and relationship with performance and satisfaction. *Personnel Psychology*, 60(3): 541-572.
- Luthans, F., & Church, A. H. 2002. Positive organizational behavior: Developing and managing psychological strengths. *Academy of Management Executive*, 16(1): 57-72.
- Luthans, F., Norman, S. M., Avolio, B. J., & Avey, J. B. 2008. The mediating role of psychological capital in the supportive organizational climate—employee performance relationship. *Journal of Organizational Behavior*, 29(2): 219-238.
- Luthans, F., Vogelgesang, G. R., & Lester, P. B. 2006b. Developing the psychological capital of resiliency. *Human Resource Development Review*, 5(1): 25-44.
- Luthans, F., Youssef, C., & Avolio, B. J. 2007b. *Psychological capital developing the human competitive edge*. New York / Oxford: Oxford University Press.

- Luthans, F., & Youssef, C. M. 2007. Emerging positive organizational behavior. *Journal of Management*, 33(3): 321-349.
- Luthar, S. S., Cicchetti, D., & Becker, B. 2000. The construct of resilience: A critical evaluation and guidelines for future work. *Child Development*, 71(3): 543-562.
- Maddux, J. E., Norton, L. W., & Stoltenberg, C. D. 1986. Self-efficacy expectancy, outcome expectancy, and outcome value: Relative effects on behavioral intentions. *Journal of Personality and Social Psychology*, 51(4): 783-789.
- Madjar, N. 2008. Emotional and informational support from different sources and employee creativity. *Journal of Occupational & Organizational Psychology*, 81(1): 83-100.
- Mannheim, B., Baruch, Y., & Tal, J. 1997. Alternative models for antecedents and outcomes of work centrality and job satisfaction of high-tech personnel. *Human Relations*, 50(12): 1537-1562.
- Markham, S. K. 2000. Corporate championing and antagonism as forms of political behavior: An R&D perspective. *Organization Science*, 11(4): 429-447.
- Marquard, D. W. 1970. Generalized inverses, ridge regression, biased linear estimation, and nonlinear estimation. *Technometrics*, 12: 591-612.
- Masten, A. S. 2001. Ordinary magic: Resilience processes in development. *American Psychologist*, 56(3): 227-238.
- Masten, A. S., & Reed, M. J. 2002. Resilience in development. In C. R. Snyder, & S. J. Lopez (Eds.), *Handbook of positive psychology*: 74-88. New York: Oxford University Press.
- Mathieu, J. E., & Zajac, D. M. 1990. A review and meta-analysis of the antecedents, correlates, and consequences of organizational commitment. *Psychological Bulletin*, 108(2): 171-194.
- McCrae, R. R., & Costa Jr, P. T. 1982. Self-concept and the stability of personality: Cross-sectional comparisons of self-reports and ratings. *Journal of Personality & Social Psychology*, 43(6): 1282-1292.
- McCrae, R. R., & John, O. P. 1992. An introduction to the five-factor model and its applications. *Journal of Personality*, 60(2): 175-215.

- McDonald, M. L., & Westphal, J. D. 2011. My brother's keeper? CEO identification with the corporate elite, social support among CEOs, and leader effectiveness. *Academy of Management Journal*, 54(4): 661-693.
- McDonough, E. F. I. 2000. An investigation of factors contributing to the success of cross-functional teams. *Journal of Product Innovation Management*, 17(3): 221-235.
- McFarland, C., & Ross, M. 1982. Impact of causal attributions on affective reactions to success and failure. *Journal of Personality and Social Psychology*, 43(5): 937-946.
- McGrath, C., & Zell, D. M. 2009. Profiles of trust: Who to turn to, and for what. *MIT Sloan Management Review*, 50(2): 75-80.
- McGrath, R. G., Keil, T., & Tukiainen, T. 2006. Extracting value from corporate venturing. *MIT Sloan Management Review*, 48(1): 50-56.
- McNatt, D. B., & Judge, T. A. 2008. Self-efficacy intervention, job attitudes, and turnover: A field experiment with employees in role transition. *Human Relations*, 61(6): 783-810.
- Mento, A. J., Cartledge, N. D., & Locke, E. A. 1980. Maryland vs Michigan vs Minnesota: Another look at the relationship of expectancy and goal difficulty to task performance. *Organizational Behavior & Human Performance*, 25(3): 419-440.
- Metzl, E. S. 2009. The role of creative thinking in resilience after hurricane Katrina. *Psychology of Aesthetics, Creativity, and the Arts*, 3(2): 112-123.
- Miron, E., Erez, M., & Naveh, E. 2004. Do personal characteristics and cultural values that promote innovation, quality, and efficiency compete or complement each other? *Journal of Organizational Behavior*, 25(2): 175-199.
- Moenkemeyer, G., Hoegl, M., & Weiss, M. 2012. Innovator resilience potential: A process perspective of individual resilience as influenced by innovation project termination. *Human Relations*, 65(5): 627-655. - Previous versions were presented at the 2010 Conference of the European Academy of Management (EURAM), Rome; at the 15th Conference of the European Association of Work and Organizational Psychology, Maastricht; at the 2011 Academy of Management Conference, San Antonio and included in the 2011 Academy of Management Best Paper Proceedings, San Antonio.
- Moenkemeyer, G., Weiss, M., & Hoegl, M. 2012a. Innovator resilience potential and the relationship with project commitment. *Unpublished working paper*. A previous

- version was presented at the 2012 European Academy of Management Conference, Rotterdam.
- Moenkemeyer, G., Weiss, M., & Hoegl, M. 2012b. Social support and innovator resilience potential. *Unpublished working paper*. A previous version was presented at the 2012 Product Development & Management Association (PDMA) International Research Conference, Orlando.
- Montgomery, R. L., Haemmerlie, F. M., & Ray, D. M. 2003. Psychological correlates of optimism in college students. *Psychological Reports*, 92(2): 545-547.
- Moore, S., Grunberg, L., & Greenberg, E. 2004. Repeated downsizing contact: The effects of similar and dissimilar layoff experiences on work and well-being outcomes. *Journal of Occupational Health Psychology*, 9(3): 247-257.
- Mowday, R. T., Steers, R. M., & Porter, L. W. 1979. The measurement of organizational commitment. *Journal of Vocational Behavior*, 14(2): 224-247.
- Muethel, M., Hoegl, M., & Parboteeah, K. P. 2011. National business ideology and employees' prosocial values. *Journal of International Business Studies*, 42(2): 183-201.
- Mumford, M. D., & Gustafson, S. B. 1988. Creativity syndrome: Integration, application, and innovation. *Psychological Bulletin*, 103(1): 27-43.
- Nadler, D. A. 1988. Concepts for the management of organizational change. In M. L. Tushman, & W. L. Moore (Eds.), *Readings in the management of innovations*: 718-731. Cambridge, MA: Ballinger Publishing Company.
- Neundorf, K. A. 2002. *The content analysis guidebook*. London: Sage.
- Noe, R. A., Noe, A. W., & Bachhuber, J. A. 1990. An investigation of the correlates of career motivation. *Journal of Vocational Behavior*, 37(3): 340-356.
- O'Connor, G. C., & McDermott, C. M. 2004. The human side of radical innovation. *Journal of Engineering and Technology Management*, 21(1-2): 11-30.
- Oaks, G. 2006. There's no success like failure. *Financial Times*, Jul 12: 2.
- Oldham, G. R., & Cummings, A. 1996. Employee creativity: Personal and contextual factors at work. *Academy of Management Journal*, 39(3): 607-634.

- Ollier-Malaterre, A. 2010. Contributions of work—life and resilience initiatives to the individual/organization relationship. *Human Relations*, 63(1): 41-62.
- Ong, A. D., Bergeman, C. S., Bisconti, T. L., & Wallace, K. A. 2006. Psychological resilience, positive emotions, and successful adaptation to stress in later life. *Journal of Personality and Social Psychology*, 91(4): 730-749.
- Overmier, J. B., & Murison, R. 2005. Trauma and resulting sensitization effects are modulated by psychological factors. *Psychoneuroendocrinology*, 30(10): 965-973.
- Parker, S. K., Chmiel, N., & Wall, T. D. 1997. Work characteristics and employee well-being within a context of strategic downsizing. *Journal of Occupational Health Psychology*, 2(4): 289-303.
- Paulhus, D. L. 1991. Measurement and control of response bias. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measures of personality and social psychological attitudes*: 17-59. San Diego, CA: Academic Press, Inc.
- Peterson, C. 2000. The future of optimism. *American Psychologist*, 55(1): 44-55.
- Peterson, K. 2001. The terrorist attacks on September 11 brought stark reminders that extraordinary circumstances require extraordinary leadership. What can leaders do to be as effective as possible during a crisis? *Leadership in Action*, 21(5): 13-13.
- Philippe, F. L., Vallerand, R. J., Houliort, N., Lavigne, G. L., & Donahue, E. G. 2010. Passion for an activity and quality of interpersonal relationships: The mediating role of emotions. *Journal of Personality and Social Psychology*, 98(6): 917-932.
- Phillips, J. M., & Gully, S. M. 1997. Role of goal orientation, ability, need for achievement, and locus of control in the self-efficacy and goal--setting process. *Journal of Applied Psychology*, 82(5): 792-802.
- Pierce, J. L., Gardner, D. G., Cummings, L. L., & Dunham, R. B. 1989. Organization-based self-esteem: Construct definition, measurement, and validation. *Academy of Management Journal*, 32(3): 622-648.
- Pierce, J. L., Gardner, D. G., Dunham, R. B., & Cummings, L. L. 1993. Moderation by organization-based self-esteem of role condition-employee response relationships. *Academy of Management Journal*, 36(2): 271-288.

- Podsakoff, P. M., MacKenzie, S. B., Jeong-Yeon, L., & Podsakoff, N. P. 2003. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5): 879.
- Podsakoff, P. M., & Organ, D. W. 1986. Self-reports in organizational research: Problems and prospects. *Journal of Management*, 12(4): 531.
- Polivy, J., & Herman, C. P. 2000. The false-hope syndrome: Unfulfilled expectations of self-change. *Current Directions in Psychological Science*, 9(4): 128-131.
- Popper, M., & Maysel, O. 2003. Back to basics: Applying a parenting perspective to transformational leadership. *Leadership Quarterly*, 14(1): 41.
- Porter, L. W., Steers, R. M., Mowday, R. T., & Boulian, P. V. 1974. Organizational commitment, job satisfaction, and turnover among psychiatric technicians. *Journal of Applied Psychology*, 59(5): 603-609.
- Powley, E. H. 2009. Reclaiming resilience and safety: Resilience activation in the critical period of crisis. *Human Relations*, 62(9): 1289-1326.
- Range, L. M., & Penton, S. R. 1994. Hope, hopelessness, and suicidality in college students. *Psychological Reports*, 75(1): 456.
- Reichers, A. E., Wanous, J. P., & Austin, J. T. 1997. Understanding and managing cynicism about organizational change. *Academy of Management Executive*, 11(1): 48-59.
- Rhoades, L., & Eisenberger, R. 2002. Perceived organizational support: A review of the literature. *Journal of Applied Psychology*, 87(4): 698-714.
- Richardson, G., E. . 2002. The metatheory of resilience and resiliency. *Journal of Clinical Psychology*, 58(3): 307-321.
- Riggs, M. L., & Knight, P. A. 1994. The impact of perceived group success-failure on motivational beliefs and attitudes: A causal model. *Journal of Applied Psychology*, 79(5): 755-766.
- Riggs, M. L., Warka, J., Babasa, B., Betancourt, R., & Hooker, S. 1994. Development and validation of self-efficacy and outcome expectancy scales for job-related applications. *Educational and Psychological Measurement*, 54(3): 793-802.
- Riskind, J. H. 1999. The psychology of looming vulnerability: Its relationships to loss. *Journal of Personal & Interpersonal Loss*, 4(1): 25-45.

- Robinson, S. L. 1996. Trust and breach of the psychological contract. *Administrative Science Quarterly*, 41(4): 574-599.
- Rotter, J. B. 1966. Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, 80(1): 1-28.
- Rousseau, D. M. 2001. Schema, promise and mutuality: The building blocks of the psychological contract. *Journal of Occupational and Organizational Psychology*, 74(4): 511.
- Runco, M. A., & Richards, R. 1998. *Eminent creativity, everyday reativity, and health: Publications in creativity research*. Greenwich, CT: Ablex Publishing Corporation.
- Rush, M. C., Schoel, W. A., & Barnard, S. M. 1995. Psychological resiliency in the public sector: "Hardiness" and pressure for change. *Journal of Vocational Behavior*, 46(1): 17-39.
- Rybowiak, V., Garst, H., Frese, M., & Batinic, B. 1999. Further analysis of employment interview validity: A quantitative evaluation of. *Journal of Organizational Behavior*, 20(4): 449.
- Scheier, M. F., Carver, C. S., & Bridges, M. W. 1994. Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the life orientation test. *Journal of Personality and Social Psychology*, 67(6): 1063-1078.
- Schmidt, J. B., & Calantone, R. J. 1998. Are really new product development projects harder to shut down? *Journal of Product Innovation Management*, 15(2): 111-123.
- Schmidt, J. B., & Calantone, R. J. 2002. Escalation of commitment during new product development. *Journal of the Academy of Marketing Science*, 30(2): 103-118.
- Schneider, B. 1983. Interactional psychology and organizational behavior. *Research in Organizational Behavior*, 5: 1.
- Schneider, S. L. 2001. In search of realistic optimism: Meaning, knowledge, and warm fuzziness. *American Psychologist*, 56(3): 250-263.
- Schroth, H. A., & Shah, P. P. 2000. Procedures: Do we really want to know them? An examination of the effects of procedural justice on self-esteem. *Journal of Applied Psychology*, 85(3): 462-471.

- Schweiger, D. M., & Denisi, A. S. 1991. Communication with employees following a merger: A longitudinal field experiment. *Academy of Management Journal*, 34(1): 110-135.
- Seligman, M. 1998. *Learned optimism*. New York: Pocket Books.
- Seligman, M. E. P., Castellon, C., Cacciola, J., Schulman, P., Luborsky, L., Ollove, M., & Downing, R. 1988. Explanatory style change during cognitive therapy for unipolar depression. *Journal of Abnormal Psychology*, 97(1): 13-18.
- Seligman, M. E. P., & Csikszentmihalyi, M. 2000. Positive psychology: An introduction. *American Psychologist*, 55(1): 5-14.
- Sethi, R., & Sethi, A. 2009. Can quality-oriented firms develop innovative new products? *Journal of Product Innovation Management*, 26(2): 206-221.
- Shalley, C. E., & Gilson, L. L. 2004. What leaders need to know: A review of social and contextual factors that can foster or hinder creativity. *Leadership Quarterly*, 15(1): 33.
- Shenkar, O., & Yan, A. 2002. Failure as a consequence of partner politics: Learning from the life and death of an international cooperative venture. *Human Relations*, 55(5): 565.
- Shepherd, D. A. 2009. Grief recovery from the loss of a family business: A multi- and meso-level theory. *Journal of Business Venturing*, 24(1): 81-97.
- Shepherd, D. A., & Cardon, M. S. 2009. Negative emotional reactions to project failure and the self-compassion to learn from the experience. *Journal of Management Studies*, 46(6): 923-949.
- Shepherd, D. A., Covin, J. G., & Kuratko, D. F. 2009a. Project failure from corporate entrepreneurship: Managing the grief process. *Journal of Business Venturing*, 24(6): 588-600.
- Shepherd, D. A., & Kuratko, D. F. 2009. The death of an innovative project: How grief recovery enhances learning. *Business Horizons*, 52(5): 451-458.
- Shepherd, D. A., Patzelt, H., & Wolfe, M. 2011. Moving forward from project failure: Negative emotions, affective commitment, and learning from the experience. *Academy of Management Journal*, 54(6): 1229-1259.
- Shepherd, D. A., Wiklund, J., & Haynie, J. M. 2009b. Moving forward: Balancing the financial and emotional costs of business failure. *Journal of Business Venturing*, 24(2): 134-148.

- Sherman, S., & Freas, A. 2004. The wild west of executive coaching. *Harvard Business Review*, 82(11): 82-90.
- Siegel, P. A., Post, C., Brockner, J., Fishman, A. Y., & Garden, C. 2005. The moderating influence of procedural fairness on the relationship between work-life conflict and organizational commitment. *Journal of Applied Psychology*, 90(1): 13-24.
- Siggelkow, N. 2007. Persuasion with case studies. *Academy of Management Journal*, 50(1): 20-24.
- Silverman, D. 2000. *Doing qualitative research: A practical handbook*. Thousand Oaks, California: SAGE Publications Inc.
- Simon, M., Houghton, S. M., & Aquino, K. 2000. Cognitive biases, risk perception, and venture formation: How individuals decide to start companies. *Journal of Business Venturing*, 15(2): 113-134.
- Sitkin, S. B. 1992. Learning through failure: The strategy of small losses. In B. M. Staw, & L. L. Cummings (Eds.), *Research in organizational behavior. Volume 14*: 231-266: An Annual Series of Analytical Essays and Critical Reviews; Greenwich, Conn. and London: JAI Press.
- Sivanathan, N., Molden, D. C., Galinsky, A. D., & Ku, G. 2008. The promise and peril of self-affirmation in de-escalation of commitment. *Organizational Behavior & Human Decision Processes*, 107(1): 1-14.
- Snyder, C. R., Harris, C., Anderson, J. R., Holleran, S. A., Irving, L. M., Sigmon, S. T., Yoshinobu, L., Gibb, J., Langelle, C., & Harney, P. 1991. The will and the ways: Development and validation of an individual-differences measure of hope. *Journal of Personality and Social Psychology*, 60(4): 570-585.
- Snyder, C. R., Sympson, S. C., Ybasco, F. C., Borders, T. F., Babyak, M. A., & Higgins, R. L. 1996. Development and validation of the state hope scale. *Journal of Personality and Social Psychology*, 70(2): 321-335.
- Spreitzer, G. M. 1996. Social structural characteristics of psychological empowerment. *Academy of Management Journal*, 39(2): 483-504.
- Stajkovic, A. D. 2006. Development of a core confidence-higher order construct. *Journal of Applied Psychology*, 91(6): 1208-1224.

- Stajkovic, A. D., Luthans, F., & Slocum Jr, J. W. 1998. Social cognitive theory and self-efficacy: Going beyond traditional motivational and behavioral approaches. *Organizational Dynamics*, 26(4): 62-74.
- Steers, R. M. 1977. Antecedents and outcomes of organizational commitment. *Administrative Science Quarterly*, 22(1): 46.
- Sutcliffe, K., & Vogus, T. 2003. Organizing for resilience. In K. S. Cameron, J. E. Dutton, & R. E. Q. Quinn (Eds.), *Positive organizational scholarship: Foundations of a new discipline*: 94-110. San Francisco: Berrett-Koehler.
- Szabo, S., Orley, J., & Saxena, S. 1997. An approach to response scale development for cross-cultural questionnaires. *European Psychologist*, 2(3): 270-276.
- Taylor, S. E. 1983. Adjustment to threatening events: A theory of cognitive adaptation. *American Psychologist*, 38(11): 1161-1173.
- Tierney, P., & Farmer, S. M. 2002. Creative self-efficacy: Its potential antecedents and relationship to creative performance. *Academy of Management Journal*, 45(6): 1137-1148.
- Tiger, L. 1979. *Optimism: The biology of hope*. New York: Simon & Schuster.
- Tjosvold, D., & Ziyou, Y. 2007. Group risk taking. *Group & Organization Management*, 32(6): 653-674.
- Tugade, M. M., & Fredrickson, B. L. 2004. Resilient individuals use positive emotions to bounce back from negative emotional experiences. *Journal of Personality & Social Psychology*, 86(2): 320-333.
- Tugade, M. M., Fredrickson, B. L., & Feldman Barrett, L. 2004. Psychological resilience and positive emotional granularity: Examining the benefits of positive emotions on coping and health. *Journal of Personality*, 72(6): 1161-1190.
- Tversky, A., & Kahneman, D. 1974. Judgment under uncertainty: Heuristics and biases. *Science*, 185(4157): 1124-1131.
- Välrikangas, L., Hoegl, M., & Gibbert, M. 2009. Why learning from failure isn't easy (and what to do about it): Innovation trauma at Sun Microsystems. *European Management Journal*, 27(4): 225-233.

- Van de Ven, A. H. 1986. Central problems in the management of innovation. *Management Science*, 32(5): 590-607.
- Van de Ven, A. H., & Polley, D. 1992. Learning while innovating. *Organization Science*, 3(1): 92-116.
- Van Dierendonck, D., Haynes, C., Borrill, C., & Stride, C. 2004. Leadership behavior and subordinate well-being. *Journal of Occupational Health Psychology*, 9(2): 165-175.
- Van Dyne, L., & Pierce, J. L. 2004. Psychological ownership and feelings of possession: Three field studies predicting employee attitudes and organizational citizenship behavior. *Journal of Organizational Behavior*, 25(4): 439-459.
- Verona, G. 1999. A resource-based view of product development. *Academy of Management Review*, 24(1): 132-142.
- Von Krogh, G. 1998. Care in knowledge creation. *California Management Review*, 40(3): 133-153.
- Wanberg, C. R., & Banas, J. T. 2000. Predictors and outcomes of openness to changes in a reorganizing workplace. *Journal of Applied Psychology*, 85(1): 132-142.
- Warheit, G. J. 1979. Life events, coping, stress, and depressive symptomatology. *American Journal of Psychiatry*, 136(502-507).
- Wayne, S. J., Shore, L. M., & Liden, R. C. 1997. Perceived organizational support and leader-member exchange: A social exchange perspective. *Academy of Management Journal*, 40(1): 82-111.
- Weick, K. E. 1993. The collapse of sensemaking in organizations: The Mann Gulch disaster. *Administrative Science Quarterly*, 38(4): 628.
- Weiner, B. 1985. An attributional theory of achievement motivation and emotion. *Psychological Review*, 92(4): 548-573.
- Wengraf, T. 2001. *Qualitative research interviewing: Biographic narrative and semi-structured methods*. London: Sage.
- Werner, E. E. 1982. *Vulnerable but invincible: A longitudinal study of resilient children and youth*. New York: McGraw-Hill.
- Werner, E. E. 1995. Resilience in development. *Current Directions in Psychological Science*, 4(3): 81-85.

- Westphal, M., & Bonanno, G. A. 2007. Posttraumatic growth and resilience to trauma: Different sides of the same coin or different coins? *Applied Psychology: An International Review*, 56(3): 417-427.
- Wilks, S. E., & Spivey, C. A. 2010. Resilience in undergraduate social work students: Social support and adjustment to academic stress. *Social Work Education*, 29(3): 276-288.
- Wills, T. A., & Cleary, S. D. 1996. How are social support effects mediated? A test with parental support and adolescent substance use. *Journal of Personality and Social Psychology*, 71(5): 937-952.
- Witkin, H. A., & Goodenough, D. R. 1981. *Cognitive styles - essence and origins: Field dependence and field independence*. New York: International University Press.
- Wolin, S., & Wolin, S. 1993. *The resilient self: How survivors of troubled families rise above adversity*. New York: Villard Books.
- Wood, R., & Bandura, A. 1989. Social cognitive theory of organizational management. *Academy of Management Review*, 14(3): 361-384.
- Woodman, R. W., Sawyer, J. E., & Griffin, R. W. 1993. Toward a theory of organizational creativity. *Academy of Management Review*, 18(2): 293-321.
- XING.com. 2010. Xing mediadaten; https://www.Xing.Com/pdf/xing_mediadata_100813_de.Pdf.
- Yin, R. K. 2003. *Case study research: Design and methods* (3rd Edition ed.). Thousand Oaks, CA: Sage.
- Youssef, C. M., & Luthans, F. 2007. Positive organizational behavior in the workplace: The impact of hope, optimism, and resilience. *Journal of Management*, 33(5): 774-800.
- Zhou, J., & George, J. M. 2001. When job dissatisfaction leads to creativity: Encouraging the expression of voice. *Academy of Management Journal*, 44(4): 682-696.